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The French Future: evidentiality and incremental information¹

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Abstract

We propose a new analysis for the French future, which treats it as a modal-evidential, combining two perspectival points, a conjectural and a ratificational one, arguing that future signals an increment of information in time. Considering that future also contributes a relative tense, we explain a variety of uses also covering previously unexplained cases, in which the speaker has knowledge at the time of the utterance and still uses the future. Finally, our account could shed some light on cross-linguistic facts and most notably on the relation between the ratificational French future and the conjectural future in Italian, paving the way for a typological distinction between language types: ‘conjectural future type’ languages and ‘ratificational future type’ ones.

Key-words: Future, epistemic modality, ratification, perspective.

1. Introduction

Future sentences are described in traditional grammars as featuring a temporal interpretation. In this interpretation, the time of the event described in the sentence is forward-shifted with respect to the time of the utterance (t_u).

- (1) a. John will arrive at 4pm. (English)
b. Gianni arriverà alle 4. (Italian)
 John arrive.3SG.FUT at 4.
c. Jean arrivera à 4 heures. (French)
 John arrive.3SG.FUT at 4 hours.
 ‘John will arrive at 4pm.’

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This use is overwhelmingly present across languages, and explains why future reference is generally associated with future expressions.

Across languages, however, the repertoire of uses of future expressions (FUT from now on) varies widely and includes so called epistemic uses (2-a) and (2-b) (Palmer 1986) generic uses (2-c) (Copley 2002). In these uses, FUT does not convey future reference; rather it conveys a modal interpretation (for the epistemic uses of the future across languages, see a.o. Bertinetto 1979; Enç 1996; Tasmowski and Dendale 1998; Rocci 2000; Celle 2004; Squartini 2004; Kissine 2008; Mari 2009; Broekhuis and Verkuyl 2013; Giannakidou and Mari 2013; Falaus and Laca to appear).

- (2) a. That will be the postman. (Palmer, 1986)
- b. Il aura oublié son rendez-vous. (French)
He have.3SG.FUT forget.PAST.PART his appointment.
'He must have forgotten his appointment.'
- c. Oil will float on water.

The research regarding which type of modality FUT conveys mostly focuses on the temporal and epistemic interpretations, and goes back to the Aristotelian idea that future sentences convey some kind of indeterminacy. Without siding with one particular theory, here, we acknowledge that the entire debate stemming from Aristotle and developed within the analytical tradition is very heavily dependent on model theoretic assumptions about the nature of the future, past, and present and about how language represents them.

It is very hotly debated in the formal literature whether language represents this indeterminacy as metaphysical or epistemic and whether one or different types of indeterminacies are involved in the epistemic and temporal interpretations of future sentences. It has thus been argued that the future is deterministic (i.e. language represents the future as a single line, with the entire future history being settled) and that the indeterminacy is epistemic in both the epistemic and the temporal interpretation of future sentences (e.g. Kissine 2008). It has also been argued that the indeterminacy is metaphysical in the temporal reading (on this view, language represents the future as a set of branches, that is to say as a set of possible alternatives into which the actual world can evolve; e.g. Prior 1957; Thomason 1984; Copley 2002; Giannakidou and Mari 2013) and that the indeterminacy is epistemic in the epistemic reading (e.g. Condoravdi 2002).

Here we study the systematic ambiguity of FUT in French but make no model theoretic assumptions about what the future is like (multi-branching, deterministic-one branch). We only acknowledge that, no matter how the future is to be represented (open, or determined), one cannot know the future. The route that we take here places evidence at the core of the account. Our claim here is that FUT in French is a modal with an evidential component, and we explain how its uses (including the epistemic and the temporal interpretations among others) are derived from a core modal-evidential meaning.

Across a variety of frameworks, recent literature has shown that the boundaries between epistemic modality and evidentiality are not as clear-cut as one would expect (Mithun 1986; de Haan 1999,2001; Nuyts 2001, Faller 2002, Matthewson et al. 2007; Murray 2010; Narrog 2012). While it is recognized that evidentials convey information about the source of information and epistemic modals express the speaker's commitment to the truth of the proposition (e.g. Aikhenval't 2004; de Haan 2001), it has been recently proposed that a variety of expressions across languages convey both modal and evidential meaning. The question arises of how these two meanings are articulated. Specifically, for English, it has been proposed that *must*, in its epistemic interpretation, presupposes indirect evidence (in the sense of Willett 1998; von Stechow and Gillies 2010). A sentence like *That must be the postman* (Palmer 1967) is not acceptable if the speaker has seen the postman (see also Dendale 2001 for French, Mortelmans 2000; Nuyts 2001 for Dutch; *a contrario*, for Italian, see Squartini 2004). The idea is that *must* - and its equivalent across languages -, can be used felicitously if the speaker grounds her assertion in indirect evidence.

Here we propose that the French future contributes modality and that the specific type of modality that FUT contributes imposes that the context of the modal evaluation satisfy specific evidential constraints. We consider this evidential constraint as a felicity condition on the use of the modal. Importantly, when modality interacts with time, this constraint on the context holds *at the time when the modal is evaluated*.

Previous literature has mostly investigated epistemic modals in the present, whose time of evaluation is the time of the utterance. When the use of these modals imposes evidential constraints on the context, the evidential constraints hold at the time of the utterance. Typically, with *must*, the modal is evaluated at the time of the utterance (the set of alternatives is projected at the time of the utterance), and the indirect evidence on which the use of the modal relies is also available to the speaker at the time of the utterance. Our investigation of the future in French broadens this view, and consider a modal whose time of evaluation is not always the time of the utterance, but can be in the future of it.

Some discussion is available in the literature in relation with modals evaluated in the past. It is well-known that the modal in the imperfect in French can have an epistemic meaning and can be evaluated in the past (see Homer 2010; Boogaart and Trnavac 2011; Mari 2015). Consider a scenario in which my husband sees that the drawer of the table is open, and asks me why it is open. I can reply (3).

- (3) Je cherchais les clés, et elles pouvaient être dans le tiroir.
 I look-for.1SG.IMPERF the keys, and they can.IMPERF be in the drawer.
 ‘I was looking for the keys and they might have been in the drawer.’

At the time of the evaluation of the epistemic modal (which is past), the speaker had evidence (in this case, indirect, inferential evidence) that the keys were in the drawer. Indirect evidence being available in the past is a constraint on the context, at the time of the evaluation of the modal.

We argue here that future contributes a temporal component that forward-shifts the time of evaluation of the modal component. We claim specifically that the modality is *ratificational* (we use the terms *verification* and *ratification* interchangeably) and that the future forward-shifts the time of the ratification. As a consequence, FUT does not convey that the speaker/hearer uses evidence at the time of the utterance (unlike what has been argued for *devoir*). Rather FUT conveys that the speaker/hearer will use evidence at a time following the utterance time (i.e. at the time of evaluation of the modal).

We spell out the evidential constraint on the context of evaluation of the modal in a precise way (we call it the *direct evidence constraint*) arguing that the time of evaluation of the modal and of the prejacent proposition coincide (the ‘prejacent’ is the proposition within the scope of the modal²).

From this evidential constraint that the modal imposes on its context of evaluation, we derive in a principled way the available interpretations of the future. The bottom line of the paper is thus that we cannot make sense of the varieties of the interpretations of the French future without relying on the evidential constraint that the speaker/hearer has direct evidence at the time of evaluation of the ratificational modal. We allow for the possibility that this principle be satisfied at different degrees,³ and we will thus be able to rank the

² We use interchangeably ‘prejacent’ and ‘prejacent proposition’

³ We thank the reviewer for pointing this out to us.

interpretations according to preferences when more than one interpretation is available for a given form.

Our proposal covers data not previously noted or explained and is thus to be preferred to previous proposals, which have treated FUT as a temporal operator or as a modal (either epistemic or metaphysical), without appealing to the evidential component.

The paper is structured as follows. In section 2 we show that the future is not a temporal operator nor does it behave like *devoir* and is thus not an epistemic modal. We also contrast the French future to the Italian future, further disentangling epistemic futures (like the Italian future) and evidential futures (like the French future). This will give us the opportunity to provide a description of the available uses of the French future. In section 3 we provide our account for those interpretations that satisfy the ‘direct evidence constraint’ that is associated with the interpretation of the future as a ratification modal. In section 4 we explain how the epistemic interpretations arise. Further support for the evidential component of future in French is also provided by the ability to shed new light on synchronic and cross-linguistic variation, discussed in section 5. Section 6 concludes the paper.

2. Disentangling future from epistemic modality

The idea that FUT conveys future verification is solidly established in the functionalist literature (a.o. Tasmowski and Dendale 1998; Dendale 2001; de Saussure and Morency 2001). Dendale (*ibid.*) explains that *devoir* can be used if the speaker has proofs in the utterance context for the truth of the prejacent proposition (p from now on), while such proofs are not needed to use FUT. FUT can be used, Dendale claims, even in absence of such proofs.

Consider a scenario in which I wonder what it is going on with John, who is unexpectedly tired. My husband asserts the following.⁴

⁴ In order to use minimal pairs, we use constructed examples. These examples, however, have been submitted to judgment elicitation of native speakers of French and Italian. We consulted 31 adult French native speakers (6 women, 25 men). Examples were rated from 1 to 7, 7 being the maximum of acceptability and 1 the rejection of the example. We provided the speakers the same scenarios introduced here. For Italian, we consulted 16 speakers (7 women, 9 men). The scale used was the same for the Italian examples. Next to the tested examples, we provide the average acceptability. As the reader will note, the ratings were clear-cut. We would like to thank our students of the Sorbonne, Introduction to semantics course, Spring 2014, as well as the Italian students and post-docs at Institut Jean Nicod and Université Paris-Sorbonne

(4) Il doit avoir été malade, (il a l'air tout pâle). (6.6)
He must have been ill, he has the-air all pale.

(5) Il aura été malade. (6.4)
He have.3SG.FUT be.PAST.PART ill.
'He must have been ill, (he is so pale).' ⁵

In both cases the speaker must have 'indirect' evidence, that is to say, he must not have seen John sick. However, the *devoir* sentence requires that the speaker bases his assertion on some piece of evidence (e.g. John is pale), but the future sentence does not. The idea then arises that these proofs will be available in the future and that the conjecture will be verified in the future. In Tasmowski and Dendale's view, future sentences lack truth conditions at the time of the utterance (see Tasmowski and Dendale, 1998: 327).

de Saussure and Morency (2011: 209), pick up on the idea of future verification, but code it in the truth conditions of future, a path that we follow here. They write: "Our general assumption follows the classical analysis in which future in French represents a future verification of a possible state of affairs in the present (or in the past, as with the anterior future)."

There are some cases in which the idea of a future verification works particularly well. The following example is due to de Saussure and Morency (2011). Two friends are speculating about the shape of the universe. FUT cannot be used to express a conjecture. *Devoir* can be used in this context (7), as can the Italian future (8).

(6) #Il sera sphérique. (1.06)
'It be.3SG.FUT spherical.'

(7) Il doit être sphérique. (6.8)
It must be spherical.
'It must be spherical.'

(8) Sarà sferico. (6.7)

⁵ Note that the future sentence (5) and (4) have the same translation in English, to avoid taking position in the open debate of whether future in English has an epistemic interpretation when combined with past, e.g. Copley (2002).

be.3SG.FUT spherical.

‘It must be spherical.’

de Saussure and Morency (ibid.) explain the impossibility of (6) by the fact that neither the speaker nor the hearer can *directly* verify whether the universe is spherical and make clear that ‘future verification’, in itself, is not sufficient. Devoir is unproblematic in this context, as it expresses conjecture based on indirect evidence.

Unlike *devoir*, FUT can be used when the speaker has knowledge that the prejacent is true at the time of the utterance. Again, the example is due to de Saussure and Morency. A shop employee has just rearranged the shoes on the shelves. A customer enters the shop and asks where the Adidas are. The employee replies (9).

(9) Elles seront sur le présentoir là-bas. (6.9)

They be.3PL.FUT on the shelf over there.

‘They will be on the shelf over there.’

Here FUT does not express a conjecture. Rather, it postpones the time of the verification that the shoes are on the shelf. The hearer will be in charge of the verification. Epistemic *devoir* cannot be used in this context, in which the speaker knows *p*.

Other uses of FUT, however, which seem to invalidate the hypothesis that FUT asserts future verification.

FUT, in French, features a truly epistemic use. Consider a scenario in which I have been traveling to Japan and stayed at a hotel. I cannot find my watch anymore. My husband utters (10).

(10) Tu l’ auras laissée à l’ hôtel. (6.4)

You the have.2SG.FUT left at the hotel.

‘You must have left it at the hotel.’⁵

The sentence is predicted to be false when the context does not provide a future event of verification. It is nonetheless acceptable, and the question, under the hypothesis that FUT asserts future verification, is why.⁶

⁶ ‘You will have left it at the hotel.’ is a plausible translation in English, which, however, is not unanimously admitted in the literature, some of the authors denying the existence of the epistemic English future (e.g. Copley

In this interpretation, FUT behaves parallel to *devoir* (*must*) (11), and to the Italian future (12). In the same scenario, both the following sentences are acceptable.

- (11) Tu dois l'avoir laissée à l'hôtel. (6.9)
 You must.2SG.PRES that have.INF leave.PAST.PART at the hotel.
 'You must have left it at the hôtel.'

- (12) L'avrai lasciato in albergo. (6.87)
 The have.2SG.FUT leave.PAST.PART at hotel.
 'You must have left it at the hotel.'

Note also that FUT cannot be a temporal operator that forward-shifts the time of the event (or one that locates the event, at the earliest, at the time of the utterance; see Kissine 2008). If FUT were such an operator, future in the past reading would be obtained for (12), contrary to fact. (12) asserts that, according to what the speaker knows at the time of the utterance, I left the watch at the hotel in the past.

Let us also note that simple future sentences can have an epistemic interpretation with stative verbs. We extensively comment on these cases later in the paper (see sections 5.1 and 5.2), and, for now, we leave them aside.

- (13) Il sera sûrement à la maison. (5.2)
 He be.3SG.FUT certainly at the home.
 'He must certainly be at home.'

Another use unexplained by the hypothesis that FUT asserts future verification (as de Saussure and Morency acknowledge) is what we label the 'present ratification' use.⁷

Consider a scenario in which my husband and I are watching the Roland Garros final and see Nadal winning. My husband utters (14). We provide, in English, the most plausible translation using the present perfect.

- (14) Et voilà, Nadal aura encore gagné. (6.9)

2002). For this reason, we remain consistent with the 'must' translation for French and Italian future sentences that have an epistemic interpretation.

⁷ This is also called 'futur de bilan', (see Caudal 2012).

Here we are, Nadal have.3SG.FUT again win.PAST.PART.
 Intended: ‘Here we are, Nadal, as expected, has won again.’

Neither *devoir* nor the Italian future can be used in this context.

(15) While witnessing the victory of Nadal.

- a. #Et voilà, Nadal doit avoir encore gagné. (0.3)
 Here we are, Nadal must have again win.past.part.
- b. #Nadal avrà ancora vinto. (0.6)
 Nadal have.3SG.FUT again win.PAST.PART.

In view of these two cases, a series of questions arises. Does FUT mean present conjecture? Not always. It seems to do so in (10) only. Does the future mean future verification? Not always. In some cases the speaker *knows* at the time of the utterance that p is true (14).

A proper theory of the future, we claim, must be able to explain the facts summarized in Table 1. Like *devoir*, FUT seems to be able to convey present conjecture. This conjecture is grounded in indirect evidence (10). Unlike *devoir*, FUT can use direct evidence (14). In this case, it can assert present ratification. Unlike *devoir*, it can assert future verification (9).

Table 1. Distributions of future and epistemic *devoir* in French

	<i>Absence of verification</i> <i>Conjecture</i>	<i>Present ratification</i> <i>Present knowledge</i>	<i>Future verification</i> <i>Future knowledge</i>
FUT	(10)	(14)	(9)
<i>Devoir</i>	(11)	no	no

The diversity of these uses is puzzling, and the goal of the remaining of the paper is to propose a theory that explains these distributions in a principled way.

3. The temporal and the 'present ratification' use

3.1. FUT and past, scoping relations and relative tense

We have claimed that FUT is a modal with an evidential presupposition. Before laying down our proposal, we need to spell out the relations between FUT and other temporal components. In our analysis, indeed, the future bears *modal*, *temporal* and *evidential* information. That the future bears modal and temporal information is now quite standard in the analysis of future.⁸ In our account FUT contributes future ratification (or verification). In most of the accounts FUT forward-shifts the time of evaluation of the proposition, in our account, it *forward-shifts the time of evaluation of the modal component itself*.⁹ The lexical entry for the future is in (16):

- (16) [[FUT]] = there is a time t' that is future with respect to a time t ,
such that, at t' the speaker/hearer knows that p is true, or knows that
 $\neg p$ (not- p) is true.

Note that here FUT is decomposed into a temporal operator with scope over a modal operator. As a consequence, FUT does not fix the time of evaluation of the prejacent. With Giannakidou and Mari (2013), we are going to assume that there is an inner tense NON-PAST, parallel to past for the anterior future sentences, which provides a right open interval starting at the time of the utterance. Indeed the time of evaluation of the prejacent for simple future sentences can either be the utterance time t_u – see (13), or a time in the future of the utterance time (as in (1-c)). As we explain later on, the time of evaluation of the prejacent is fixed by an evidential principle of direct evidence (cf. *infra*).

In what follows, we are also going to argue that sentences in (10) and (14) correspond to two different analyses. Specifically, they correspond to (18-a) and (18-b), respectively.

- (18) a. FUT(PAST(p))
b. PAST(FUT(p))

⁸ Theories diverge as to the type of modality that future expressions convey across languages (whether epistemic, metaphysical; e.g. Copley 2002; Kissine 2008; Giannakidou and Mari 2014, to appear-a).

⁹ This is in line with de Saussure and Morency 2011; See also references therein.

In our account we consider that the perfect construction as a whole provides a past element (see discussion in Boogaart and Trnavac, 2011), PAST. PAST can scope above or below FUT. Both FUT and PAST contribute tense (FUT also contributes modality and evidentiality, as we said). The inner operators in (18-a)-(18-b), provide a relative tense. PAST in (18-a) is PAST relative to a future time and FUT is interpreted relative to the utterance time. In (18-b), it is FUT that has a relative interpretation with respect to a past time, and PAST is interpreted relative to the utterance time.

The following table summarizes the cases that we are going to consider in the sequel of the paper.

Table 2. Interpretations and decompositions

<i>Decomposition</i>	<i>Interpretation</i>	<i>Example number</i>
FUT(NON-PAST(p))	Temporal	(1-c) - (9)
FUT(PAST(p)) – see (18-a)	Epistemic (or conjectural)	(10)
PAST(FUT(p)) – see (18-b)	Present ratification	(14)

This establishes a divide between the epistemic *devoir* and FUT. *Devoir*, as we noted, does not have the ‘present ratification use’ (15). This modal verb can only express epistemic uncertainty when combined with past and statives (see Tasmowski 1980; Sueur 1979; Nuyts 2001; Condoravdi 2002; Laca 2012; Mari 2015). As for (11), the only available interpretation is the one according to which, given what the speaker knows at the time of the utterance, the watch has been left at the hotel in the past. In this interpretation, the modal has wide scope over tense and the decomposition would be MUST(PAST(*p*)) in a way parallel to (18-a). FUT, instead, in its present ratification use, scopes below PAST.

The decomposition in (18-a) also covers the commonly known ‘future perfect’, illustrated in (19). In this configuration, the event of eating will take place at a time that precedes the future time ‘tomorrow’ but also follows the utterance time.¹⁰ As for now, leave this interpretation aside and return to it in section 4.3.

- (19) Demain, à cette heure-ci, il aura mangé.
 Tomorrow, to this hour, he have.3SG.FUT eat.PAST.PART.

¹⁰ This is Reichenbach’s anterior future (Reichenbach 1947).

‘Tomorrow, by this time, he will have eaten.’

Setting aside the latter case (19), our line of argument is that the uses illustrated in the table 2 divide in two main classes: the epistemic uses and the non-epistemic uses. The latter are those that best satisfy (we explain what ‘best satisfy’ later in the paper) the direct evidence constraint associated with the modal component of FUT. We consider these two classes in turn, beginning with the temporal and the present ratification uses that we treat in the reminder of this section. We turn to the epistemic use in section 4.

3.2. Temporal and present ratification uses: truth conditions, inferences and direct evidence constraint

We work in a compositional framework in which the meaning of the sentence is a function of the meaning of its parts. We distinguish between the semantics and the pragmatics in sections 3.2.1 and 3.2.2 respectively. We present the direct evidence constraint in section 3.3, and derive a first set of predictions in section 3.4.

3.2.1. The truth conditional dimension

Decomposing a simple future sentence like (20-a) as in (20-b), we need to provide the lexical entries for FUT and p . i is a parameter for the judge (the judge can be the speaker, the hearer or a third party), which, in our cases is the speaker (unless stated otherwise).

- (20) a. Jean arrivera
 John arrive.3SG.FUT
 ‘John will arrive.’
 b. FUT(NON-PAST(p)) (= (17))

- (21) [[FUT(NON-PAST(p))]] = There is a time t' in the future of a time t such that i knows at t' that p is true or knows at t' that $\neg p$ (not- p) is true. The time of evaluation of p can either be t_u or a time that follows t_u .

FUT provides ratificational modality, whose time of evaluation is t . Truth conditions are assigned at the time of the utterance t_u . At t_u , there is uncertainty about the future. We

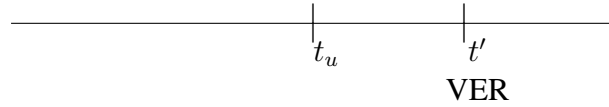
know that the speaker will know the truth but we do not know whether she will know p or she will know $\neg p$. When FUT is not in the scope of PAST, $t = t_u$. We thus obtain (22).

- (22) $[[\text{FUT}(\text{NON-PAST}(p))]]$ = There is a time t' in the future of t_u such that i knows at t' that p is true or knows at t' that $\neg p$ is true. The time of evaluation of p can either be t_u or a time that follows t_u .

Recall that the time of evaluation of p , in simple future sentences, can be either t_u (13) or a future time (1-c).

Let us picture this interpretation. VER is an abbreviation for the verificational modal, ie. '*i knows at t' that p is true or knows at t' that p is not true.*'

- (23) $\text{FUT}(\text{NON-PAST}(p))$ - Example (20-a) – first step



FUT fixes the time of the verification. We will return shortly to the question of how the temporal location of the prejacent is provided, as this is where the direct evidence constraint plays a crucial role.

We now consider the decomposition in (18-b) repeated in (24-b), for the example (14), repeated in (24-a).

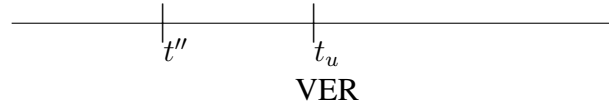
- (24) a. Et voilà, Nadal aura encore gagné. (6.9)
 Here we are, Nadal have.3SG.FUT again win.PAST.PART.
 'Here we are, Nadal has won again.'
 b. $\text{PAST}(\text{FUT}(p))$

When PAST scopes above FUT, the latter again sets the time of the verification, but t' is a time in the future of a past time. The compositional analysis is the following.

- (25) $[[\text{PAST}(\text{FUT}(p))]] = \text{There is a time } t' \text{ in the future w.r.t } t'' \text{ (which is in the past of } t_u) \text{ such that } i \text{ knows at } t' \text{ that } p \text{ is true or knows at } t' \text{ that } \neg p \text{ is true.}$

As the time of acquisition of knowledge is in the future of a past t , the time of evaluation of the ratificational modal can be t_u (and indeed we assume here that $t = t_u$). As we explained in section 3.1, FUT is a relative tense, when embedded under PAST. In this configuration, the time it introduces is future with respect to a past time, and can thus be the utterance time. The following diagram illustrates this point.

- (26) PAST(FUT(p)) – Example (24-a) – first step



3.2.2. Deriving the inference of ignorance

All theories of verificational future acknowledge that, if the speaker / hearer will be able to verify the truth of p in the future (or a future of a past), then, at the time of the utterance (or in the past), the speaker / hearer can formulate a conjecture of whether p is (will be) true (see Sweetser 1990; Dendale 2001; Narrog 2012). This inference can be derived in a Gricean manner: had the speaker known p , he would have uttered p , thus being more informative. Since p is not uttered, then the speaker does not know p at the time of the utterance.

Moreover, when no adverbs are added (like *maybe*), the speaker has confidence that p will be found to be true in the future. This is called *positive bias* in Giannakidou and Mari (2014, to appear-a). In our framework, making a conjecture does not imply being in a state of uncertainty, it simply means formulating a hypothesis based on direct evidence.

- (27) $[[\text{FUT}(p)]] =$
 Semantics in (22) AND
 Inference: At t_u : The speaker does not know p and believes that p will be found to be true.

With this layer, which we call EPIST, we can now further elaborate the picture for the simple future in French:

(28) FUT(p) – Example (20-a) - second step



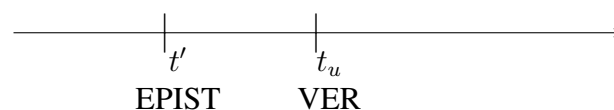
When PAST scopes over FUT (see (24-b) and example (24-a)), the time of the conjecture is set by PAST. The past time functions as a perspectival point (see Boogaart 2007). Adding the inference to the semantics, we obtain (29):

(29) $[[\text{PAST}(\text{FUT}(p))]] = \text{semantics in (25).}$

Inference : At t' , The speaker did not know p and believed that p would be found to be true.

We can thus further elaborate the picture for the decomposition PAST(FUT(p)) in (24-b). We use EPIST to represent the belief that p will be found out true.

(30) PAST(FUT(p)) - Example (24-a) – second step



As we suggested above, there is a positive bias (Giannakidou and Mari *ibid.*): the speaker believed that p would be found to be true.

FUT can combine with a variety of adverbs, of weak and strong force (see Tasmowski and Dendale 1998; Kissine 2008). The adverbs modulate the strength of the confidence that the speaker has that p will be found out true.

(31) Jean viendra peut-être.
 John come.3SG.FUT maybe.
 ‘John will maybe arrive’.

(32) Jean viendra sûrement.
 John come.3SG.FUT certainly.
 ‘John will certainly arrive’.

We note here that the adverbs compatible with FUT are those that fall in the category of subjective adverbs (Ernst 2009). These have wide scope and introduce the speaker’s perspective. For lack of space we omit the proof of this claim; the reader is referred to Ernst, 2009 and Giannakidou and Mari 2013, to appear-b for a discussion of the role of these adverbs in future sentences.

Note, however, that weak adverbs cannot always be used, as in (33), uttered while witnessing Nadal’s victory.

(33) #Nadal aura peut-être gagné.
 Nadal have.3SG.FUT maybe win.PAST.PART.

This fact needs an explanation. We now turn to the question of how to determine the time of evaluation of the prejacent when this is in the scope of FUT.

3.3. *The direct evidence constraint of ratificational modals*

To state that a modal is ratificational boils down to the simple idea that the judge acquires knowledge by *witnessing* the event. While a modal like ‘know’ only implies the truth of its complement and imposes no constraints as of how knowledge is acquired, a ratificational modal imposes a constraint on the evidence through which the truthiness of its complement is determined.

That information about the truthiness is acquired through witnessing is a felicity condition on the use of the ratificational modality.

We implement this felicity condition on the use of ratificational modality by imposing that the time of evaluation of the prejacent coincide with the time of evaluation of the ratificational modal.

- (34) *Direct evidence constraint of ratificational modal.* When the modal is ratificational, the time of evaluation of the prejacent and the time of evaluation of the modal coincide.

In the spirit of Lee (2012), we also propose the following principle (35).

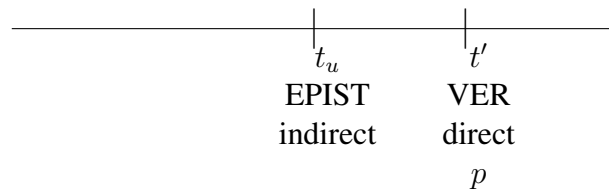
- (35) *Weakening of the ratificational modals.* Ratificational modals are weakened into conjectural modals if the time of evaluation of the modal and the time of evaluation of the prejacent do not coincide.

As we will argue in section 5, this plays a major role synchronically, and possibly diachronically. Note that we are assuming here a view according to which ‘ratification’ supports both direct and indirect evidence and thus can be successful at different degrees. In other terms, the principle (34) can be satisfied at different degrees.¹¹

When the time of evaluation of VER and the prejacent do not coincide, verification can only be indirect.

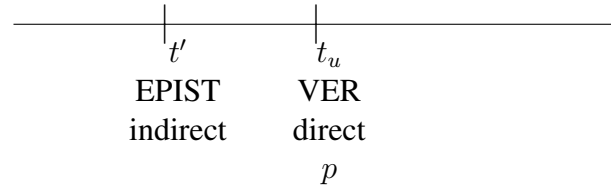
Given the direct evidence constraint, we can now complete the pictures for the decompositions $\text{FUT}(\text{NON-PAST}(p))$ and $\text{PAST}(\text{FUT}(p))$ (‘indirect’ and ‘direct’ stand, respectively, for ‘indirect evidence’ and ‘direct evidence’; with ‘indirect’ we signal that the speaker does not witness the event described in p). Let us again emphasize that the time of evaluation of the prejacent is not fixed by FUT but by the direct evidence constraint of the ratificational modal.

- (36) $\text{FUT}(p)$ - (20-a) - final representation



¹¹ We thank an anonymous reviewer for pointing this fact to us.

(37) PAST(FUT(p)) - (24-a) - final representation



With these ingredients in place, we now return to the data, and show that our evidential approach provides a previously unattained coverage, and that this is a major argument in favor of an evidential component in the meaning of the French future along our lines.

3.4. First set of predictions.

The analysis in (36) straightforwardly captures the temporal interpretation of the future in French, illustrated in (38).

(38) Marie arrivera.
 Mary arrive.3SG.FUT.
 ‘Mary will arrive.’

In virtue of the direct evidence constraint, (34), the time of evaluation of the prejacent is forward- shifted, and the temporal interpretation is obtained.

A more interesting example is (9), recalled here in (39).

(39) Elles seront sur le présentoir là-bas.
 They be.3PL.FUT on the shelf over there.
 ‘They will be on the shelf over there.’

Recall that in this case, the employee knows where the shoes are. The customer does not. Hence, the customer is in a state of epistemic uncertainty, and is in charge of verifying where the shoes are (see de Saussure and Morency 2011). The verification time is forward-shifted by FUT. By (34), the time of evaluation of p is also in the future of the time of the utterance, and the example can be classified as a case of ‘temporal’ interpretation.

Note that, differently from previous accounts, we do not postulate a separate entry for the temporal future and derive it in a principled way given (34).

Let us now turn to cases that were unexplained in the literature, most notably (24-a), repeated as in (40) and analyzed as in (37).

- (40) Et voilà, Nadal aura encore gagné.
Here we are, Nadal have.3SG.FUT again win.PAST.PART.
Intended: ‘Here we are, Nadal, as expected, has won again.’

We have stated that here we have present verification and past conjecture. The question arises of the competition between the future perfect and the present perfect, as in (41).

- (41) Nadal a gagné !
Nadal has win.PAST.PART !
‘Nadal has won !’

Our analysis predicts that the difference between the perfect with the auxiliary in the future and the perfect with the auxiliary in the present lies in the inferential component. The future is used when the speaker expresses *present verification of a previous conjecture*. To reveal this, we can see that while present perfect sentences can be an answer to unbiased questions, as in (42-a), the future perfect can only be used as an answer to a biased question (43-a). This is unexpected under previous analyses.

- (42) A: Qu’est-ce qui s’est passé ? / What happened ?
a. #Nadal aura encore gagné ! (future perfect)
b. Nadal a gagné ! (present perfect)
- (43) Et alors, je ne te l’avais pas dit ? / Didn’t I say do ?
Nadal aura encore gagné ! (future perfect)
Nadal a gagné ! (present perfect)

Another interesting prediction of our account is that, in this case, weak adverbs cannot be used, see (44). Our explanation is that these adverbs are speaker oriented and are evaluated at the time of the utterance, and at that time, the speaker has *knowledge*, which is not

gradable.

- (44) #Nadal aura peut-être gagné.
Nadal have.3SG.FUT maybe win.PAST.PART.

4. Epistemic reading

4.1 *The epistemic interpretation of future with past*

Epistemic reading of future sentences in French, as we discussed, are indeed attested. Recall the scenario in which I have been traveling to Japan and stayed at a hotel. I cannot find my watch. My husband utters (45).

- (45) Tu l' auras laissée à l'hôtel.
You the have.2SG.FUT left at the hotel.
'You must have left it at the hotel.'

In this interpretation, FUT behaves parallel to *devoir* (46), and to the Italian future (47). In the same scenario, both the following sentences are acceptable.

- (46) Tu dois l'avoir laissée à l'hôtel
'You must have left it at the hôtel.'
- (47) L'avrai lasciato in albergo.
The FUT-have.2SG left at hotel.
'You must have left it at the hotel'

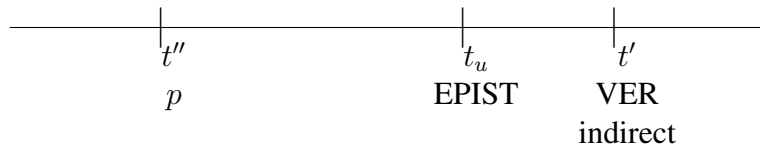
How can we explain this pure conjectural reading of the French future? We propose that, in this case, FUT is interpreted over PAST. Recall the decomposition in (18-a), repeated in (48).

- (48) FUT(PAST(*p*))

In this configuration, FUT provides a time future with respect to the utterance time. PAST provides a relative time, which is past w.r.t. the future time. As for (45), the time of the event precedes the time of the utterance. Compositionally, all that is required is that the time of evaluation of the prejacent proposition be in the past with respect to a future time.

The resulting interpretation is the following.

(49) FUT(PAST(p)) Option 1 – Example (45) – Final representation



The analysis is provided in (50).

(50) $[[\text{FUT}(\text{PAST}(p))]]$ = There is a time t' in the future w.r.t to the utterance time such that i knows at t' that p is true at t'' (which is in the past of t) or knows at t' that $\neg p$ is true at t'' .

Stated otherwise, the speaker will know at a future time t' that p was true in the past of t , or will know that p was not true in the past of t . In this specific case, this past time t is also in the past w.r.t. the utterance time t_u .

Crucial for our explanation is that the time of evaluation of the verificational modal and of the evaluation of the prejacent do not coincide. As a consequence of the dissociation between the time of evaluation of VER and the time of evaluation of the prejacent, and in virtue of the weakening of verificational modals rule (35), VER is weakened into an indirect evidential. In other terms, verification will be indirect and the speaker is, and will remain in a state of uncertainty.

Since FUT introduces a time in the future w.r.t. the time of utterance, the utterance time functions as the anchor for the ‘conjectural’ component. As for (45), at the utterance time the speaker believes that his wife has left the watch at the hotel, but this cannot be verified directly as the event is all in the past.

As we have announced in section 3.1, the decomposition in (18-a) also covers the use that is generally referred to, in the grammars, as ‘future perfect’. Let us modify the Nadal scenario. Now, Nadal has not yet disputed the final. The speaker utters (51) in this context:

- (51) Demain, Nadal aura gagné la finale.
 Tomorrow, Nadal have.3SG.FUT win.PAST.PART the final.
 ‘Tomorrow, Nadal will have won the final.’

Here the time of the verification is in the future with respect to the time of the utterance, just as in (45). The time of evaluation of the prejacent, however, is in the past of the future time (as expected when PAST scopes below future) but it is in the future with respect to the time of the utterance. This is allowed, as PAST is a relative tense when embedded under FUT and all is required is that the time of evaluation of the prejacent precedes a future time (in this case, determined by the adverb, and obligatorily following the utterance time). In this case, we do not obtain the epistemic interpretation, but a ‘predictive’ interpretation (which is conjectural in nature, see Giannakidou and Mari 2013, 2015, to appear-a). This different flavor emerges as the event has not happened yet, unlike in the epistemic case.

Overall, our analysis allows us to disentangle at least three cases, which are generally subsumed under the generic label ‘anterior future’ by the grammars. These cases are summarized in Table 3.

Table 3. Disentangling the ‘future anterior’

<i>Decomposition</i>	<i>Interpretation</i>	<i>Example</i>	<i>Time of the event</i>	<i>Mode of verification</i>	<i>Time of verification</i>
FUT(PAST(<i>p</i>)) (18-a)	Epistemic	(10)	Past	Indirect	Future of t_u
FUT(PAST(<i>p</i>)) (18-a)	Predictive	(51)	Future	Indirect	Future of t_u
PAST(FUT(<i>p</i>)) (18-b)	Present ratification	(14)	Present	Direct	t_u

4.2. Summary

Our account of the uses of the French future is one that attributes a central role to the evidential component in deriving the interpretations. While previous literature has focused on the fact that evidence is not used at the time of the utterance, the role of future evidence has been undermined. The time of evaluation of the prejacent in simple future sentences is fixed in virtue of (34), and thus have derived both the temporal and the epistemic interpretation in a principled way. We have explained that the temporal interpretation is obtained in order for the direct evidence constraint to be satisfied. The pure conjectural reading - obtained when FUT scopes over PAST - arises in virtue of the weakening of this constraint, when, for compositional reasons, the time of evaluation of the prejacent (which, in this case, is the past) and the time of evaluation of the verificational modal (which is the future), do not coincide. FUT, we have argued, always maintains its meaning, ie. it provides future ratification w.r.t a time that can be set as the past when FUT scopes below PAST.

Moreover, we have argued that future sentences feature two evidential situations: a situation of conjecture and a situation of verification thus explaining the competition between the future perfect and the present perfect, as the former is used when the speaker has knowledge at the time of the utterance.

We have also further suggested that verification comes in degrees, and can be direct or indirect. The evidence is ‘direct’ in the temporal interpretation (e.g. (20-a)) and the present ratification case (14). It is ‘indirect’ in the other cases (e.g. (10)). The speaker, however, can have indices revealing whether the prejacent was true or not. When these indices are considered to be out of reach, the sentence is unacceptable, see (6).¹²

We now explore further insights that the modal-evidential approach allows us to gain, with respect to the difficult data around the epistemic uses of simple future sentences.

5. Synchronic and cross-linguistic variation: the epistemic interpretation of simple future sentences

5.1. Conjectural future and the competition with ‘devoir’

¹² We thank a reviewer for pointing this out to us.

It is a legitimate question whether the epistemic reading of the French future arises only when FUT interacts with PAST. It has been indeed claimed that this is the case (see discussion in Dendale, 2001). It is also widely noted, however, that with statives, simple future can have an epistemic interpretation, see (52) (= (13)).

- (52) Il sera sûrement à la maison. (5.2)
 He be.3SG.FUT certainly at the home.
 ‘He must certainly be at home.’

Our theory states that the sentence asserts that there is a time in the future in which it will be verified whether John is at home, and that, at the time of the utterance, the speaker is in a state of ignorance (although has confidence that John is at home). This is in line with previous views of verificational futures (see Sweetser 1990; Narrog 2012). Importantly, the ‘conjecture’ is not part of the semantics, it is calculated as an inference.

That the conjectural interpretation arises via inference is shown by the fact that the inference can be cancelled, as in the case of (39). Here, we have future verification and present knowledge, and the conjectural reading does not arise. When the speaker does not have present knowledge, the conjectural interpretation is calculated.

The precise status of the epistemic interpretation of simple future sentences featuring stative predicates is still unclear. Indeed, even with statives (we consider eventives in a few lines) the epistemic reading in non-future environments is not completely natural. Consider the scenario in which John is absent from school. My husband conjectures (53).

- (53) Il sera malade (4.6)
 He be.3SG.FUT sick
 Intended: ‘He must be sick’.

As the assigned average acceptability reveals, the speakers are hesitant (they are less hesitant when the epistemic adverb *sûrement* is added, as in (52)). Note that the corresponding *devoir* sentence (54) is totally natural. Across languages the epistemic interpretation of modals is the default with statives (see e.g. Condoravdi 2002; Boogaart and Trnavac 2011) and the French future is an exception to this robust pattern, as the epistemic interpretation is less prominent than the temporal one, even with statives.

(54) Il doit être malade. (6.9)

‘He must be sick.’

Our theory explains this by the fact that the conjectural interpretation, with future, arises as an inference. The modal semantically codes epistemic uncertainty and thus is preferred over the future to express conjecture.

5.2. Synchronic variation with eventives: a new hypothesis

It has been traditionally denied that preajacent propositions describing an event are compatible with the epistemic interpretation of future sentences (see discussion in Dendale 2001; de Saussure and Morency 2011 and references therein).

Consider a scenario in which Mary is on a train, her telephone rings, but she does not answer. A friend of mine, who is waiting for Mary with me at the train station, tries to figure out why she is not answering. I reply (55). The sentence is claimed to be unacceptable under current views defending that simple future sentences, using eventive predicates, only feature the temporal interpretation.¹³

(55) #Son train traversera un tunnel. (1.3)

Her train go-through.3SG.FUT a tunnel.’

Intended: ‘Her train must be going through the tunnel.’¹⁴

Recently, de Saussure and Morency (2011) have claimed that this sentence becomes acceptable, or at least improves considerably if one adds an event of verification (see also Sthioul, 2007).

One plausible explanation of the impossibility of (55) is that the direct evidence constraint, cannot be satisfied. If the event of passing through the tunnel holds at the time of the utterance, it will presumably not continue to hold at a future time. By default, unless otherwise stated, if no event of verification is mentioned, the speaker/hearer believes that there is no such an event and the sentence is out. If this event of verification is mentioned, as in (56), the sentence is somehow rescued. This is very much in line with de Saussure and

¹³ We omit the translation, as, in English, the progressive is required.

¹⁴ Note that, in English, for the sentence to be acceptable, the progressive is needed. The sentence is also acceptable in French with the progressive.

Morency (*ibid.*).

This hardly explains why the epistemic reading is unproblematic when PAST scopes above future. We thus propose that eventive predicates are hardly compatible with the epistemic interpretation of future sentences, because of the competition with the temporal interpretation. The temporal interpretation is unavailable when PAST scopes below FUT. It is instead available for simple future sentences. We would thus make the hypothesis that the following principle is at play: If a future sentence in French has more than one interpretation, the one that best satisfies the direct evidence constraint (34) is chosen. This predicts that the temporal interpretation is preferred for simple future sentences featuring both the epistemic and the temporal interpretation and that the epistemic interpretation is allowed when FUT scopes over PAST as this is the only available option.

We do not explore any further here the consequences of this principle (see Mari 2015), which is clearly reminiscent of the Strongest Meaning Hypothesis of Dalrymple et al. (1998). According to the SMH the strongest interpretation is chosen among the available ones. Our hypothesis is that the interpretation of FUT that better satisfies the direct evidence constraint is chosen among the available ones. In our view, those in which the time of evaluation of the modal and of the prejacent coincide are ranked as stronger than those in which these two times do not coincide, and are thus preferred. This explains that when both the temporal and the epistemic interpretation are available for simple future sentences, the first one is chosen.

To conclude, it should be acknowledged that the question of whether the epistemic reading is available with future in non-past environments remains unsettled and that, to some extent, there is a clear variability in the judgments. What matters for us here is that this variability in judgments requires an explanation. If the future were a tense, no variability should be observed at all, and the question would not even arise. In our account ratification can be satisfied at different degrees (ratification via direct evidence vs. ratification via indirect evidence), and we have thus at least provided a new handle to deal with these difficult cases. Our bottom line is thus that the interpretation that better satisfies the directness constraint is preferred and thus variation in judgments is thus expected under our view.

Similarly, our account of the future as a modal imposing a direct evidence constraint also allows us to explain cross-linguistic variation between two related languages like Italian and French.

5.3. A note on cross-linguistic variation

As we have mentioned, the overlap between the uses of the Italian future and *devoir* (*must*) - in French - is important, and the Italian future differs from the French future in many respects. Let us reconsider the data here from the perspective of Italian.

Italian simple future has a pure conjectural reading and does not require an event of verification.

- (57) L'universo sarà sferico.
The universe be.3SG.FUT spherical.
'The universe must be spherical.'

Italian future cannot be used when the speaker knows p at the time of the utterance. If the employee knows where the shoes are, (58) is not acceptable.

- (58) #Le scarpe saranno sullo scaffale laggiù.
The shoes be.3SG.FUT on-the shelf over-there.
'The shoes will be on the shelf over there.'

Similarly, future in the perfect cannot be used when the speaker knows p, as in the scenario in which I have witnessed Nadal's victory.

- (59) #Nadal avrà ancora vinto.
Nadal have.3SG.FUT again win.PAST.PART.
'Nadal will have won again.'

Italian future features a purely conjectural reading when FUT combines with PAST. Talking about my watch, my husband can conjecture (60).

- (60) L' avrai lasciato in albergo.
The have.2SG.FUT left at hotel.
'You must have left it at the hotel'

The distributions of the Italian future seem to be parallel to those of *devoir* in French (and indeed the Italian *dovere*, see Giannakidou and Mari 2013, to appear-a).

There is just one case, though, in which the Italian future seems to require an event of

verification, namely with predicates of personal taste. I see a beautiful green kiwi. My husband utters (61). The situation that renders the sentence true is the one in which I am going to taste the kiwi.¹⁵

- (61) Sarà buono.
 Be.3SG.FUT good.
 ‘It will be good.’

We now summarize the uses of the Italian future and of the epistemic *devoir* in French.

Table 4. Distributions of Italian future and epistemic *devoir* in French

	Absence of verification Conjecture	Present ratification Present knowledge	Future verification Future knowledge
<i>devoir</i>	(11)	no	no
FUT (Italian)	(57) and (60)	no	restricted to predicates of personal taste (62)

We hypothesize that this type of case (61) suggests that there are some traces of a verificational future in Italian as well. We thus conjecture that from the weakening of the ratificational modal and the relaxing of the direct evidence constraint, the inferential conjectural material has undergone a process of lexicalization in Italian, where the conjectural component does not arise as an inference but is coded in the semantics of the future. This hypothesis seems to follow the diachronic path described in Berretta (1997), providing further support for our analysis.

6. Conclusion

In this paper we have defended a new view for the French future which treats it as a modal-

¹⁵ Note that (61) improves with the addition of epistemic adverbs, like *sicuramente* (*certainly*). In this case, the conjectural component is brought about by the adverb, just as when an epistemic adverb is used in past sentences, as *He maybe came*.

evidential, combining a ratificational and a direct evidence component. The key ingredient in our account is the direct evidence constraint that is treated as a felicity condition on the use of ratificational modality, namely that the time of evaluation of the modal and of the prejacent coincide. This constraint has allowed us to explain in a principled way the temporal interpretation (without assuming that future is a tense) and the pure epistemic reading with future in the past (in virtue of the weakening of the ratificational modal when the direct evidence constraint is not satisfied in virtue of the composition). We are able to explain why the conjectural interpretation is hardly available with the French future and eventives for most speakers (by providing a handle to deal with preferences), but also that it is not banned in the same way as one would expect if the forward-shifting of the prejacent were coded in the truth-conditional dimension. Our view has allowed us to cover previously unexplained uses, in which the speaker has knowledge at the time of the utterance and still uses the future. Finally, our account could shed some light on cross-linguistic facts and most notably on the relation between the ratificational French future and the conjectural future in Italian.

Overall, treating the French future as a modal with an evidential component has allowed us to reach previously unattained empirical coverage, thus showing that the modal-evidential account is to be privileged over those treating the future as pure epistemic modal or as pure tense (or as ambiguous between these two readings), ultimately providing empirical evidence for evidentiality.

References

- Aikhenvald, A. 2004. *Evidentiality*. Oxford: Oxford University Press.
- Berretta, M. 1997. Sul Futuro Concessivo: riflessioni su un caso (dubbio) di degrammaticalizzazione. *Linguistica e Filologia* 5, 7-40.
- Bertinetto, P.M. 1979. Alcune ipotesi sul nostro futuro (con alcune osservazioni su *potere* e *dovere*). *Rivista di grammatica generativa* 4, 77-138.
- Boogaart, R. 2007. The past and perfect of epistemic modals. In L. de Saussure, J. Moeschler & G. Puskas (Eds.), *Recent advances in the syntax and semantics of tense, aspect and modality* (47-70). Berlin: Mouton de Gruyter.
- Broekhuis, H. & Verkuyl, H. 2013. Binary Tense and Modality. *Natural Language and Linguistic Theory* 32, 973-1009.
- Caudal, P. 2012. Relations entre temps, aspect, modalité et évidentialité dans le système du français. *Langue Française* 1-173, 115-129.
- Celle, A. 2004. The French future tense and English *will* as markers of epistemic modality. *Languages in Contrast* 5(2): 181-218.

- Condoravdi, C. 2002. Temporal interpretation for modals. Modals for the present and modals for the past. In D. Beaver et al. (eds.), *Stanford Papers on Semantics* (59-87), Stanford: CSLI.
- Copley, B. 2002. *The Semantics of the Future*, PhD MIT.
- Dalrymple, M., Kanazawa, M. Kim, Y., Mchombo, S. & Peter, S. (1998). Reciprocal expressions and the concept of reciprocity. *Linguistics and Philosophy* 21, 159-210.
- Dendale, P. 2001. Le futur conjectural versus devoir épistémique : différences de valeur et restrictions d'emploi. *Le Français Moderne*, 69(1), 1-20.
- Enç, M. 1996. Tense and Modality. In S. Lappin (ed.), *Handbook of Contemporary Semantic Theory*. Oxford: Blackwell.
- Faller, M. 2002. *Semantics and pragmatics of evidentials in Cuzco Quechua*. PhD thesis, Stanford University.
- von Fintel, K & Gillies, A. 2010. Must...stay...strong! *Natural Language Semantics* 18, 351- 383.
- Giannakidou, A. & Mari, A. 2012. The future of Greek and Italian: An epistemic analysis, *Proceedings of Sinn und Bedeutung* 17, 255-270.
- Giannakidou, A. & Mari, A. 2013. A two dimensional analysis of the future: modal adverbs and speaker's bias. *Proceedings of the 19th Amsterdam Colloquium*, 115-122.
- Giannakidou, A. & Mari, A. 2014. The future in Greek and Italian: metaphysical and epistemic dimensions. Ms. University of Chicago and Institut Jean Nicod.
- Giannakidou, A. & Mari, A. 2015. A unified analysis of the future as epistemic modality: the view from Greek and Italian. Ms. University of Chicago and Institut Jean Nicod.
- Giannakidou, A. & Mari, A. to appear-a. Epistemic future and MUST: reasoning with non-veridicality and partial knowledge. In J. Blaszczak & al. (Eds.), *Tense, Mood, and Modality: New Perspectives on Old Questions*. Chicago : Chicago University Press.
- Giannakidou, A. & Mari, A. to appear-b. La dimension épistémique du futur : le rôle des adverbes. In L. Baranzini & L. de Saussures (Eds.), *Le Futur dans les Langues Romanes*. Bern : Peter Lang.
- de Haan, F. 1999. Evidentiality and epistemic modality: setting boundaries. *Southwest Journal of Linguistics* 18, 83-101.
- de Haan, F. (2001). The relation between modality and evidentiality. In R. Müller & M. Reis (Eds.), *Modalität und Modalverben im Deutschen* (201-216). Buske, Hamburg.
- Homer, V. 2010. Epistemic modals, high ma non troppo. *Proceedings of Nels* 40.
- Karttunen, L. 1972. Possible and Must. In J.P. Kimball (Ed.), *Syntax and Semantics Vol 1* (1-20), New York: Academic Press.
- Kissine, M. 2008. From predictions to promises. *Pragmatics and Cognition* 16, 169-189.
- Falaus, A. & Laca, B. to appear. Les formes de l'incertitude. Le futur de conjecture en espagnol et le présomptif roumain. *Revue de Linguistique Romane*.
- Laca, B. 2012. On modal tenses and tensed modals. *Cahiers Chronos* 25, 163-198.

- Lee, J. 2012. Temporal constraints on the meaning of evidentiality. *Natural Language Semantics* 21, 1-41.
- Mari, A. 2009. Disambiguating the Italian Future. *Proceedings of Generative Lexicon*: 209-216.
- Mari, A. 2012. On the evidential nature of the Italian future. Ms. Institut Jean Nicod.
http://jeannicod.ccsd.cnrs.fr/ijn_00678549/document.
- Mari, A. 2014. Each Other, asymmetry and reasonable futures. *Journal of Semantics*, 31(2), 209- 261.
- Mari, A. 2015. *Modalités et temps. Des modèles aux données*. Bern : Peter Lang.
- Matthewson, L. Rullmann, H., & Davis, H. 2007. Evidentials as Epistemic Modals: Evidence from St'at'imcets', *The Linguistic Variation Yearbook* 7, 201-254.
- Mithun, M. 1986. Evidential diachrony in Northern Iroquoian. In W. Chafe, & J. Nichols (Eds.), *Evidentiality: The Linguistic Coding of Epistemology*. Norwood (89-112). New Jersey, Ablex.
- Morency, P. 2010. Enrichissement épistémique du futur. *Cahiers Chronos* 21, 197-214.
- Mortelmans, T. 2000. On the 'evidential' nature of the 'epistemic' use of the German modals *müssen* and *sollen*. In J. van der Auwera & P. Dendale (Eds.), *Modal Verbs in Germanic and Romance Languages [Belgian Journal of Linguistics 14]*, 131-148.
- Murray, S. 2010. *Evidentiality and the Structure of Speech Acts*. PhD dissertation, Rutgers.
- Narrog, H. (2012). *Modality, Subjectivity, and Semantic Change*. Oxford: Oxford University Press.
- Nuyts, J. 2001. *Epistemic modality, language, and conceptualization: A cognitive-pragmatic perspective*. Amsterdam: J. Benjamins.
- Palmer, F.R. 1986. *Mood and Modality*. Cambridge: Cambridge University Press.
- Portner, P. 2009. *Modality*. Oxford University Press.
- Prior, A. 1957. *Time and Modality*. Oxford: Oxford University Press.
- Reichenbach, H. 1947. *Elements of Symbolic Logic*. New York : Macmillan.
- Rocci, A. 2000. L'interprétation épistémique du futur en Italien et en Français: une analyse procédurale, *Cahiers de Linguistique Française* 22, 241-274.
- de Saussure, L. and Morency, P. 2011. A cognitive-pragmatic view of the French epistemic future. *Journal of French Language Studies* 22, 207-223.
- Smirnova, A. 2013. Evidentiality in Bulgarian: Temporality, epistemic modality, and information source. *Journal of Semantics* 30(4), 479-532.
- Sthioul, B. 2007. Informations conceptuelle et procédurale: la piste beauzénne. In L. de Saussure, J. Moeschler & G. Puskas (Eds.), *Information Temporelle, Procédures et Ordre Discursif*. (105-121) Amsterdam, New York: Rodopi.
- Squartini, M. 2004. Disentangling evidentiality and epistemic modality in Romance. *Lingua*, 114, 873-895.
- Sueur, J.-P. 1979. Analyse sémantique des verbes 'devoir' et 'pouvoir'. *Le français moderne* 2, 97-119.

- Sweetser, E. 1990. *From Etymology to Pragmatics: Metaphorical and Cultural Aspects of Semantic Structure*. Cambridge: Cambridge University Press.
- Tasmowski, L. 1980. Un 'devoir' opérateur. *Travaux de Linguistique I*, 43-58.
- Tasmowski, L. & Dendale, P. 1998. *Must/will* and *doit/futur* simple as epistemic modal markers. Semantic value and restrictions of use. In J. E. van der Auwera (Ed.), *English as a Human Language. To honour Louis Goossens* (325-336). Munich: Lincom Europa.
- Thomason, R. (1984). Combination of Tense and Modality, in D. Gabbay and F. Guenther (Eds.), *Handbook of Philosophical Logic: Extensions of Classical Logic* (135-165). Dordrecht: Reidel.
- Willett, T. (1988). A cross-linguistic survey of the grammaticization of evidentiality. *Studies in Language* 12, 51-97.