

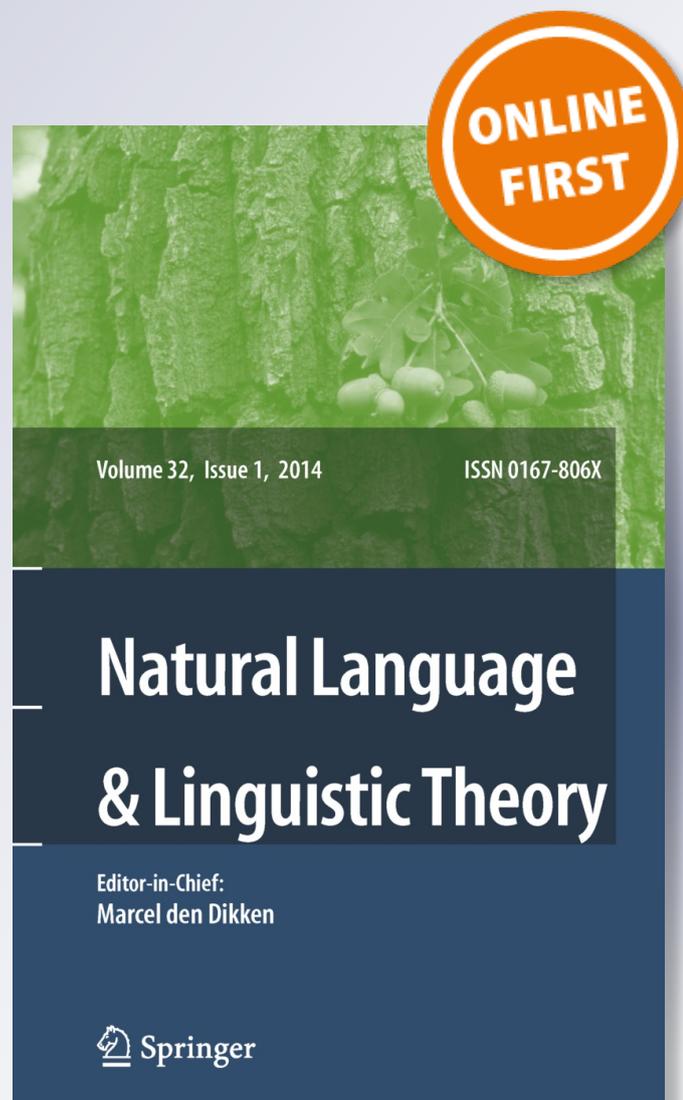
# *The futurity of the present and the modality of the future: a commentary on Broekhuis and Verkuyl*

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# The futurity of the present and the modality of the future: a commentary on *Broekhuis and Verkuyl*

Anastasia Giannakidou

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**Abstract** In this commentary, I address two aspects of Broekhuis and Verkuyl's (2013) paper *Binary Tense and Modality*, pertaining to the analysis of the present and the future. Broekhuis and Verkuyl propose an analysis of the morphological present in Dutch as a prospective interval allowing reference to times after the speech time. This renders the Dutch auxiliary *zullen* redundant as a future marker—and relegates its function to the realm of epistemic modality. The present-as-interval analysis extends to Greek and beyond, but I show that additional language-systemic constraints are needed to precisely specify when a particular present form will be allowed to future-shift, and whether it designates a present or a nonpast. The epistemic use of the future forms is also supported crosslinguistically, as can be seen in recent discussions on the Greek and Italian future words (Giannakidou 2012; Giannakidou and Mari 2012, 2013). I present examples from Greek and Italian showing that future morphemes crosslinguistically induce *commitment weakening*, and are therefore very similar to modal particles in Dutch and German (Zimmermann 2011) which appear to have exactly the same effect.

**Keywords** Tense · Modality · Present · Future · Nonpast · Commitment weakening · Epistemic future

## 1 Introduction: main ideas to be discussed

The paper *Binary tense and modality* by Hans Broekhuis and Henk Verkuyl (2013) conveys a number of refreshing proposals about how to analyze traditional categories such as 'present', 'past', and 'future'. At the most general level, the main goal is to offer arguments for replacing the well-known Reichenbachian system—which uses

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a three way distinction between speech time, event time and reference time—with a set of three *binary* oppositions attributed to the Dutch grammarian Lammert Allard Te Winkel. Te Winkel published a series of works on tense between 1848 and 1866; his ideas are most clearly articulated in the work of 1866 cited by Broekhuis and Verkuyl, and were further developed in Verkuyl (2008). These two studies form the foundation of the Te Winkel-Verkuyl system presented in the paper.

Before moving to comment on the specific aspects of the proposal pertaining to the future and present, it is important to offer some terminological clarifications. In the literature, the term *tense* is used to indicate tense morphology which typically, though maybe not exclusively, is used for temporal orientation. Tense, in this sense, is a morphological category, i.e., the grammatical category realized in the system of a language. On the other hand, the term *tense system* is taken to mean the mechanisms of temporal interpretation assumed to be common, perhaps even universal, to natural languages—for instance, a Reichenbachian tense diagram (Reichenbach 1947) or a Priorian system (Prior 1957). These two definitions correspond to the grammatical tense distinction as opposed to the notional partitions of time represented in a natural language (Jespersen 1924:255).

The Te Winkel-Verkuyl system is proposed as a general tense system intended to replace Reichenbach's ternary division. It uses three binary oppositions, and shows how these can be implemented to cover the Dutch tenses. The oppositions are: Present/Past, Synchronous/Posterior and Imperfect/Perfect. These are characterized as tense oppositions, though at least the third one clearly isn't: imperfect vs. perfect reflects the imperfective (atelic, unbounded, ongoing) vs. perfective (telic, bounded, completed) distinction, so it is most clearly aspectual. It is not important whether the key oppositions are purely temporal or not; what I take to be valuable lessons of this system are the following. Te Winkel (1866) took the second opposition (Synchronous/Posterior) to be reflected in the absence or presence of a temporal auxiliary *zullen* 'will'. However, Broekhuis and Verkuyl argue that in a binary system, 'future' loses the status it has in a ternary analysis as being at the same level as Past and Present. They suggest that Present and Past *already may express prospective information* (they call it posterior, but I call it prospective, following Giannakidou and Zwarts 1999); and this leaves no temporal role for the 'future' auxiliary *zullen* 'will' exemplified in (1).

- (1) a. Elsa zal        hem bellen.  
       Elsa will.3sg him call.inf.  
       b. Elsa will call him.

The internal dynamics of Te Winkel-Verkuyl system *forces the future auxiliary to a purely modal meaning*. In the authors' own words (italics are my own):

“In fact, the indeterminacy about whether Elsa's call is in the future or may be at the moment of speech will be argued to *be a matter of the Present tense form in zal* ('will-3sg'), so that the infinitival form of *zullen* 'will' is *to be considered as carrying only* the burden of expressing some form of modality, in particular *epistemic modality*.” (Broekhuis and Verkuyl 2013)

The question of whether the category 'future tense' in natural languages is a tense or modality has received a lot of attention in linguistic semantics, and both answers

have been explored (for modal accounts see Bertinetto 1979; Enç 1996; Copley 2002; Squartini 2004; Kaufmann 2005; Mari 2012; Klecha 2013; Giannakidou 2012; Giannakidou and Mari 2012; for a defense of the temporal analysis see Kissine 2008). Certainly, the English future word 'will' is a modal, and admits purely epistemic readings. We read, e.g., in Palmer (1987:136), that "it is tempting to refer to the meaning of *will* as probability, alongside possibility and necessity for *may* and *must*... A better paraphrase is in terms of conclusion: 'A reasonable conclusion is that...'"

- (2) The French'll be on holiday this week.
- (3) No doubt, you'll remember John.

The sentences above with *will* are conjectural: *will* seems to convey a sort of epistemic modality, e.g., *given what I know, it is quite likely* or *it is quite plausible*, or in cases of stronger certainty, *it must be the case* that the French are on holiday this week. According to Broekhuis and Verkuyl, *zullen* is likewise an epistemic modal used to express that the prejacent proposition is the result of reasoning from reasonable premises. To quote from the conclusions:

"We think that the best way to describe the meaning of  $WILL(p)$  is to say that the speakers using this modal verb feel sufficiently confident to say  $p$  is true at  $n$  or is to be made true at  $i_{\diamond}$ . *This confidence relies on information judged as reliable and well-founded*. It may take all sorts of form dependent on the situation: as a hypothesis, a confident expectation, a reassurance, etc. What these circumscriptions have in common is that the speaker has entrance to sufficiently many worlds to be able to pick out the ones that seem convincing."

This is a very appealing analysis of the future morpheme, and indeed in line with a recent proposal I made about Greek (Giannakidou 2012), and in joint work with Alda Mari about Greek and Italian futures (Giannakidou and Mari 2012, 2013b). The idea that the future is modal is also common in the Italian literature (Bertinetto 1979; Mari 2012 and more works cited therein). These studies join forces with Broekhuis and Verkuyl: if indeed Dutch, Greek, Italian and English future morphemes convey epistemic modality, then the 'future' as a purely temporal category becomes redundant, at least in these languages. This is, in my view, one of the most important and welcome implications of this paper, and I would like to discuss it further in this response.

Another very appealing feature of the analysis is the treatment of the present. The Reichenbachian identification of the present with the 'speech time' is rejected, and the authors argue instead that the present tense denotes an 'extended present'. The temporal category 'present', Broekhuis and Verkuyl argue, is an open interval that contains the actual speech time ('now'), but also times close to now, before or after it. This extended present then, contains both retrospective (past) and prospective (future) portions of time. If the present contains times after now, then present tenses can be used to refer to future events. As I noted at the beginning, this assumption is crucial in the system because it renders the category 'future' systemically redundant—futurity is now expressed by the present. But conceptually too, I find the idea that the present is a continuum that includes the speech time but moves forward quite liberating.

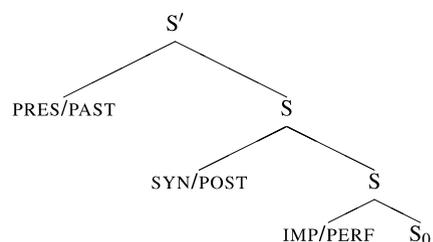
The idea that the present contains some portion of the future, and that this depends on the combination present, synchronous and imperfective (as it does in the Te Winkel-Verkuyl system) successfully captures the fact that present forms that have these properties are often used as futures in languages, e.g., Slavic, Germanic languages, Greek, and to a certain extent, Italian. It is also consistent with the intuition that the imperfective aspect conveys modality, often voiced in the relevant literature (see Trnavac 2006 for a recent overview and generalizations). At the same time, the impossibility of combining a perfective form with a present—something we see very clearly in Greek (Giannakidou 2009)—also confirms the connection between imperfectivity, present and future, while also necessitating a distinction between a ‘present’ and a nonpast, as I suggested in Giannakidou (2009). I will compare Dutch, Greek and English more closely in Sect. 2, and I think it will become evident that we need to acknowledge that not all present forms shift to future, definitely not these that are marked perfective. We therefore have to address the role of aspect (perfective-imperfective) in the question of whether a given present tense form does, or does not, denote an extended ‘present’ interval. From that discussion, we conclude also that, although indeed the semantic present is an interval, it is desirable to further constrain it as a forward-looking interval only, i.e., as containing times only *after now*. The main motivation for this is that present forms do not ever make reference just to the retrospective present interval; and in the Te Winkel-Verkuyl system, that retrospective present interval overlaps with the past anyway.

I will proceed as follows. I comment first on the idea of extended present in Sect. 2, and then go on with the modal analysis of future morphemes in Sect. 3. Following Giannakidou (2012), and Giannakidou and Mari (2014b), I will suggest that the future contains both epistemic and metaphysical dimensions. As purely epistemic modality, I will argue that the future produces *commitment weakening* (Giannakidou 2013; Giannakidou and Mari 2014b), which we observe in Greek, Italian, English, and, as it turns out, Dutch.

## 2 The extended present: present, aspect, and futurity

Te Winkel’s overall system of Dutch tenses is presented in Broekhuis and Verkuyl’s (2013:Sect. 2) Table 1. Verkuyl’s rendering of the system is reflected in Fig. 1, where the past vs. present opposition is the highest one. The order here is also consistent with the idea that the two lower distinctions are more ‘aspectual’. In languages with grammatical aspect such as perfective and imperfective, the aspectual morphemes will appear lower than the tense, closer to the verb stem.

**Fig. 1** The scope relations between the tense operators



One important empirical point that the authors make is that the present form does not always make reference to *now*, to the speech time. This is a well-known fact about present forms crosslinguistically, and here are the examples from Dutch (number (3) in Broekhuis and Verkuyt's work):

- (4) a. Elsa werkt deze week aan de paragraaf over het tempussysteem.  
Elsa works this week on the section about the tense system  
'This week, Elsa is working on the section about the tense system.'
- b. Gisteren heft ze de algemene opbouw vasgesteld.  
yesterday has she the overall organization prt.-determined  
'Yesterday, she has determined the overall organization.'
- c. Vandaag schrijft ze de inleiding.  
today writes she the introduction  
'Today, she is writing the introduction.'
- d. Daarna zal ze de acht tempusvormen beschrijven en vrijdag is  
after.that will she the eight tense forms describe and Friday is  
ze klaar.  
she ready  
'After that, she will describe the eight tense forms and Friday she will be ready.'

In these examples, the underlined 'present' forms do not place the eventuality of the sentence at the speech time. In (4a), (4c) we have reference to the present but the present is extended, it covers the interval given by *deze week* 'this week' and *vandaag* 'today'. In (4b), the present on the auxiliary also fails to make reference to the speech time. In example (4d), the present *is* further makes reference to a future time. Clearly, then, we cannot just say that the present form makes the eventuality true at the speech time, as one would expect from the Reichenbachian analysis. Greek presents are used parallel to Dutch:

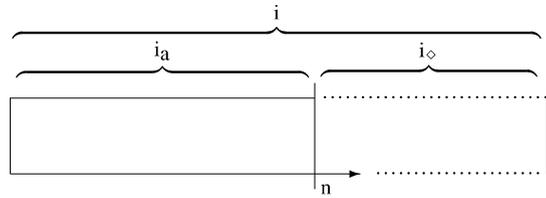
- (5) a. *Afti tin evdomada*, i Ariadne *doulevi* to proto kefaleo.  
this the week the Ariadne works the first chapter  
'This week, Ariadne is working on the first chapter.'
- b. *Simera*, i Ariadne *doulevi* tin eisagogi.  
Today, the Ariadne works the introduction  
'Today, Ariadne is working on the introduction.'
- c. *Avrio*, i Ariadne *ine* etimi.  
Tomorrow, the Ariadne is ready  
'Tomorrow Ariadne will be ready.'

These presents are not uncommon, so empirically, the claim based on Dutch can be extended to Greek. In Greek, the present in lieu of the future particle *tha* indicates often imminence of the event, i.e., that it will happen close to the speech time.<sup>1</sup>

<sup>1</sup> Yet, this is a tendency only, as one can certainly say (i), e.g., in November:

- (i) *Afto* to kalokeri metakomizoume.  
'This summer we are moving.'

**Fig. 2** The present tense domain  $i$



Notice that the English present, contrary to Dutch and Greek, is resistant to the future use. Equivalents to (5a) and (5b) would need a progressive form, and the example with future reference needs *will*. The English simple present is odd, or at best marked, which is designated below by the symbol “#”.

- (6) a. #This week, Elsa works on the section on the tense system.
- b. #Today, Elsa works on the introduction.
- c. #Tomorrow, Elsa is ready.

Kaufmann (2005) argues that the simple present in English can have future usage, but Copley (2002) and others consider such uses highly marked or impossible. The speakers I have consulted share Copley’s intuitions. So, empirically, one must conclude that the English and Dutch/Greek presents differ in their ability to receive future reading. We will come back to this variation later.

### 2.1 The main analysis: extended present

Broekhuis and Verkuyl argue in Sect. 2.2 that “the basic problem of Reichenbach’s approach to tense based on the ternary opposition Past/Present/Future is the identification of the notion of speech time with the notion of present. Keeping these notions strictly apart turns out to offer important advantages. For example, it allows us to treat tense as part of a developing discourse: shifting the speech time does not necessarily lead to shifting the present.”

In the binary system offered by the authors, the expression of ‘present’ (the PRES-operator) is interpreted as pertaining to some temporal domain  $i$  containing  $n$ . The intuition is that, by the use of a present tense, speakers present eventualities as occurring in *the eventuality’s present* even though these eventualities need not occur at  $n$  itself. A speaker could utter a sentence like (4a)(=3a in the authors’ paper) on Tuesday to express that Elsa is dedicating the whole week to writing the mentioned section on the tense system. Likewise, in the (4d)(=3d) example, the present extends to times after the utterance time.

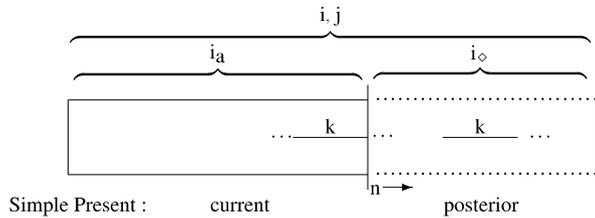
The extended present is graphically given in Broekhuis and Verkuyl’s Fig. 2:

$n$  is the designated speech time, which establishes a partition of the present interval into  $i_a$  (I suppose for interval *anterior*), the ‘past’ of present, i.e., time prior to  $n$

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Consider also the text’s example (5c). In such cases, there seems to be a flavor of scheduling, a plan already in place (as has been observed in Copley 2002 for the English progressive). In Dutch or German, on the other hand, present-as-future doesn’t necessarily convey scheduling/plan (though, of course, it may also do so).

**Fig. 3** The present domain in relation to the eventualities



and close to it, and  $i_{\diamond}$ , which is time immediately following  $n$ . It is also stated that the present tense domain is contextually determined, or given by adverbials such as *deze week*, *vandaag* etc. The Dutch Simple Present form is claimed to express that the present domain  $j$  of the eventuality  $k$  is taken to be synchronous to the present domain  $i$  of the speaker/hearer ( $j \approx i$ ). This formulation predicts that by the use of a present tense form, the eventuality  $k$  may be located in  $i_a$  or in  $i_{\diamond}$ . This is illustrated in Broekhuis and Verkuyl's Fig. 3.

The extended now interval is the semantic contribution of the 'present'. The common generic use of presents seems to support this analysis too. I give below examples from Dutch, English, French and Greek:

- (7) Ta fila *peftoun* apo ta dentra to fthinoporo.      Greek
- Les feuilles *tombent* des arbres à l'automne.      French
- De bladeren *vallen* van de bomen in de herfst.      Dutch
- The leaves *fall* from the trees in the fall.      English

These are generic uses of the present that refer to past, present, and future fallings of leaves. Here we seem to have the extended present interval replacing all relevant time—which captures the often-voiced intuition that generic sentences are 'atemporal'. If the present form is an interval that makes no reference to the speech time, as argued, then the systematic generic use of present tenses falls nicely, and gives further evidence for the need to extricate present from the tyranny of the speech time.

At the same time, it must also be appreciated that, putting the generic sentences aside, present expressions tend to gravitate toward the prospective interval ( $i_{\diamond}$ ). One would expect, given the symmetry between  $i_a$  and  $i_{\diamond}$ , equal ability of present forms to refer to events that preceded the speech time. However, if we know that Ariadne indeed wrote the introduction today—maybe she just finished it a second before the time of speech—we cannot use the present tense in Greek or in Dutch.

- (8) a. I Ariadne grafi tin isagogi simera.  
The Ariadne writes.3sg the introduction today
- b. Ariadne schrijft de inleding vandaag.  
#Ariadne (just) wrote the introduction today.

It appears that the use of morphological present cannot refer to the past interval  $i_a$ , though clearly it can refer exclusively to the prospective interval  $i_{\diamond}$ , which is what happens with the future reading of the present. To the extent that reference to  $i_{\diamond}$  is made, it is made *jointly* with an  $i$  adverbial such as 'today'. So, there is an asymmetry between the past interval of the present and the prospective  $i_{\diamond}$  interval, which seems privileged. The analysis, as it stands, doesn't capture this asymmetry; but if we look

at the treatment of the past (their Fig. 5 and formula (33)), we see that Broekhuis and Verkuyl propose wisely *not* a past tense that precedes  $i$ , but a past tense that simply precedes the utterance time  $n$ . Consider their formula (33), here (9):

$$(9) \quad \llbracket \text{PAST}(\phi) \rrbracket_{M,i} = 1 \text{ iff } \exists i' \exists n' \left[ \llbracket \phi \rrbracket_{M,i'} = 1 \ \& \ i' \circ n' \ \& \ n' < n \ \& \ i \circ n \right]$$

By this definition, the past tense can refer to a time immediately preceding  $n'$  which is the *now* of the past, and which can itself immediately precede  $n$ , which is located in  $i$ . The condition does *not* say that the past interval  $i'$  needs to precede the present interval  $i$ —though of course it also allows this case, as the past can refer to any other time in past further away from  $n$ . This definition renders any time prior to  $n'$ , which can be immediately preceding  $n$ , a past time, therefore the space  $i_a$  becomes truly unnecessary for the present—as it is an actual past. In other words, the very definition of the past in the system, renders the past interval of the present unnecessary for present forms. If this is so, then the extended present analysis can be simplified to include the prospective interval only. In this sense, Broekhuis and Verkuyl's present becomes a forward-looking interval like the one proposed for WOLL (Abusch 2004) and the Greek nonpast (Giannakidou 2009).

We will come back to this point. But first, I will address how general the extended present analysis can be across present forms in languages.

## 2.2 Extended present, nonpast, and crosslinguistic variation

Recall the observation I made earlier about the English present tense: why can't it be used like the Dutch or the Greek one, which can easily shift to future readings?

- (10) a. This week, Elsa #works/is working on her French exam.  
 b. Today, she #writes/is writing the introduction.

English allows the future reading of present only with the progressive markers, and verbs of motion (e.g., *John flies to Paris tomorrow*). According to Kaufmann (2005), sentences like (11) are fine, but many speakers object to them (Copley 2002). The ones with the progressive and the future auxiliary as in (12), however, are perfect.

- (11) # The dice comes up heads.  
 (12) a. The dice is coming up heads.  
 b. The dice will come up head.

Kaufmann offers an analysis of the present tense as future in English by positing a null modal to account for the future reading. This is different from the approach suggested here—where there is no modality of the present, just the extended present interval. In my opinion, the present interval approach is better, as it avoids unnecessary structure. But a pressing empirical question is: why do we observe this crosslinguistic variation in the ability of a present tense form to be used as future? In modern Dutch and German, the present-as-future is completely productive and unmarked; in Greek less so, and in English it is considerably much more limited. Why?

At the very least, this variation should make us admit that not all present forms denote extended present intervals in the sense defended by Broekhuis and Verkuyl. Given the existence of two morphological forms for future reference—a present and a future—we may speculate a Jespersen-style cycle for the future: a weakening of the original form (future auxiliary *zullen*), strengthening of another one (present), and reanalysis of the present as future. This appears to have evolved into full cycle in Dutch, maybe it is halfway in Greek, but it hasn't evolved in English. This comment is somewhat speculative, but looking at diachronic corpora one can get more solid information about the interaction between *zullen* and the present. If the Jespersen Cycle idea is correct, then we have additional evidence that *zullen* in Dutch is no longer semantic future, and we explain why it *is not necessary* for the expression of the future in Dutch. *Zullen* can be 'recycled' for epistemic use.<sup>2</sup>

Now, consider the structure *aan het* in Dutch, also with present and imperfective, which, however, does *not* allow prospective readings:

- (13) a. #Marie is morgen een brief *aan het schrijven*.  
           Marie is tomorrow one letter on the write  
       b. Maria is writing a letter tomorrow.

Notice the contrast with the progressive in English, which *does* get the future reading. Why doesn't the *aan het* progressive shift to the future? If anything, it contains a present (*is*), so this is quite unexpected. Moreover, given that this is a progressive form, it is surprising that, unlike the English progressive, we do not have a prospective shift with *aan het*. What is going on here?

I think that in order to account for such variation, one has to accept additional systemic constraints on the tense system. For instance, it is conceivable that the *aan het* progressive—which is never obligatory in Dutch (unlike verbal aspect such as the English progressive, and perfective-imperfective)—doesn't shift because, when chosen, the speaker intends to ensure the simultaneous interpretation. Pragmatic reasoning (speaker's intention) thus excludes the future-shifted reading with this marked form. In English, the progressive is obligatory and unmarked; and due to its imperfective nature, it is a perfect match for the extended present interval. But why not the simple present, which also seems to qualify? It appears, then, that whether apparent present forms in languages will be future-shifted or not is affected by other grammatical factors, among which possible competition with other forms.

Finally, on the other side of the spectrum, and in confirmation of the interval analysis of present, notice that the *perfective present* does *not* shift to the future, and is in fact ungrammatical. One such clear case is Modern Greek. The Greek verb is obligatorily inflected for tense and aspect, in both past and what I will call nonpast (following Holton et al. 1997; Giannakidou 2009). I give all combinations below: perfective nonpast (PNP), perfective past (PP), imperfective nonpast (INP) and imperfective past (PP).

<sup>2</sup>Something parallel can be said for German which does not have a special future auxiliary, but uses *werden* 'become'. *Werden* does seem to have the purely epistemic uses observed in Dutch, as in *Es wird jetzt 5 uur sein* 'It must/#will be now 5 o'clock,' something impossible in English with *will*, as we see.

- (14) a. graf- -o (INP) write.**imperf.** 1sg.nonpast  
 'I am writing (right now).'  
 'I write (generally).'
- b. grap- s- -o (PNP) write- **perf.** 1sg.nonpast  
 [no English equivalent; \* on its own]
- (15) a. e- graf- -a (IP) past- write.**imperf.** 1sg.past  
 'I used to write.'  
 'I was writing.'
- b. e- grap- s- a (PP) past- write- **perf.** 1sg.past  
 'I wrote.'

The basic temporal opposition in Greek is between a morphological past, which is usually marked by the prefix *e-* to the verbal stem and specific inflection; and a nonpast which is signaled by the absence of the prefix *e-* (hence the label *nonpast*), and which has its own inflection. Many languages choose not to lexicalize a combination perfective present at all, but Greek allows the aspectual distinction in the nonpast domain. The form perfective nonpast is not possible on its own, as indicated (but needs the subjunctive, future and other nonveridical, future-oriented particles). This by itself supports the idea that present forms want to associate with intervals, maybe by default. If a verbal form appears in the perfective, it won't be able to be used to convey the present interval. Hence, what appears as 'present' in (10b) is correctly characterized as nonpast in Greek.

The imperfective nonpast (INP) behaves like a progressive or generic form, and is the equivalent of Dutch present, as we noted already.

- (16) a. I Ariadne dinei exetasis avrio.  
 the Ariadne give.INP.3sg exams tomorrow  
 'Ariadne is taking an exam tomorrow.'
- b. I Ariadne petai sto Parisi se ena mina.  
 the Ariadne fly.INP.3sg to-the Paris in one moth  
 'Ariadne is flying to Paris in one month.'

INP is the actual semantic present in Greek, corresponding to the extended present of the Dutch present tense. The defective perfective nonpast, on the other hand, can't function as a present, because of its aspectual limitation of perfectivity (Giannakidou 2009). So, Greek actually possesses a semantic present (morphologically: imperfective nonpast) *and* a semantic nonpast. Crucially, the nonpast improves in combination with nonveridical particles (Giannakidou 1998, 2009) such as the subjunctive *na*, the future *tha*, the optative *as*:

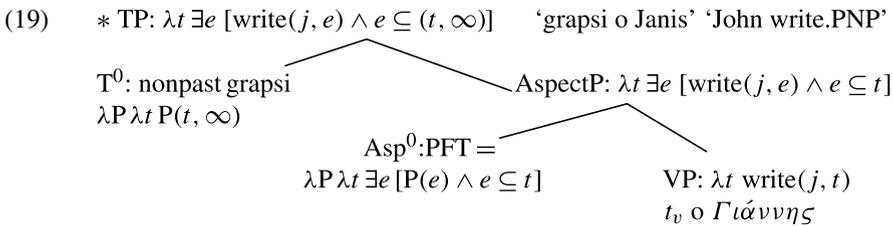
- (17) a. **As** fiji o Janis.  
 as leave.PNP.3sg the John  
 'Let John go.'
- b. **Na** fiji o Janis.  
 na leave.PNP.3sg the John  
 'Let John go.'
- c. **Tha** fiji o Janis.  
 tha leave.PNP.3sg the John  
 'John will leave.'

All these occurrences of PNP plus particle have prospective orientation, so future reference is not a privilege of the future particle *tha*. In Giannakidou (2009) I claimed that Greek perfective nonpast denotes a prospective interval—but unlike the prospective present interval whose left boundary is *n*, the left boundary of the nonpast is undefined. It contains a dependent variable *t*.

$$(18) \quad \llbracket \text{perfective nonpast} \rrbracket = \lambda P \lambda t P(t, \infty)$$

A dependent variable cannot remain free, but must be valued by some higher value. This idea is in line with Abusch's (2004) analysis of *WOLL* as a substitution operator. According to Abusch, "In the substitution operator, *t* is a bound variable that corresponds to the tense argument of *will* [which is *n*, coming from an implied higher PRES; clarification mine]. For a top-level occurrence of *will*, the effect is to substitute (*n*,  $\infty$ ) for *n*" (Abusch 2004:39).

The Greek perfective nonpast then is a *WOLL*, but unlike *will*—where *n* is triggered by default (Abusch 2004:(48))—the Greek perfective nonpast does not convey or trigger PRES; so it becomes necessary to have an overt exponent of *n* in the structure, otherwise the structure is illicit:



The interval  $(t, \infty)$  is ill-formed, because *t* is unvalued. The particles save the structure by providing *n*. If we add, for example, the future *tha*, *t* can now be identified with *n*:

$$(20) \quad \llbracket \text{tha} \rrbracket = n$$

$$(21) \quad \llbracket \text{tha} \rrbracket (\text{TP (19)}) = \lambda t \exists e [\text{write}(j, e) \wedge e \subseteq (t, \infty)] (n) = \exists e [\text{write}(j, e) \wedge e \subseteq (n, \infty)]$$

The event of John's writing will now be located at the interval that starts at *n* and stretches through infinity. This explains the possibility of future for the PNP, while saying that *tha* is NOT a future tense. The analysis says that the 'future' particle *tha* simply contributes *now*, which at the highest level is the speech time. The subjunctive particle *na* and the optative *as* give exactly the same prospective interpretation (but differ from *tha* in also conveying non-declarative illocutionary force of a wish, request or invitation).

What is important for our comparison with Dutch is that in Greek, if this analysis is correct, *there is indeed a speech time distinct from the present form*: it is given by the particles, which are uninflected, invariant forms. And if the English present (according to Abusch) also contributes just *n*, then we can indeed explain why the English present cannot be used as a future. (We still need to explain why it can be used generically, though). If particles generally introduce a speech time present, the theory

makes predictions about other languages with particle morphology of this kind, most notably Slavic and other Balkan languages.

Another way of looking at this is to say that the additional structure provided by the particles simply gives a locus for a default triggering of the speech time. Importantly, for the present purposes, the prospective shift still relies in the combination of *now* with a interval (nonpast), a fact that comes to reinforce Broekhuis and Verkuyl's proposal, namely that future orientation is a product of an extended forward-looking interval. It's just that, with nonpast (as opposed to a *true* present), the left boundary needs to be negotiated as now, and this requires additional structure.

I think that overall this analysis gives us a reasonable account for why we need the particles in the first place—and as I suggested in Giannakidou (2009), it can be readily extended to dependent tenses as a class: e.g., the tense of infinitives (also requiring a particle: *to*), subjunctive verbal forms, and other anaphoric verbal tenses. In line with what I said earlier about strengthening and reanalysis of the present as future, we might be witnessing here in these dependent cases weakening of a present, and 'demotion' to nonpast.

I move on now to the discussion of the future morphemes.

### 3 The modality of future morphemes: epistemic weakening and prediction

The starting point of discussions of future sentences is often Aristotle's very famous sea battle example (*Περί Ερμηνείας*, *De Interpretatione* 9).

- (22) a. There will be a sea-battle tomorrow.  
b. There will not be a sea-battle tomorrow.

A major goal of Aristotle in *Περί Ερμηνείας* is to discuss the thesis that, of every contradiction, one member must be true and the other false (the "Law of the Excluded Middle"). Regarding the future sentences, Aristotle acknowledges that the truth or falsity of each sentence will, in time, be fully determined by how things will turn out: there will either be or not be a sea battle. Aristotle also acknowledges that, at present (i.e., at the speech time), it is *not known*, in the sense that a past sentence can be known, that there will be a sea battle tomorrow. So, the future sentences at the speech time are objectively nonveridical (as the prejacent *p* is not true yet; Giannakidou 1998, 1999; Zwarts 1995; Giannakidou and Zwarts 1999)—but they are also subjectively nonveridical, as they are compatible with an epistemic state that includes, for a future time, both *p* (there will be a sea battle) and *not p* (there will not be a sea battle); This is the position Alda Mari and I defended in recent publications (Giannakidou 2012; Giannakidou and Mari 2013b, 2014b), and I rely on it in the rest of discussion.

From the perspective of nonveridicality, future statements are pretty much like statements with *must*:

- (23) a. For all I know, there must be a sea battle tomorrow.  
b. (In order for this conflict to end), there must be a sea battle tomorrow.

Modal verbs, in epistemic and mostly deontic uses, come with the same kind of indeterminacy about the prejacent proposition  $p$ , and are therefore also nonveridical (Giannakidou 1998, 1999, 2013, more discussion to follow). Broekhuis and Verkuyl correctly point out the parallelism of the future auxiliary with other modal verbs, e.g., in their example (9), given here as (24), and in their more thorough discussion in Sect. 4.1:

- (24) a. Elsa zal dan wandelen.                      a'. Elsa moet dan wandelen.  
       Elsa will then walk                              Elsa must then walk  
       'Elsa will walk then.'  
       b. Ik zal je bellen.                              b'. Ik ga je bellen.  
       I will you call                                    I go you call  
       'I will call you'                                  'I am going to call you.'  
       c. We zullen morgen thuis zijn.            c'. We kunnen morgen thuis zijn.  
       We will tomorrow at home be            We may tomorrow at home be  
       'We will be at home tomorrow.'        'We may be at home tomorrow.'

Future orientation is common to *zullen* and non-*zullen* modalities, as we see in the prime examples. Broekhuis and Verkuyl correctly claim that, despite the future orientation, it doesn't make sense to say that the modal verbs *moeten* 'must', *kunnen* 'may', and therefore also *zullen* are future tenses. Future orientation is going to be attributed to the present on the auxiliaries. The modal verb itself (i.e., minus the present) is an indicator of pure modality. Broekhuis and Verkuyl go on further to offer arguments against Kissine's temporal analysis of *will*, which I find convincing, but will not discuss here because our focus is on Dutch and Greek.<sup>3</sup> If *zullen* is a modal, what kind of modal is it? Broekhuis and Verkuyl argue that *zullen*, and by extension *will*, convey epistemic modality. This is revealed in their passage below, extracted from the *Conclusions*, (underline mine):

"We think that the best way to describe the meaning of  $WILL(p)$  is to say that the speakers using this modal verb feel sufficiently confident to say  $p$  is true at  $n$  or is to be made true at  $i_{\diamond}$ . *This confidence relies on information judged as reliable and well-founded.* It may take all sorts of forms dependent on the situation: as a hypothesis, a confident expectation, a reassurance, etc. What these circumscriptions have in common is *that the speaker has entrance to sufficiently many worlds to be able to pick out the ones that seem convincing.*"

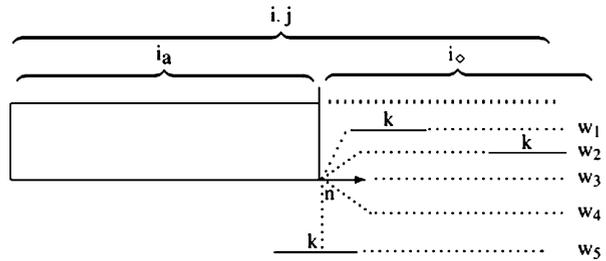
It is a little unfortunate that the claim is made about  $WILL(p)$  while it is clearly intended for *zullen(p)*—and as we read in footnotes 2 and 3, there are crosslinguistic

<sup>3</sup>It must also be mentioned that the purely epistemic modal uses of *will* are considerably more limited than those of *zullen*, *tha*, and German *werden*. Recall the contrast in fn. 2 with the German example, here I add Greek/Dutch:

Context: the speaker is wondering about the time, there is no watch:

- (i) *Es wird jetzt 5 uur sein.*  
 (ii) *Tha ne 5 i ora tora.*  
 (iii) *Het zal nu 5 uur zijn.*  
 (iv) 'It must/#will be now 5 o'clock.'

**Fig. 4** Present tense and epistemic modality



differences in the purely epistemic use of the future auxiliaries (see also Giannakidou and Mari 2013a). At any rate, I will take the passage above to be about *zullen*. The temporal dimension of the future is taken care of by the present tense. The relation between time and modality is given in Fig. 7 from Broekhuis and Verkuyl’s paper, reproduced in Fig. 4. The underlined *k* indicates worlds that make the eventuality of the prejacent *k* true. This is a general format for modals (when future-oriented) that includes *zullen*, whose force seems to be thought of as universal (in agreement with Enç’s 1996 for *will*, and the more recent analysis of Greek and Italian futures I mention next).

In Giannakidou (2012), I argued for an epistemic modal analysis of the Greek particle *tha*, and, in line with Broekhuis and Verkuyl, for a more clear division between the temporal and modal contribution of modals and the future. In more recent work with Alda Mari, we have highlighted the epistemic uses of both Greek and Italian futures. Our approach, at least for the epistemic future, is very compatible with the claims of Broekhuis and Verkuyl. In this part of my commentary, I will bring some insights of the Giannakidou-Mari analysis into the discussion that will help further refine the epistemic modal analysis of future auxiliaries crosslinguistically.

### 3.1 Purely epistemic uses of futures

Palmer (1987), Sarkar (1998), Huddleston (1995), Enç (1996), Tsangalidis (1998) and Chiou (2012) are among the many to point out that *will* has purely epistemic, conjectural reading, without conveying prediction about the future. Recall Palmer’s examples from the beginning:

- (25) a. The French’ll be on holiday this week.
- b. No doubt, you’ll remember John.

According to Palmer, *will* here expresses the conclusion of reasoning that the speaker does, an idea very close to Broekhuis and Verkuyl’s view.<sup>4</sup> What kind of reasoning? Obviously, reasoning that relies on what the speaker knows or has evidence for.

<sup>4</sup>Other non-predictive uses of *will* circulated in the literature are generic or with ability readings:

- (i) Ed will get upset over nothing.
- (ii) Ed will lay in bed all day reading trashy novels. (Huddleston 1995)
- (iii) Oil will float on the water. (Haegeman 1983)

In concluding with *will*, the prejacent is supported. However, and we come back to this, the speaker's confidence is not as high as it would have been, had she chosen a non-modalized form, e.g., *The French are on holiday this week*. The non-modalized sentence is therefore stronger, and conveys veridicality, i.e. full commitment.

In Greek, as we see below, the future particle in the non-predictive use can be followed by either a present or a past tense form (see Tsangalidis 1998; Giannakidou 2012). In the past use, we see that it is compatible with past adverbials:

- (26) I Ariadne tha pezi tora. (non predictive)  
 the Ariadne FUT *play.imperfective.nonpast.3sg* now  
 'Ariadne must be playing now.'
- (27) a. I Ariadne tha kimithike prin 2 ores. (non predictive )  
 the Ariadne FUT *sleep.PP.3sg* before two hours  
 'Ariadne must have slept two hours ago.'
- b. I Ariadne tha milise xthes. (non predictive)  
 the Ariadne FUT *talk.PP.3sg* yesterday  
 'Ariadne must have spoken yesterday.'

None of these cases is 'future' in the sense of making reference to an event that follows the utterance time. Rather, as can be seen in the translations, we use *must*. (*Will*, especially with the past, is quite odd: *Ariadne will have slept two hours ago* only has a temporal reading.) These are modal, inferential sentences, and *tha* conveys in itself no future or predictive information whatsoever. Giannakidou and Mari call this the 'epistemic future'.

Epistemic future is observed also with past and present in Italian:

- (28) Giovanni sar  malato. (FUT present)  
 Giovanni FUT-be sick  
 'John must be sick.'
- (29) Giovanni sar  stato malato. (FUT past)  
 Giovanni FUT-be been sick  
 'John must have been sick.'

These sentences convey assessments that John *must believe been sick*, and are not statements about John getting sick some time in the prospective interval of the present. Clearly then, what traditional grammars call 'future' morphemes have systematic non-future-shifted, purely epistemic uses, some of which can include reference to past events. In Dutch, these appear to necessitate past on the auxiliary (*zou*), but in Greek and Italian they involve a lower past tense.

In Giannakidou (2012), I argued that the epistemic future functions as a *weaker* of the speaker's epistemic commitment to the truth of the prejacent. Commitment weakening is defined as follows:

- (30) *Commitment weakening*  
 Commitment weakening is the creation of a *nonveridical epistemic* space.
- (31) Veridical and nonveridical epistemic space (Giannakidou 2013)  
 (i) An epistemic space (a set of worlds)  $M(i)$ , relevant to an individual  $i$  is

*veridical* with respect to a proposition  $p$  just in case *all* worlds in  $M(i)$  are  $p$ -worlds.

(ii) An epistemic space (a set of worlds)  $M(i)$ , relevant to an individual  $i$  is *nonveridical* with respect to a proposition  $p$  just in case  $M(i)$  is partitioned into  $p$ -worlds and non- $p$  worlds.

The spaces we are talking about represent the speaker's knowledge and beliefs. The idea is that sentences are not true or false in isolation but always relevant to an epistemic agent  $i$ , also called the individual anchor (Giannakidou 1998; Farkas 1985). We can think of this as a perspectival view of truth (see also Harris and Potts 2010; for a recent discussion of the relevance of individual anchors to temporal interpretation see Merchant 2014). In unembedded sentence like the ones we have been discussing here,  $i$  is the speaker. A veridical modal space is homogenous: all worlds are  $p$  worlds, and there is no further ordering source or partition to allow doubt (*not p* worlds). This is typically the case with unembedded assertions such as *Ariadne is sick*. If you compare this sentence to the FUT version of it, we conclude that, though highly confident about the truth of  $p$ , in choosing *tha*, the speaker is still not confident enough as in the unembedded assertion, as witnessed by the test below (from Giannakidou and Mari 2013):

- (32) a. I Ariadne ine aroستی—#ala dhen ime ke endelos sigouri.  
Ariadne is sick—#but I am not entirely sure.  
b. I Ariadne tha ine aroستی—ala dhen ime ke endelos sigouri.  
Ariadne will/must be sick—but I am not entirely sure.

*Tha*, FUT, and modalization in general—including *must*—appear to create nonveridical modal spaces, which are not homogeneous: they contain  $p$  and *non-p* worlds (Giannakidou 1997, 1998, 2009, 2013). This explains why *all* modalized sentences, even with a necessity modal, are 'weaker' than non-modalized assertions (*pace* von Stechow and Gillies 2010; for recent critical discussion see also Lassiter 2013): there are worlds in the modal base  $\cap f(w)$  where  $p$  is not true, and the actual world may turn out to be one of those worlds. Just to make sure that we appreciate this, consider the following case:

- (33) Context: Ariadne is sneezing, has a fever, watery eyes, etc.  
B: She must have the flu.  
a. *Prepi* na exi gripi.  
must subj have.3sg flu  
b. *Tha* exi gripi.  
FUT have.3sg flu  
c. Exi gripi.  
She has the flu.

The doctor is assessing, and given what he knows (the symptoms, his knowledge of what the symptoms mean, the time of the year, etc.), he concludes, in c, that Ariadne has the flu. In all the worlds compatible with his knowledge/evidence, etc., this is his verdict, he is absolutely certain about it. However, if he chooses a modal version, even with stronger modals such as *tha* or *prepi* (which in Greek can also combine), his

modal base allows also for worlds in which Ariadne does not have the flu (*non-p*) but rather, e.g., an allergy, or pneumonia. The doctor's judgment may be that these worlds are not the correct basis for forming his current diagnosis; they are not best (in the sense of Portner 2009), but they are there in the modal base. The more of those *non-p* worlds the doctor allows, or the more he allows them to influence his judgment, the less certain he becomes. If the doctor wants to exclude *non-p* worlds, he must make the stronger statement without *must/thal/prepi*, which relies on a veridical epistemic space, which is homogeneous: *all worlds* compatible with what he considers as the basis for his diagnosis are *p* worlds.

The bottom line of this discussion is that *tha* in the epistemic use is akin to *must*, and the modal base ( $\cap f(w)$ ) is epistemic.

(34) Epistemic future (Giannakidou 2012)

For any world  $w$ , and conversational backgrounds  $f, g$ :

$\llbracket \text{prepi/tha/MUST} \rrbracket w, f, g = \lambda q \langle st \rangle. \forall w' \in \text{Best}_{g(w)}(\cap f(w)) : q(w') = 1$ ;  
where  $\text{Best}_{g(w)}(X)$  selects the most ideal worlds from  $X$ , given the ordering given by  $g(w)$

Crucially, only in the *Best* worlds is *p* true, therefore the universal modal is non-veridical. In terms of truth conditions, then, in this analysis FUT and *must* are equivalent. In Greek, in fact, they can co-occur creating modal concord: e.g., a very common variant of (33) is *Tha prepi na exi gripi* 'She must have the flu'. *Tha prepi*, for all intents and purposes, is equivalent to either (33a) or (33b).

So, the future and *must* create nonveridical spaces; at the same time, universal modals express a *positive bias* towards *p* (Giannakidou and Mari 2013b)—they are stronger than the mere possibility statements. I think it is important to note a similarity here between future/*must* and German discourse particles such as *wohl*, also known to contribute weakening plus a positive assessment (Zimmermann 2011):

(35) a. Max ist wohl auf See. (example from Zimmermann 2011)

Max is prt at sea

Max must be in the sea.

b. (For all I know), Max will be in the sea.

Zimmermann claims that with *wohl*, the epistemic commitment of the speaker is weakened compared to the plain sentence, while also conveying a confidence that the proposition is likely to hold.

(36) A: I can't see Hein.

Er ist wohl auf See.

'He may be at sea.'

(36') A: I know for sure:

#Hein ist wohl auf See.

Hein is prt at sea

Likewise, in Greek, if I know for sure, I can't utter *Tha ine sti thalasa*. In using the epistemic future and *wohl*, I am in a state of knowledge that still allows for *not p*. Giannakidou and Mari (2013b) make a similar observation about direct evidence: e.g., while raining, I cannot utter FUT *p*:

- (37) Context: I am watching the rain through the window. I say:  
 a. #Tha vrexí!  
 b. #Piovera!  
 ‘It must be raining.’

If we are directly evidencing the rain, then we know that the sentence ‘It is raining’ is true; the modalized statement is therefore an infelicitous choice, violating Gricean quantity by saying something weaker than what you know. In Giannakidou and Mari (2012, 2014b), we took this case to illustrate an evidential component—but generally we can think of this as a case of incompatibility between the epistemic weakening function of *tha*, *wohl*, *must*, which require that the speaker be in an epistemic state that is compatible with both *p* and *non-p*, and the fact that in direct perception contexts the speaker *knows p*. So, we can think of commitment weakening as a presupposition that constrains the distribution of the expressions that have it.

Crucially, epistemic *zullen* seems to function similarly, as we see in the sentences below. The Dutch counterpart of *wohl*, *wel* can also combine with *zullen* (and we can think of this as modal concord too, on a par with co-occurrences of *tha* and *prepi* mentioned earlier):<sup>5</sup>

- (38) A: I can’t see Hein.  
 Hein zal (wel) in de/op see zijn.  
 ‘He may be at sea (swimming/on a boat).’
- (39) A: I know for sure:  
 #Hein zal in de/op see zijn.  
 ‘He may be at sea.’

Notice also that the purely epistemic reading is possible with the *p*.

- (40) A: He is so grumpy.  
 Hij zal wel slecht geslapen hebben!  
 ‘He must have slept really bad!’

So *zullen* epistemically weakens statements about the past too, just like the Greek and Italian futures. Its epistemic modality goes beyond the predictive modality and orientation after *now* that Broekhuis and Verkuyl are trying to capture. The important generalization about epistemic future here is that future words, regardless of their status as bound morphemes (Italian), particles (Greek), or auxiliaries (English, Dutch) all seem to have purely epistemic uses *without* reference to the future crosslinguistically. This suggests clearly that future words associate with purely epistemic modal bases in their non-predictive reading.

I move on now, finally, to offer some comments on the modality of prediction based on Giannakidou and Mari (2013b).

<sup>5</sup>Many thanks to Jack Hoeksema for discussion of these examples.

### 3.2 Epistemic constraints and metaphysical modality in the predictive reading

Since future events have not occurred yet, the future is epistemically uncertain (non-veridical; Giannakidou 1998; Giannakidou and Zwarts 1999), or “unsettled” (Kaufmann 2005; Kaufmann et al. 2006), as noted at the beginning. The speaker can simply not *know* future facts because there are no future facts yet. So Giannakidou and Mari (2013b) argue in the predictive reading the modal base of future morphemes cannot be epistemic. It can also not be doxastic, because that would allow unjustified beliefs to enter the reasoning with futures.

At the same time, prediction does have an epistemic basis, and knowledge plays a role in the predictive use. Broekhuis and Verkuyl say that speakers “feel sufficiently confident to say  $p$  is true at  $n$  or is to be made true at  $i_{\diamond}$ . *This confidence relies on information judged as reliable and well-founded*” at present. But what does it mean to “be confident that the proposition is to be made true”? This confidence relies on knowledge at the present, but it is not itself knowledge of the future event, since such events have not materialized. Now, it is conceivable that in the extended present analysis, future events partly materialize in the prospective interval of present; still, however, unless completed in that interval, future events cannot, strictly speaking, be known to the speaker at present. So, the metaphysical and epistemic indeterminacy of the future seems to remain even in the extended present analysis.

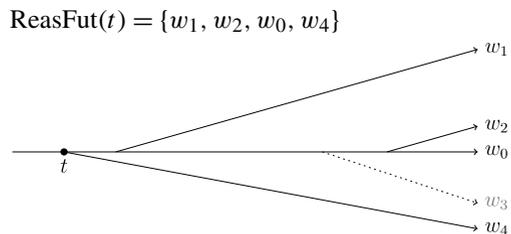
Giannakidou and Mari (2013b) argue that the speaker uses her knowledge as a domain restriction, i.e., to consider only a subset of available metaphysical future alternatives. Although the future objectively hasn’t happened yet (nonveridical), speakers project their knowledge to clean up the metaphysical alternatives, to carve them out into *reasonable* and *unreasonable* ones (Mari 2013). Reasonable futures are those where everything proceeds as expected and nothing peculiar happens (see Mari 2013 for extended discussion of this). The knowledge a speaker has at present allows them to know which metaphysical branches seem reasonable, and which not. In Fig. 5, the dotted line to  $w_3$  indicates unreasonable future.

Now consider the sentence *John will be here at 5*.

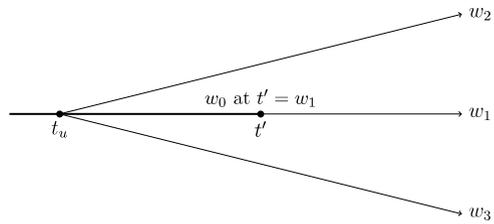
The event unfolds in the actual world  $w_0$ , which has a reasonable development  $w_1$  as indicated in Fig. 6. The sentence then says that if the course of events remains reasonable, the speaker is highly confident that John will be here at 5.

However, it is still possible that an accident happens. In this case, the actual world-to-come becomes an unreasonable one (see Fig. 7). When we predict, we normally don’t consider as relevant such possibilities—but if we know that John is prone to accidents, they become relevant, in which case the force of our prediction (*John will*

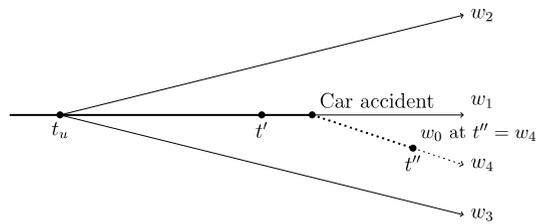
**Fig. 5** Reasonable Future Worlds (ReasFut)



**Fig. 6** The actual world at  $t'$  coincides with a reasonable future determined at  $t$



**Fig. 7** The actual world at  $t''$  does not coincide with a reasonable future determined at  $t$



be here at 5) becomes weaker. Giannakidou and Mari claim that such a mixed analysis, where the speaker's knowledge domain restricts the metaphysical alternatives, is better suited for the predictive reading than a purely epistemic analysis.

It will be impossible to consider this approach further here (see Giannakidou and Mari 2014a for more extended details), but here is how I think Giannakidou and Mari's analysis combines with Broekhuis and Verkuyl's. The modality of prediction consists in the following: (i) determining via present knowledge what the metaphysical alternatives are in which  $p$  comes out true (reasonable ones); (ii) not knowing for sure whether the actual world to come will be one of these alternatives, but (iii) the speaker being positively biased, given current knowledge, that the actual world to come will be a reasonable alternative. Broekhuis and Verkuyl's analysis of extended present offers a strong basis for (iii): the speaker believes or is convinced that the actual world to come will be among the reasonable branches because she reasons with the present, and the present interval contains indications, or preparatory phases of events that develop prospectively, into the future.

## 4 Conclusions

The paper by Broekhuis and Verkuyl is extremely rich in observations and ideas, and quite ambitious in its scope. Limited by space, I was unable to address every aspect of the system in this response. I think it is fair to say that "Binary Tense and Modality" presents a useful perspective, and indeed one that addresses convincingly well-known shortcomings or inconsistencies of the previous literature. In my response, I focused especially on the present and future, because I find the treatment of these categories appealing and promising, as it offers new ways of addressing old questions and understanding new phenomena. The relation Broekhuis and Verkuyl propose between a semantic present as an interval and the future, and their idea of *zullen* as an epistemic modal are appealing—and I hope to have shown that they jointly allow us, with

certain refinements, to capture crosslinguistic generalizations about present tenses and future morphemes that go beyond Dutch alone. In the course of the discussion, we also found similarities in the epistemic use between the future elements (e.g., in Greek, Dutch, and Italian) and modal particles such as *wohl* and *wel*, which are worth further exploring. The very fact that future words, in a number of languages (including English) contribute epistemic modality *without* predictive reading, supports the idea, common in the many recent works I cited here, that the category 'future' contains an epistemic component, and can therefore not be a purely temporal category.

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