

# ASPECT, SCOPE, AND FUTURE CONDITIONALS\*

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## Abstract

This paper argues that though *will* and *be going to* both involve a future modal, their meanings differ aspectually. *Be going to* includes a progressive-like aspectual operator that takes scope over the future modal. *Will*, on the other hand, is ambiguous between a reading that is the future modal alone, and a reading that has a generic-like aspectual operator over the modal. The evidence for these logical forms consists primarily of modal effects caused by aspectual operation on the temporal argument of the future modal's accessibility relation. Similar evidence motivates a proposal that future modals in conditionals can have scope either over or under the antecedent of the conditional. These findings argue against analyses that treat futures as a kind of tense, and suggest possible directions for theories of aspect, modals, and conditionals.

## 1 Introduction

The goal of this paper is to provide a better understanding of futures in general, through comparison of *will* with another future, namely *be going to*. *Will* and *be going to*, I will argue, contain the same future modal, differing only in aspect. *Be going to* has a progressive-like operator located just under tense and over the future modal, while *will* initially at least seems to have no aspectual component. *Will*, however, is later argued to be ambiguous between an aspect-free reading and a reading with a generic-like aspectual operator. In all these cases, the aspect, or lack thereof, has detectable effects on the temporal argument of the future modal's accessibility relation.<sup>1</sup> However, since we know that higher *tense* has an effect on the temporal argument of accessibility relations, perhaps we should not be too surprised to see aspectual effects as well. A class of apparent counterexamples to the *be going to* proposal is shown to have a different scope for *be going to*, and a class of apparent counterexamples to the *will* proposal is accounted for via a reading of *will* with generic aspect. Subsequently the evidence for scope distinctions among *will* conditionals is examined. We are left with a fairly varied picture of future conditionals.

## 2 Aspect of *be going to*

In this section I offer a puzzle about offering, and solve the puzzle by proposing an aspectual difference between *be going to* and *will*. The puzzle is this: Why can *will* be used to make an offer, while *be going to* seemingly cannot be? The eventual solution is that *be going to* consists

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<sup>1</sup>The effect of higher aspect on modals has not been much remarked upon; in fact, the very existence of aspect in that position has not been much remarked upon (Cinque (2002), Tenny (2000))

of a progressive-like aspectual operator on top of a future modal, and that this combination conflicts with a pragmatic requirement on acts of offering.

As a first step in the argument that *will* and *be going to* differ aspectually, it is necessary to demonstrate that *will* and *be going to* do in fact differ in meaning. It is not immediately obvious that they do; in some contexts, as in (1), they seem almost interchangeable.

- (1) a. It will be sunny tomorrow  
b. It's going to be sunny tomorrow.

Certain contexts, however, bring out clear assertability differences. Consider the sentence in (2a), seen outside Madera, California, on a billboard advertising a mechanic's shop. The sentence in (2b) was not on the billboard, and in fact could not felicitously have been used there.

- (2) a. We'll change your oil in Madera. √offer  
b. We're going to change your oil in Madera. #offer

Thus here is a difference between *will* and *be going to*. Intuitively, (2a) is used to make an offer that you can take or leave. But the sentence in (2b), in the context given, is not an offer. Rather, it is somewhat bullying. The threatening nature of (2b) seems to stem from the intuition that there is no chance for you to have a say in the matter.

Suppose we consider in more depth what it is to make an offer. First, the contribution of the speaker. It seems clear that only someone who believes they can say whether an eventuality happens or not can felicitously make an offer for that eventuality to happen. I cannot felicitously offer for it to rain tomorrow, for instance, because I have no power over the weather, and I know it. So in order for an individual *s* ("speaker") to be able to make a valid offer to carry out a *q*-eventuality (an eventuality of which a predicate *q* holds), *s* must have power over whether a *q*-eventuality holds occurs. Let's call this ability (without going into a precise modal characterization of ability) *direction* (Copley 2002b).

- (3) An individual *s* *directs* *q* just in case *s* has the ability to determine whether *q* happens.

The one to whom the offer is made, whom I will refer to as *h* ("hearer"), also seems to have some control over whether the *q*-eventuality occurs. It should happen if *h* wants it to happen, and, equally importantly, it should not happen if *h* wants it not to happen. It would certainly be rude for someone to make an assertion that entails that in some cases where you do not want them to change your oil, they do it anyway. For an utterance to count as an act of offering, the speaker's carrying out of the offered eventuality has to be contingent on the interlocutor's preferences.

Let's treat a sentence of offering as a conditional with an elided antecedent *if you want q*, an overt consequent *will q*, and a presupposition that *d* has power over whether a *q*-eventuality occurs. The offerer *s*, in uttering that sentence in good faith, asserts the truth of that conditional. On a Lewis-Kratzer-style account of conditionals (Lewis (1986), Kratzer (1986)), *s* asserts that in all worlds where *h* wants *q*, a *q*-eventuality happens. And let us further agree that in making a valid offer, *s* is also committed to the truth of the proposition expressed by the conditional *If you don't want q, won't q* (where *don't want* = *want not*). This commitment reflects our intuition that the hearer's desires have an effect on whether a *q*-eventuality happens; it happens only if the hearer wants it to. Note that this commitment is not required by anything about the semantics of the conditional, but rather is just a pragmatic requirement on offers.

We also need a condition on offers. (I have abbreviated the intensional verbs *want* and *be-*

*lieve*; w-t-believe, for instance, is short for “believes in w at t,” with the usual possible world semantics.)

- (4) *Condition on offers*: A person s offers in w at t to bring about a q-eventuality for h only if s w-t-believes that:  $\forall w'$  that agree with w up to t:  $[\exists t'$  such that s directs q in  $w'$  at  $t'$ :  $[h w'-t'$ -wants q  $\Leftrightarrow \forall w''$  that agree with  $w'$  up to  $t'$ :  $[\exists t'' > t'$ :  $[q(w'')(t'')]]$ ]]]

Now let's see how this characterization of offering intuitively conflicts with the semantics of *be going to*. According to our assumption, an offering utterance is interpreted with a certain kind of antecedent, whether or not it is pronounced. In that case, the billboard utterances actually have the meaning of the conditionals given in (5):

- (5) Revision of the billboard utterances  
 a. (If you want us to change your oil in Madera,) we will change your oil in Madera.  
 b. #(If you want us to change your oil in Madera,) we are going to change your oil in Madera.

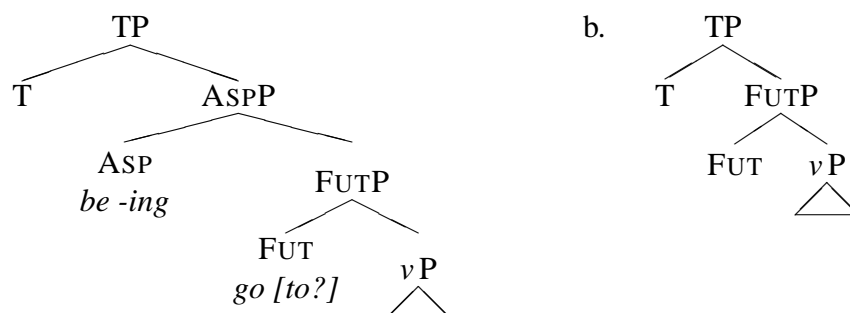
The problem with (5b) seems to be a conflict with part (b) of the offering condition in (4), instantiated in this case as follows:

- (6) If you don't want us to change your oil in Madera, we won't change your oil in Madera.

While (6) feels consistent with (5a), it feels inconsistent with (5b). This intuition is what is responsible for the feeling noted earlier: Felicitous offering requires the offerer to take the hearer's desires into account, but using *be going to* feels like a decision has already been made, without prior consultation with the hearer.

The question we have arrived at is this: What is it about the meaning of *be going to* that causes (5b) to contradict (6)? The answer to this question, I propose, is that *be going to* consists of a progressive-like aspectual operator scoping over a future modal. The proposed structure is as in (7a) below. Tense is marked on the progressive auxiliary, yielding *was/were going to*.<sup>2</sup> Note that (7a) is minimally different from a proposal for the logical form of *will* and *would* (Abusch 1985), shown in (7b).

- (7) a. *Be going to* (Copley 2001, 2002a, b)



Two considerations motivate the proposed structure in (7a). The first is morphological. *Be -ing* often marks progressives; perhaps it does just that, or something quite like that, in *be going to*. English is notorious for reusing morphology, but the presence of *be -ing* should at least

<sup>2</sup>*To* is not separable from *going* (Copley 2001), giving the impression that *be going to* is something of an idiom. It is not unusual for constructions to lose transparency as they progress from main verb to tense/aspect marking (Dahl 1985).

prompt an investigation into the possibility of progressive semantics. And if we decide to take the morphology seriously, and if we believe in the Mirror Principle (Baker 1985), the future projection, presumably *go*, ought to be lower than the aspectual head, which is itself lower than the tense head.

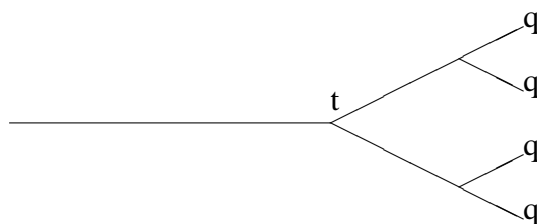
The second consideration is semantic in nature. The core meaning of progressives involves a kind of “ongoingness;” if John was singing, then at the time under discussion, the John-singing eventuality was already ongoing. Recall the intuition about why *be going to q* is not a felicitous offer: It’s already true that a *q*-eventuality will happen, so the hearer has no chance to say *yea* or *no*. We may understand this fact as reflecting a kind of “ongoingness,” not of the eventuality itself, but of the *futurity* of the eventuality. If so, this intuition is another reason to give serious attention to the idea that there is something like a progressive scoping over the future element.

To evaluate the hypothesis, we need to flesh it out with specific future and progressive elements from among the existing literature: a version of Thomason’s (1970) future operator, and a very simple progressive operator first proposed by Bennett and Partee (1978). Thomason’s operator is defined as follows:

- (8) (Thomason 1970): For any time  $t$  and world  $w$ ,  $FUT(w)(t)(q)$   
 $= 1$  if  $\forall w'$  that agree with  $w$  up to  $t$ :  $\exists t'$ :  $t < t'$  and  $q(w')(t') = 1$ ;  
 $= 0$  if  $\forall w'$  that agree with  $w$  up to  $t$ :  $\neg \exists t'$ :  $t < t'$  and  $q(w')(t') = 1$ ;  
 and is undefined otherwise.

The definition in (8) says that for any instant  $t$  and world  $w$ ,  $FUT(w)(t)(q)$  is defined just in case all the worlds share a truth value for  $q$  at the time in question. Then, if  $FUT(w)(t)(q)$  is defined, it is true if on all worlds that agree with  $w$  up to  $t$ , there is some time  $t'$  that is later than  $t$ , at which  $q$  is true; and it is false if on all worlds that agree with  $w$  up to  $t$ , there is no time  $t'$  that is later than  $t$  at which  $q$  is true. The figure in (9) represents graphically a case in which  $FUT(w)(t)(q)$  is true: The horizontal line in the diagram below represents the actual world, and the lines branching off represent the set of accessible worlds at time  $t$ .

- (9) A case in which  $FUT(w)(t)(q)$  is true



The Bennett and Partee progressive operator, which I will call “P”, is a very simple one; it is true at a world and a time just in case its propositional argument is true at a superinterval of that time, in that world.<sup>3</sup>

- (10)  $P(w)(t)(p) = 1$  iff  $\exists t' \supset t$ :  $p(w)(t')$

Let us assume that present tense is null, and that *will* is just Thomason’s modal FUT, while

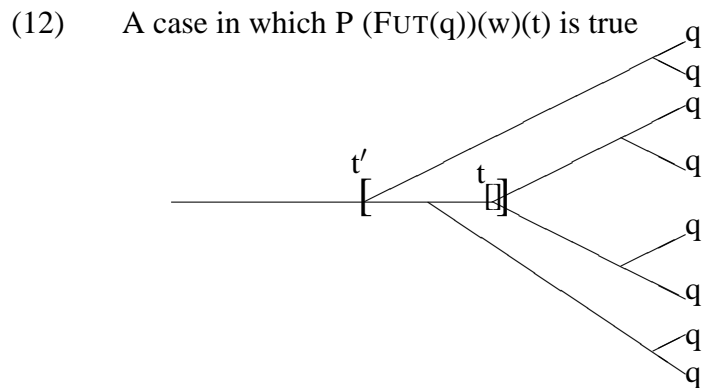
<sup>3</sup>This denotation of progressive aspect (Bennett and Partee 1978) runs afoul of the imperfective paradox, as noted by (Dowty 1979). Thus P cannot be the denotation of a “real” progressive. In Copley (2002b), I argue, following Dowty and practically everyone since (e.g., Landman (1992), Portner (1998), Cipria and Roberts (2000)) that “real” progressives have a modal component as well as this temporal component. I diverge from earlier accounts by pointing out a number of similarities between the modal component of “real” progressives and the future modal.

*be going to* has the proposed structure, with a Bennett and Partee progressive scoping over the Thomason modal, as expanded below.

- (11)  $P(w)(t)(FUT(q)) = 1$  iff  $\exists t' \supset t: [FUT(w)(t')(q) = 1]$   
 $P(w)(t)(FUT(q)) = 1$  if  $\exists t' \supset t: [\forall w'$  that agree with  $w$  up to  $t'$ :  $[\exists t'': t' < t''$  and  $q(w')(t'') = 1]]$

How can we characterize the set of worlds quantified over by this denotation of *be going to*?  $P$ , evaluated at  $t$ ,  $w$ , and  $p$ , yields a truth value of 1 just in case  $p$  holds over a superinterval  $t'$  of  $t$  in  $w$ , where  $t$  is an internal interval of  $t'$ . *Be going to* represents a case where  $p$  is  $FUT(q)(w)(t')$  (for some  $q$ ).<sup>4</sup>

The worlds *be going to* quantifies over are not just the set of worlds  $FUT(q)(w)(t)$  quantifies over, i.e., those that branch off during  $t$ , but a larger set of worlds: the worlds that branch off during some interval  $t'$  that surrounds  $t$ . We would represent the worlds *be going to* quantifies over as below in (12). If  $[[be\ going\ to]](q)(w)(t)$  is true, that entails that all the worlds pictured branching off during some  $t'$  are  $q$  worlds, as shown in (12).



*Be going to* therefore quantifies over not only the worlds that  $FUT$  would quantify over given the same arguments, but also over additional worlds — those that branch off during  $t'$  but before the beginning of  $t$  — as long as  $t$  is not an initial interval of  $t'$ . While we could explicitly define the relation between  $t$  and  $t'$  to exclude such a possibility, there is no need to do so if we adopt a common<sup>5</sup> assumption that the actual world only exists up to the time of utterance; equivalently, that future world-time pairs are not available except via modal means.

We are now in a position to return to the puzzle about offering, and explain why the speaker of ((13)a) (i.e., the billboard *be going to* utterance with the elided antecedent made explicit) cannot also consistently assert ((13)b), part of the offering condition.

- (13) a. #If you want us to change your oil in Madera, we're going to change your oil in Madera.  
 b. If you don't want us to change your oil in Madera, we won't change your oil in Madera.

Let  $p$  = the proposition expressed by *you want us to change your oil in Madera* (in the context in question);  $q$  = the proposition expressed by *we change your oil in Madera* (in the context in

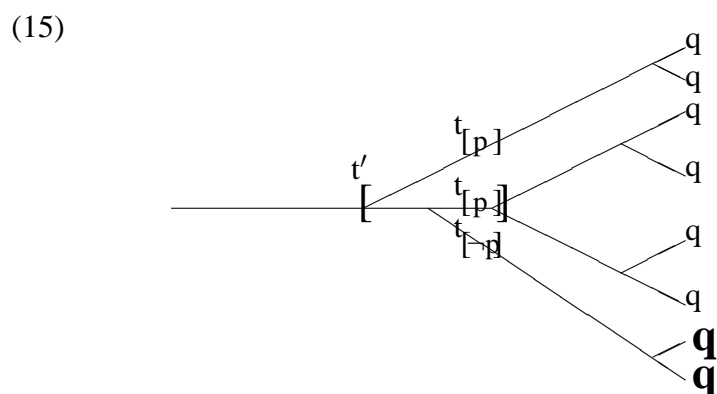
<sup>4</sup>Thomason's original operator must be altered slightly so that it takes intervals rather than instants. The change is to substitute "agree with  $w$  up to the beginning of  $t$ " for "agree with  $w$  up to  $t$ " in the denotation of  $FUT$ . Intuitively, we can speak of branching worlds that branch off during an interval, rather than at an instant.

<sup>5</sup>See, among others, Prior (1967) and Abusch (1998) for independent justification of this assumption.

question); and  $t$  = a time at or after the reading of the billboard (i.e., the time when it matters whether the hearer wants  $q$ , and at which the offerer is prepared to bring about a  $q$ -eventuality). Then ((13)a) and ((13)b), the incompatible utterances from the puzzle, turn out as follows.

- (14) a. all worlds  $w$  such that  $p(w)(t) = 1$  are worlds in which  $P(w)(t)(FUT(q)) = 1$   
 b. no worlds  $w$  such that  $p(w)(t) = 1$  are worlds in which  $FUT(w)(t)(q) = 1$

Now we will see how the current proposal derives the intuition that (14a) and (14b) are incompatible, solving the puzzle. Suppose now we consider one of the worlds in which  $p$  is true at  $t$ . We can imagine possible worlds in which  $p$  is not true at  $t$  (i.e., worlds in which  $\text{not-}p$  is true at  $t$ , assuming contradictory negation for the sake of simplicity). These worlds would have to branch off from the  $p$  world before  $t$ . Of course, not all of the worlds that branch off before  $t$  are worlds that have  $\text{not-}p$  true at  $t$ ; some of the worlds that branch off before  $t$  make  $p$  true at  $t$ . In general, for any interval  $t'$  which properly includes  $t$ , there will be some worlds that branch off from the actual world during  $t'$  such that  $\text{not-}p$  is true at  $t$  (given, again, that  $t$  cannot be an initial interval of  $t'$ ). Now, let us further suppose that (14a) is true. Therefore on any world that makes  $p$  true at  $t$ , there is an interval  $t'$  such that all the worlds that branch off during  $t'$  make  $q$  true at some later interval. This state of affairs is given below in (15).



But now notice that in a situation in which (14a) is true — that is, in which there is an interval  $t'$  including  $t$  such that all worlds branching off during  $t'$  have  $q$  true at some later time — there can still be  $\text{not-}p$  worlds among these  $q$  worlds. Two such worlds in the diagram above are those with boldface, larger  $q$ . The existence of such worlds is inconsistent with the condition in (14b) that all  $\text{not-}p$  worlds are worlds in which  $\text{not-}q$  will happen (assuming that  $q$  and  $\text{not-}q$  are inconsistent). That, then, is why the *be going to* sentence can't be used to make an offer. This incompatibility with a condition on offering explains the infelicity of *be going to* in this context, and is the correct characterization of the puzzle.

That this is the right approach to the puzzle becomes clear when we consider contexts in which  $\text{not-}p$  worlds are assumed to be non-existent. In these contexts, *be going to* sentences don't sound so rude. Consider, for example, another possible billboard (you are already in Madera):

- (16) We're going to make you happy in Madera.

The sentence in (16) isn't exactly an offer, but neither is it entirely rude. The reason it is not so rude is that it is safe for the speaker to assume that there are no  $\text{not-}p$  worlds; that is, conceivably, if you are already in Madera, there are no possible worlds in which you don't want to be happy in Madera. The utterance of (16) thus doesn't entail that any  $\text{not-}p$  worlds are  $q$  worlds. Hence no conflict emerges.

The puzzle we began with, i.e., that *be going to* cannot be used to make an offer, provided empirical support to the proposal that this construction involves two ingredients: progressive-like aspect and a future modal. Indeed the semantic result of composing these two operators is apparently incompatible with what it means to make an offer.

Thus we have seen that an aspectual difference between *will* and *be going to* can account for modal differences between them. The modal semantics, we suppose, are indistinguishable, but because there is a temporal input to the accessibility relation, a difference in aspect means a difference in the set of worlds quantified over by the modal. In this case we saw that a progressive future conditional *If p, be going to q* will typically entail that some<sup>6</sup> not-p worlds are q worlds, while a *will* conditional will not have such an entailment.

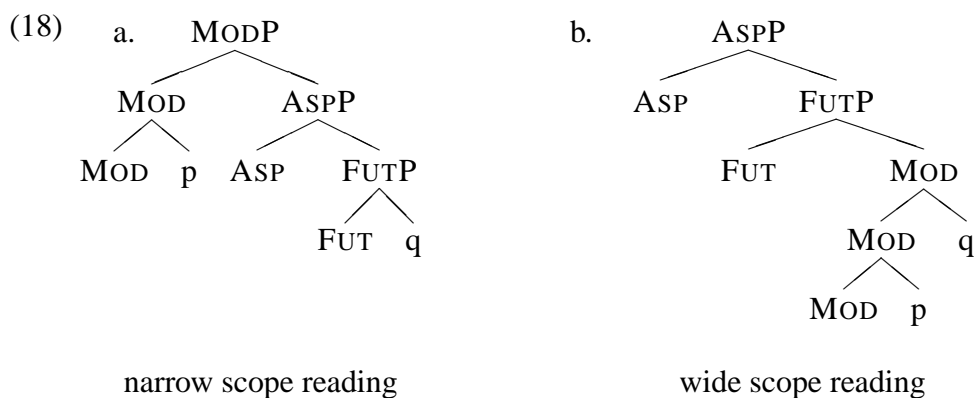
Let's call the entailment triggered by *be going to* the *anyway entailment*, since what is conveyed is that a q-eventuality will happen anyway whether a p-eventuality happens or not.

(17) *anyway entailment*: Some not-p worlds are q worlds

Conditionals that entail the anyway entailment I will term “anyway-entailing;” those that conflict with it I will call “anyway-conflicting”.<sup>7</sup>

### 3 Scope of *be going to*

In this section we will see that the aspectual component of *be going to* provides a way to detect scope differences among *be going to* conditionals. To do this, we first need to get a bit more precise about the logical form of the future modal. The presence of the aspectual element P makes it clear that P, and also FUT, must be part of the consequent of the conditional. For what drives the argument of the preceding section is the idea that all p worlds are “be going to q” worlds *at the time at which p is evaluated*. That is, the antecedent p and the constituent *be going to q* (= ASP FUT q) must get the same temporal argument. This is possible in a structure such as (18a), where *be going to q* is a constituent. This is not possible in a structure such as (18b) where *be going to q* is not a constituent, as *be going to* has scope over both p and q.<sup>8</sup>



<sup>6</sup>Actually, no other not-p worlds are accessible, so *all* not-p worlds under consideration are q worlds.

<sup>7</sup>Again, it will be important to remember that the semantics of conditionals, by assumption, has nothing to say about the not-p worlds; i.e., there is nothing inherently wrong with *be going to* in conditionals per se. Whether a conditional conflicts with the anyway entailment has rather to do with the pragmatics of the particular conditional.

<sup>8</sup>As we begin to construct trees for future conditionals, we have an immediate choice to make: Does the future modal take two (overt) propositional arguments, as is frequently proposed for modals, or does it take only one, as we have been assuming along with Thomason? We have no need for FUT to take two overt propositional arguments in this case; if it needed two arguments we would have to put a null argument in. As this is unwieldy, I will continue to assume that FUT has only one propositional argument seen by the syntax. Of course I do not mean to rule out contextually-supplied, syntactically invisible restrictions on FUT.

The informal meanings associated with the structures in (18) are given in (19); again, it is clear that the reading in which *be going to* has narrow scope is the one we want.

- (19) a. if p, q is going to happen narrow scope  
 b. it's going to be like this: if p, q wide scope

To give a formal denotation for narrow scope *be going to* conditionals, let us assume a very bland modal semantics for the null modal:<sup>9</sup>

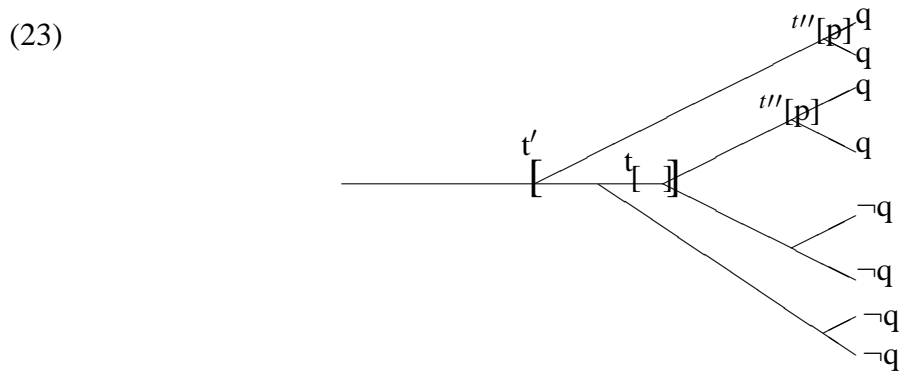
- (20)  $\text{MOD}(w)(t)(p)(q) = 1$  iff  $\forall w'$  such that  $w'$  is accessible from  $w, t$  and  $p(w')(t)$ :  
 $[\exists t' \geq_q t: [q(w')(t') = 1]]$

The denotation of a narrow *be going to* conditional is given in (21), and that of a wide scope *be going to* conditional in (22).

- (21) Narrow *be going to*: For any time  $t$  and world  $w$ ,  
 $= \text{MOD}(w)(t)(p)(\text{P}(\text{FUT}(q)))$   
 $= 1$  if  $\forall w'$  s.t.  $w'$  is accessible from  $w, t$  and  $p(w')(t)$ :  
 $[\exists t' \supset t: [\forall w''$  s.t.  $w''$  is accessible from  $w', t'$ :  
 $[\exists t'' > t': [q(w'')(t'') = 1]]]]]$

- (22) Wide *be going to*: For any time  $t$  and world  $w$ ,  
 $= (\text{P}(w)(t)(\text{FUT}(\text{MOD}(p)(q))))$   
 $= 1$  if  $\forall w'$  is accessible from  $w, t$ :  $[\exists t' \supset t$ :  
 $[\forall w''$  s.t.  $w''$  is accessible from  $w', t'$ :  
 $[\exists t'' > t'': [\forall w'''$  accessible from  $w', t''$   
 $\& p(w''')(t''): [\exists t''' \geq_q t''': q(w''')(t''') = 1]]]]]$

Narrow scope *bgt*, as we have seen, does trigger the anyway entailment: worlds that branch off during  $t'$  may or may not be  $p$  worlds, and must be  $q$  worlds. However, wide scope *bgt*, if it exists, would not trigger the anyway entailment, as it says nothing about not- $p$  worlds. A branching diagram for a case where a wide scope *be going to if p, be going to q* is given below in (23).



But is the wide scope *be going to* conditional reading attested anywhere? It appears that it is. Under certain circumstances, it is in fact possible to use a *be going to* conditional to make an offer, as in (24).

<sup>9</sup> $\geq_q$ , briefly, would be a relation such that: if  $q$  is stative,  $t' = t$ ; if  $q$  is not stative,  $t' > t$ . It is an old idea, in one version or another; c.f., e.g., Condoravdi (2002).



- (24) We're going to take good care of you before your defense.
- a. If you want a manicure, we're going to give you a manicure.
  - b. If you want an oil change, we're going to give you an oil change.

These conditionals do present the manicure and the oil change as contingent on the hearer's desires. There still is something that does not depend on the hearer's desires; what is not negotiable in ((24)) is the idea that the speaker is going to take care of the hearer.

In addition to speaker intuitions that (24a,b) involve *be going to* scoping over the entire conditional, there is other evidence that (24a,b) are wide scope *be going to* conditionals. Since an offering reading is possible, it follows immediately that the anyway entailment is not triggered, just as we would predict for a wide scope reading. Furthermore, the offering reading disappears under *already*:

- (25) If you want a manicure, we're already going to give you a manicure. #offer

Supposing that *already* only takes a stative argument (Michaelis 1996), and further supposing that our simple progressive P counts as a stativizer, *already* forces P to be interpreted in situ, i.e., a narrow scope reading. Forcing the narrow scope reading causes the offering reading to disappear; therefore the offering reading must be associated with the wide scope reading.

#### 4 Aspect of *will*

So far, I have argued that *will* and *be going to* differ in the presence or absence of an aspectual operator on the modal, and that *be going to* in conditionals exhibits two different scope-taking positions. The evidence for these claims rests on the idea that an aspectual operator, located higher than the future modal in *be going to*, triggers an entailment in a certain configuration.

Of course we do not want to stop here; ideally we would use the same means to determine whether *will*, like *be going to*, has two possible scope-taking positions in conditionals. We will begin such an investigation in section 5 below, but first it will be useful to re-examine the idea that *will* has no aspectual operator. Contrary to prediction, as we will see, some *will* conditionals are anyway-entailing. To explain these facts, I will posit a generic-like aspectual operator for these instances of *will*.

The anyway-entailing context that will prove surprising is furnished by relevance conditionals. Relevance conditionals are conditionals in which the antecedent seems to be a condition on the relevance to the hearer of the information in the consequent. Two examples of relevance conditionals are given in (26).

- (26) a. If you want to know, there's some beer in the fridge.  
b. If I may be frank, Frank is not looking good.

Unlike offering contexts, relevance contexts are anyway-entailing. We can see immediately that relevance conditionals are at least consistent with the anyway entailment; for example, the speaker of (26a) is not committed to (27a), nor is the speaker of (26b) committed to (27b).

- (27) a. If you don't want to know, there is no beer in the fridge.  
b. If I may not be frank, Frank is looking good.

Therefore, in the context in which a relevance conditional *If p, q* is truthfully uttered, not all not-p worlds are not-q worlds. That is, some not-p worlds are q worlds. So relevance conditionals

are anyway-entailing.

- (28) *Condition on relevance conditions.* If  $p$  is a relevance condition on  $q$ , some not- $p$  worlds are  $q$  worlds.

We predict that *be going to* should be possible in the consequent of relevance conditionals, and *will* should be impossible. While it initially may seem that a *will* conditional *if p, will q* has nothing to say about the not- $p$  worlds, this is not strictly true. Worlds that branch off before the present (or in the case of *be going to*, before the relevant superinterval of the present) are simply not accessible. So in a narrow scope *will* conditional, there will be no not- $p$  worlds under consideration. We might, then, expect *will* conditionals to trigger a presupposition failure with respect to (28).<sup>10</sup>

The prediction seems at first to be borne out. While the conditional in (29a), using *will*, is not a good relevance conditional (but makes a fine offer), the conditional in (29b), using *be going to*, is a good relevance conditional (and as expected, is not a particularly good offer).

- (29) a. If you want to know, we'll go get some beer. #relevance, ✓offer  
 b. If you want to know, we're going to go get some beer. ✓relevance, #offer

Interestingly, however, some *will* clauses *are* good in the consequent of relevance conditionals.

- (30) a. If you really want to know, John will win.  
 b. If you really want to know, this comet will next be visible in 22 years.

What is responsible for these facts?

It does seem that there is something special about the felicitous anyway-entailing *will* conditionals in (30) that wants addressing. In order for a *will* conditional to be anyway-entailing, the eventuality must be viewed by the speaker as a necessary outcome of forces that have already been set in motion and cannot be deflected. The same is true for *will* sentences that are *not* conditionals, as in (31).

- (31) a. Oh, she'll show up, all right.  
 b. Don't worry, the Red Sox will win.  
 c. It'll work. Trust me. I know about these things.

There seems to be some flavor of strong speaker certainty in these examples, though at this point it is hard to say what exactly. That is, we would not want to say that the corresponding *be going to* examples in (32) reflect some lesser level of certainty. In these examples, too, the speaker is absolutely sure.

- (32) a. Oh, she's going to show up, all right.  
 b. Don't worry, the Red Sox are going to win.  
 c. It's going to work. Trust me. I know about these things.

Yet, nonetheless, there is a clear intuition that *something* about the *will* sentences is stronger; somehow that they require more or better or more general evidence, or more strongly inevitable conclusions.

<sup>10</sup>For reasons of space I have had to abbreviate this point; what is important is the idea that, contrary to any homogeneous prediction, some *will* conditionals are anyway-entailing and some are anyway-conflicting.

I would like to propose the hypothesis that an aspectual difference between *will* and *be going to* is responsible for this intuition. Where *be going to* has an existential quantifier over times, the anyway-entailing version of *will* has universal quantification. In both cases the times thus picked out represent the times from which the worlds branch. If we suppose in this case that the branching is epistemic branching, then we can explain why the *will* sentences feel stronger. They require *q* to be true on epistemically accessible worlds branching off not merely from *some* time overlapping the present, but from *all* (realis) times that overlap the present.<sup>11</sup> This amounts to a requirement that the evidence for the statement be of relatively long standing.

Before addressing additional evidence for this idea, some formal details. We will proceed entirely in parallel to the *be going to* analysis, the only difference being the force of quantification. The proposed “dumb” aspectual component of anyway-entailing or *G-will* is given in (33), along with a timeline diagram illustrating the set of times that *p(w)* must hold of for *G(w)(t)(p)* to be true.<sup>12</sup>

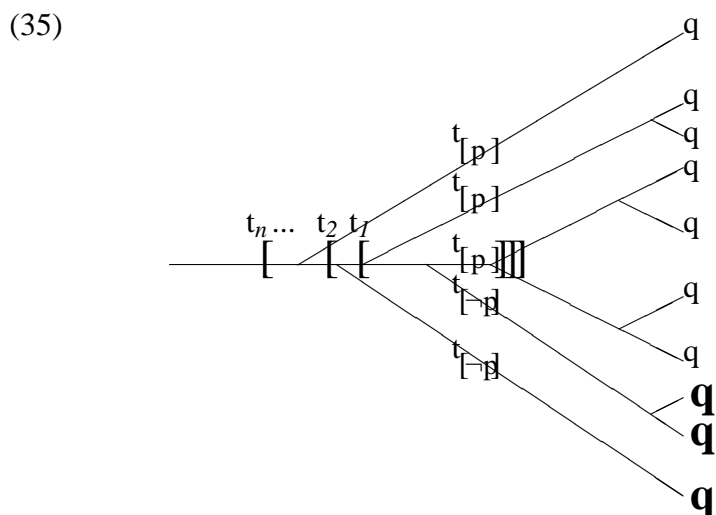
$$(33) \quad G(w)(t)(p) = 1 \text{ iff } \forall t' \supset t: p(w)(t')$$

Combining *G* with *FUT*, our future modal, yields the following denotation.

$$(34) \quad P(w)(t)(FUT(q)) = 1 \text{ iff } \forall t' \supset t: [FUT(w)(t')(q) = 1]$$

$$P(w)(t)(FUT(q)) = 1 \text{ if } \forall t' \supset t: [\forall w' \text{ that agree with } w \text{ up to } t': \\ [\exists t'': t' < t'' \text{ and } q(w')(t'') = 1]]$$

And (35) represents a state of affairs in which *G(w)(t)(FUT q)* is true.



As with *be going to* conditionals, we expect that all not-*p* worlds under consideration are *q* worlds (shown as worlds with boldface *q*), thus deriving the anyway entailment for narrow scope generic *will*. Why narrow scope? Again, the branching of the conditional modal *MOD* is not depicted. (35) represents a single *p*-world on which *G(FUT q)* is calculated at *t*.

This hypothesis seems to be supported by a conflict between the use of *will q*, and the speaker’s having just found out that *q*. This would be expected if the *will* used is *G-will*, where what *G-will* does is universal quantification over the contextually salient time, saying that *FUT q*

<sup>11</sup>Naturally there will be contextual restriction on the universal quantification.

<sup>12</sup>As with the progressive-like operator *P* above, I use the single letter *G* in an attempt to evoke the traditional aspectual terminology for mnemonic purposes.

has been known all that time. The data is exemplified in (36). The use of *Look!* in in these examples forces a context in which the subsequent claim must follow from evidence that is new information. (36a) and (37a) show that *be going to* is fine in such a context; (36b) and (37b) demonstrate that *will* is not.

- (36) a. Look! It's going to rain!  
 b. #Look! It'll rain!
- (37) a. Look! He's going to jump!  
 b. #Look! He'll jump!

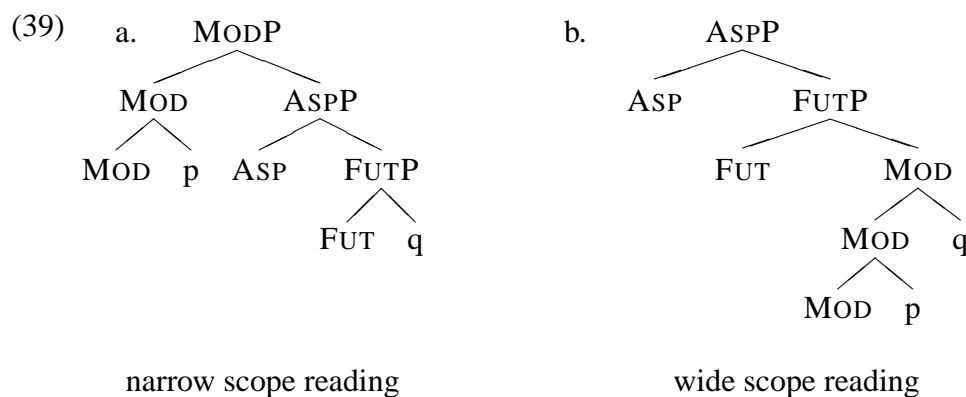
When the evidence is of long standing, *will* is fine.

- (38) a. Don't worry, it'll rain. It always does eventually.  
 b. Oh, he'll jump. He's just that kind of person.

This is exactly what we would expect if the *will* in these examples is the G-future version of *will*. But to summarize where we are so far: We have seen that *will* does not behave in a homogeneous way with respect to the anyway entailment. This fact suggests two alternative theories. The first, which I will call the “aspectual theory”, is that *will* itself is aspectually ambiguous. One version, the G-future, triggers the anyway entailment by way of universal quantification over the temporal argument of the future modal's accessibility relation, and the other, an aspectless future (“A-future”), has no such aspectual element.<sup>13</sup> Both of these contrast with the P-future *be going to*, which involves existential quantification over the temporal argument of the future modal's accessibility relation. The second alternative, which I will call the “structural theory”, is that there is only one aspectual value of *will*, namely the G-future reading. As with *be going to*, the narrow scope reading is anyway-conflicting, and the wide scope reading is anyway-entailing. We turn now to evaluate that alternative.

## 5 Scope of *will*

Recall that *be going to*, our P-future, has two different scope possibilities when in a conditional; it can occur either inside the consequent or scoping over the entire conditional.



<sup>13</sup>Would there be any aspect on “aspectless” *will*? Semantically there has to be at least a binding off of the temporal variable, which could be done by an unpronounced aspectual element:

(i)  $\mathbf{A} = \lambda p \lambda w . \exists t: [p(w)(t)]$

Or it could be done by existential closure. Morphosyntactically, of course, there is no evidence for or against an aspectual head in either the A cases or the G cases.

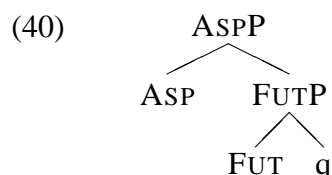
Likewise, we might expect *G-will* to have these scope possibilities, with *G* swapped in for *P* as the ASP head. Then the narrow scope reading would be anyway-entailing, and the wide scope reading would be anyway-conflicting, as in the *be going to* conditionals. There would be no need to posit two different aspectual values for *will*; *G-will* could do it all.

As initially satisfying as the structural account seems, there are a couple of reasons not to be satisfied with it. The first reason is that this theory has no principled way to explain the fact that wide scope *will* is much more natural as an offer than wide scope *be going to*. If we were to return to the aspectual theory, with an aspectually ambiguous *will*, we would at least be able to say that the aspectual futures *be going to* and *G-will* prefer to occur as narrow scope for some reason, and the aspectless future *A-will* prefers wide scope. There is still no principled reason, but at least the data are split into natural classes.

The second reason we should not be satisfied with the structural theory is that the wide scope *G*-future meaning simply does not seem to correspond to the meaning of *will* as it is used in offers. While the *G*-future semantics requires quantification over all the worlds that branch off within a contextually-specified interval, offering *will* seems intuitively to involve a “spur of the moment” decision. Indeed, *will* offers contrast with the wide scope *be going to* offers in that respect.

Thus it appears that the structural theory is not the one we want. We return to the aspectual theory, in which *will* is aspectually ambiguous, to see if that theory can be more satisfying. First we will develop a way to determine the scope of *A-will* in offers and *G-will* in inevitable *will* readings, based on whether the antecedent is obligatory or not.

The presence of *Mod* and its antecedent *p* is crucial to the wide scope readings. By compositionality, the only antecedentless structure possible should be (40):



Semantically this structure should always behave like a narrow scope reading rather than a wide scope reading in triggering the anyway entailment that all not-*p* worlds are *q* worlds, because for any *p*, whether or not *p*, *q*. Thus narrow scope readings should be able to occur either with or without an antecedent, while wide scope readings should only be possible with an antecedent. To detect an antecedent, we can rely on intuitions about whether the consequent is contingent on some other eventuality happening, or whether it will happen regardless. As per the discussion in section 1, it looks like offering *will* is wide scope, with the offer being contingent on the hearer’s desires. What we might call “inevitable *will*” must conversely be narrow scope, because the eventuality’s happening is not contingent on anything.

- (41) a. We’ll change your oil in Madera. offering *will*  
 b. Don’t worry, it’ll rain. inevitable *will*

This is the same result the structural theory suggested. But in the structural theory, we expected wide scope to correlate with anyway-conflict, and narrow scope to correlate with anyway-entailment. In the aspectual theory, we do not expect such a correlation. That is, we expect to find a wide scope *G-will* conditional, and a narrow scope *A-will* conditional (or, failing that, a good reason why one or the other or both do not exist).

In fact there exists a good candidate for a wide scope *G-will* conditional. Consider the sentence in (42). It has two readings, paraphrased in (42a) and (42b). One is the familiar inevitable *will*;

the other is commonly called “dispositional *will*”. The readings also differ in truth value, as (42a) is false, while (42b) is true.

- (42) Dogs will eat doughnuts.
- a. That’s the way dogs are; there’s nothing you can do about it. inevitable *will*
  - b. If you give a dog a doughnut, it will eat it. dispositional *will*

The first reading is not contingent upon anything; the second is contingent on something. Thus the first reading (as before) should be narrow scope, and the second reading should be wide scope. The similarity between offering *will* and dispositional *will* conditionals is even more striking if we interpret (42b) as a kind of dispositional standing offer: Generally, if you want them to, dogs will happily oblige you and eat doughnuts.

The modal semantics also seems to be appropriate for *G-will*. (41b) says that generally, these days, any world where you give the dog a doughnut is one where it eats it. (42) That is, the quantification is over all normal worlds that branch off during a contextually specified interval that overlaps the present.

Therefore it appears that we have a good candidate for a wide scope *G-will* conditional, which supports the aspectual theory rather than the structural theory. We would also then wonder whether narrow scope readings of *A-will* conditionals exist. A reexamination of the data in (36)a and (37)b above suggests that they may not. For if they did exist, unlike *G-will* readings, we would not expect them to be ruled out in the relevant contexts. Hence we would not expect infelicity in these examples. Since there is infelicity, we conclude that only *G-will* is possible with narrow scope. If this is true, we should look for a principled reason why *A-will* is not possible in narrow scope conditionals.

## 6 Conclusions

I have presented evidence that futures such as *will* and *be going to* have aspectual components to their meaning. These aspectual components interact with future modality by modifying the temporal argument to the modal’s accessibility relation. This has the effect of altering the set of worlds over which the modal quantifies. These modal differences support a theory in which there are three different aspectual variations, and two different scope positions for futures in conditionals. The presence of aspect on modals therefore provides us with a new tool with which to investigate the logical form of conditionals.

One question deserving of further investigation is whether there are any correlations or dependencies between aspect or scope and the modal base for the future modal. For instance, we saw in section 4 above that the wide scope *G-future* apparently has an epistemic modal base. While this topic is omitted from this paper for reasons of space, it is omitted for reasons of space only; it would be instructive to see how the choice of aspect or scope constrains the choice of modal base for the future modal, and why.

Finally, it is worth pointing out that the explanations explored here absolutely require a modal analysis of *will* and *be going to*. Central to the explanation of the data is the idea that a higher aspect affects the temporal argument of the modal’s accessibility relation. If instead we were to begin from a tense analysis of these futures (see Hornstein (1990), Condoravdi (2001) for discussion of such an analysis in comparison with modal analyses), it is difficult to see how the facts presented here could be explained at all.

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