Tense in non-finite complementation—from syntax to the interfaces

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1 Introduction

This paper presents a syntactic-based model of Tense in complement clauses, with special focus on non-finite contexts. Since the notion "Tense" has proven to be rather difficult to define, I will first carefully separate morphological, syntactic, and semantic uses of Tense. As a consequence, we will see that various mismatches arise, and one aim of this paper is to understand these mismatches. The perspective taken is a syntax–first view where mismatches between form and meaning can naturally be modeled via syntax as a mediator between the interfaces PF and LF.

The second aim of the paper is to present an outline of a syntactic model of Tense in complementation that i) reflects the syntactic properties of complement clauses; ii) derives differences between finite and non-finite contexts; and iii) feeds in a streamlined way into the interfaces. I follow, in spirit, syntactic Tense approaches as in Zagona (1990), Stowell (1996, 2007), Demirdache and Uribe-Etxebarria (2004) and align them with syntactic observations about the structure of complement clauses, in particular the synthesis model presented in Wurmbrand and Lohninger (2023).

After briefly laying out a syntactic model of Tense where Tenses relate syntactic time arguments, I turn to Tense in complement clauses, emphasizing that embedded time arguments are always dependent on the matrix clause, independently of the morphosyntactic finiteness settings. The main phenomena related to embedding discussed are sequence of tense, *de se* Tense, as well as certain Tense–Aspect interactions. To classify complement clauses, a three-way split is proposed for which concrete syntactic accounts exist that can be used as the basis for developing the temporal organization of non-finite clauses.

The main conclusion reached in this article is that simple notions such as "dependent" vs. "anaphoric" tense cannot characterize the properties of complement clauses. A detailed syntax of different types of complements, on the other hand, allows us to align the temporal structure with the independently observed general syntactic structure of different complement types, detect implicational relations, and formulate operations that derive the mismatches.

2 The many notions of 'Tense'

In many traditional grammars, finiteness is correlated with tense: finite clauses are tensed, whereas non-finite clauses are tenseless. This view has been shown to be inadequate, however, in both typological and theoretical works, as it, often inconsistently, mixes morphological, syntactic, and semantic notions of both finiteness and tense. As a first step to delineating the object of this overview, let us therefore be specific about these notions as they will be used here.

Tense is relevant in syntax, morphology, and semantics. I will use TENSE (all caps) for semantic notions or values, *tense* (italic) for morphological ones, and TENSE (small caps) for syntactic ones. T refers solely to the syntactic head, and Tense is used as a cover term for any of the three uses when the distinction does not matter or is not established yet.

Syntactic TENSE is usually considered to be a value (e.g., PRES, PAST) in a syntactic head such as T. T may also be involved in case assignment (depending on one's view of case), subject agreement, and the morphology of the next lower verbal element. Semantic TENSE arises when the feature in T is interpreted (depending on one's approach, as a BEFORE/AFTER/WITHIN relation, an operator, or a pronoun). Finally, morphological *tense* is the overt marking on a verbal element, typically as a *tense morpheme*. In many cases, the three notions go hand-in-hand, as, for instance, in (1), where T would include a PAST feature, which is interpreted as a BEFORE relation (the reference time precedes the utterance time) or equivalent TENSE computation, and pronounced as the morpheme *-ed*.

(1) Nova smiled.

Perhaps the majority of cases, however, involve some kind of mismatch. Tense values are often not pronounced, as for instance PRES in English (and many other languages), which syntactically behaves like PAST in all the activities T engages in (Case, agreement), and the PRES value also shows an effect in semantics. Other mismatches include Tense that is pronounced but not interpreted, and Tense that is interpreted but not pronounced. A well-known case of the former is 'sequence of tense' [SOT] as in (2) where one interpretation is that the time of Nova's pregnancy is simultaneous (more specifically, it overlaps) with the time of her statement. In this interpretation, the embedded PAST/*past* does not trigger a BEFORE relation of the embedded event with respect to the matrix event. Thus, despite the morphological presence of *past* (leaving open for now the syntax of these constructions), it is not interpreted as such (indeed, languages without SOT use *present* in such cases).

(2) Nova said that she was pregnant.

Other instantiations of semantically vacuous ('fake') PAST/*past* can be found in counterfactual conditionals or wishes such as (3) (see Iatridou 2000). Despite the presence of *past* marking, the condition in (3a) does not hold at the PRESENT time (Mary does not know the answer NOW), and the desire in (3b) is an unfulfilled desire in the PRESENT (I don't have a car NOW).

(3) a. If Mary knew the answer, she would be the only one. [Iatridou 2000: 244, (47b)]
b. I wish I had/*have a car (at present). [Iatridou 2000: 239, (25a,b)]

The opposite situation arises in cases such as (4a) where the embedded clause is necessarily interpreted as occurring after the time of the matrix event, and a BEFORE relation as in (4b) is impossible. This FUTURE relation, however, cannot be expressed morphologically, (4c) (the German example in (4d) may be more telling here, since German allows, in principle, modals in infinitives), whereas there is a very long and productive syntactic tradition showing that in these constructions, syntactic TENSE/T is present.

(4) a. Nova decided yesterday [to leave (today/tomorrow/*a week ago)].
b. *Nova decided to have left.
c. *Nova decided to will leave.
d. Nova beschloss, wegzugehen / * weggehen zu werden.
Nova decided, away.to.go / * away.go to will.
Int. 'Nova decided to (*will) leave.'

The above cases, of course, involve infinitival complements, and it may be tempting to relate the impossibility of overt future to an incompatibility between overt future and infinitives. But the same point can be made for what are often referred to as 'subjunctive' clauses, in particular, in languages with no or only limited use of infinitives. One such language is Greek, where all complement clauses involve an agreeing T, possibly a morphologically unmarked PRES, which therefore may be classified as *finite*. As shown in (5), a complement

of *decide* can be introduced by either *oti* (comparable to English *that*), (5a), or *na*, which introduces a subjunctive clause (5b). Importantly, only the former can appear with the overt future marker—*future* is excluded in the subjunctive (5c), despite the complement being clearly interpreted as FUTURE (see also Roussou 2000, 2009).

(5) a. Apofasise **oti** θa agorasi to vivlio.
decided.PST.3SG that FUT buy.PFV.3SG DET book
'She decided that she will buy the book.'

b. Apofasise **na** agorasi to vivlio
decided.PST.3SG NA buy.PFV.3SG DET book
'She decided to buy the book.'

c. *Apofasise **na** θa agorasi to vivlio
decided.PST.3SG NA FUT buy.PFV.3SG DET book
'She decided to buy the book.' [Ioannis Katochoritis, p.c.]

Subjunctives and infinitives lead us to the (rather contentious) notion of Finiteness. While a morphological distinction between *finite* and *non-finite* forms is fairly straightforward in English (clauses count as finite if they involve either *tense*, *agreement* or an overt *modal*; otherwise, they are non-finite), this is not the case cross-linguistically. Morphological marking varies immensely across languages: tense marking may be absent altogether, modals may be *finite* or *non-finite*, *non-finite* forms (such as infinitives) may not exist in a language, languages may involve inflected infinitives (e.g., European or Brazilian Portuguese; see Raposo 1987, Modesto 2009, 2016), or inflection is used identically to simple main clauses (as we saw for Greek). Moreover, it has also been observed that distinctions between what would correspond to *finite* vs. *non-finite* in a language like English can be made by entirely different categories across languages. For instance, in addition to *marking* for tense and person, we also find *marking* for aspect, mood, illocutionary force, politeness, special forms not used in independent clauses, and/or nominal morphology on the verb (for an overview see the works in Nikolaeva 2007a). From a typological perspective, thus, it has been concluded that there is no single morphological definition of *finiteness* that holds cross-linguistically (see e.g., Cristofaro 2007, Bisang 2007, Nikolaeva 2007b). For that reason, I will not engage further in the many notions of Finiteness, but concentrate on Tense and Aspect in this paper.

Despite this terminological maze, I will show in this overview that by taking the syntactic properties of different types of clauses as a starting point, patterns arise in the mapping from syntax to the interfaces. This syntax–first perspective not only allows us to indirectly link morphology with semantics and formulate mismatches, but to also make implicational statements between these components which are otherwise not expected or explained.

3 Tense in complementation

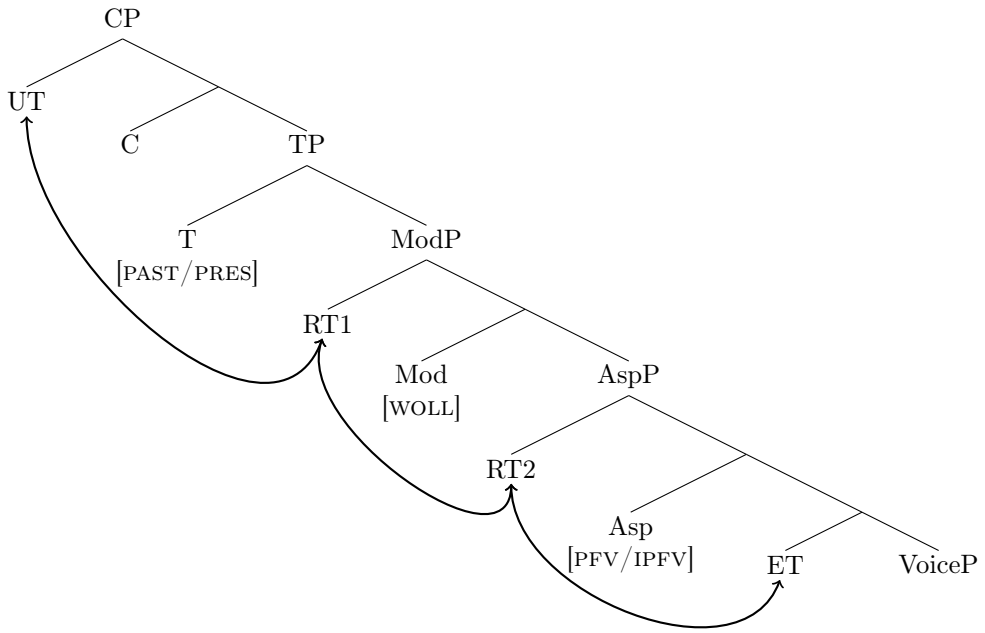
3.1 A syntactic model of Tense

Tense, in syntactic terms, is spread over the CP and TP domains and a main component of understanding the distribution of Tense is to determine the internal organization of these domains in different types of complementation. Before turning to non-finite complement clauses, I will first lay out a system of the syntax of Tense, which will be useful for comparing the Tense properties and dependencies in different types of clauses. This is mainly for expository and illustrative purposes, and does not entail that other models cannot be adopted.

Following Zagona (1990), Stowell (1996, 2007) and many others, time arguments are present in the syntax (Stowell refers to them as ZEIT PHRASES [ZP]), and, similar to DP arguments, can be modified, bound, and/or controlled. These approaches adopt and extend a (Neo-)Reichenbachian system of temporal notions (Reichenbach 1947, Klein 1994, 1995), distinguishing between UTTERANCE TIME [UT] (also called SPEECH TIME), REFERENCE TIME [RT] (also called TOPIC or ASSERTION TIME), and EVENT TIME

[ET]. Furthermore, I will also follow Klein (1994, 1995) and Demirdache and Uribe-Etxebarria (2004) in the view that Tense relates a RT to the UT, and Aspect relates the ET to a RT or a RT to another RT. The basic components of a simple future sentence are given in (6). As shown, I follow the approach that Future combines Tense and Modality, specifically the modal WOLL (see, among others, Condoravdi 2002, Copley 2002, Kaufmann 2005, von Stechow 1995). The structure in (6) combines the syntax with the reference of the time arguments (in syntax, the time arguments would be just ZPs, and the labels UT, RT, ET are given as descriptions of the nature of the different time arguments as arising through the calculation). The further details of the structure are described below.

(6)



Bi-directional arrows indicate a relation between two time arguments that is mediated by a temporal head. Thus in (6), T orders RT1 with respect to the UT, Mod orders RT1 and RT2, and Asp orders RT2 and ET. I use here the simplified presentation of time arguments as in Demirdache and Uribe-Etxebarria (2004). However, it should be noted that this makes the relations established by T or Asp between two time arguments somewhat difficult to formalize. A more complex structure is given in Stowell (2007), where the related time arguments occur as the specifier and complement of the relevant heads in a strict predication relation (e.g., ModP in (6) would itself be RT1 and UT would be in Spec,TP). Although this makes the syntax/semantics of the Tense calculation more transparent, the overall syntactic structure, in particular, the interaction of T with nominal arguments (e.g., the subject DP), becomes more complex. It also requires additional time variables embedded in a ZP, which are bound by the immediately c-commanding Z head, and which in turn can then bind/control further downwards. For the purpose of this paper, the simplified version should be sufficient, with the understanding that the formal process of relating two time arguments via a functional head is still to be developed. For that reason, I also give the relations not as uni-directional (in contrast to non-mediated binding relations; see below), since they can always be formulated in either direction. For instance, a relation mediated by a T head with the value PAST could be defined as 'RT1 is BEFORE UT' or as 'UT is AFTER RT1', and indeed both have been suggested in the literature (the first version is perhaps more common and will be used in the descriptions in this article since it better matches the morphosyntactic value, but see Demirdache and Uribe-Etxebarria 2004 for the latter).

Turning to the semantic calculation, in a main clause, the UT, like an unbound pronoun, is determined contextually (the time of the statement). PAST situates the lower time (RT1 in (6)) BEFORE the higher time (UT), PRES makes the two time arguments SIMULTANEOUS (more concretely, the RT overlaps the

UT), and WOLL situates the lower RT AFTER the higher RT (in addition to possibly also contributing other modal flavors). Lastly, Aspect hosts the values INCLUDES or IS INCLUDED. Following Pancheva and von Stechow (2004), Todorović and Wurmbrand (2015), among many others, PERFECTIVE requires the ET to be included in the RT; whereas IMPERFECTIVE and PROGRESSIVE require the RT to be included in the ET (there are of course many other Aspect properties, but for the current discussion these simplified terms should be sufficient).

Lastly, morphologically, the combination of TENSE and WOLL is pronounced as the future auxiliary: *will* in case of PRES, *would* in case of PAST, and *zero* if WOLL occurs without TENSE (see below).

In addition to relating two time arguments via a temporal head, a direct dependency between two time arguments in the form of binding or control has been proposed, which applies when there is no temporal head (or one without a semantic value) and effectively makes two time arguments "co-referent" in that their reference is identical, referring to the same time interval. This form of tense identification is relevant in complement clauses to which I turn in the next subsection.

3.2 Tense and Aspect in complement clauses

Complement clauses, in contrast to relative clauses, involve a temporal computation that necessarily relates the embedded Tense to the matrix Tense, independently of the type and form of complement clause (see, among others, Abusch 1997). The examples in (7) all involve an embedded clause with an embedded BEFORE value (leaving open here whether non-finite *have* corresponds to PAST or PERFECT). In a relative clause, (7a), this BEFORE relation can be established between the embedded RT and the main UT—i.e., the time of matrix and embedded events can be entirely independent from each other (as long as both are before the UT). In complement clauses, (7a)-(7c), this is not the case. The embedded event must occur before the matrix event (or simultaneously with it in case of SOT).

(7) a. A year ago, Nova met a teacher who got married yesterday/two years ago.
b. A year ago, Nova claimed that she got married *yesterday/two years ago.
c. A year ago, Nova claimed to have gotten married *yesterday/two years ago.

To derive this difference syntactically, I will, following Stowell (2007), assume that a time argument is always related to the most local higher time argument, but that relative clauses have a more flexible position in syntax—i.e., they (or the DP they modify; see Fox and Pesetsky 2005) can move (overtly or covertly) to a higher position. Thus, in complement clauses, the local time argument for the highest embedded time argument is always the matrix ET, whereas it may be a higher time argument, such as the matrix UT, in relative clauses if the LF position ends up above the matrix ET. Such dislocation also brings the relative clause outside the scope of the verb, which, as shown in Abusch (1988), Ogihara (1996), correctly correlates with obligatory *de re* ("about the thing") construals of the content of the relative clause in such cases. Note however, that relative clauses can also be construed *de dicto* ("about what is said")(Abusch 1988, Stowell 2007), in which case no dislocation would take place and the embedded Tense is ordered with respect to the matrix ET.

To understand the specific relation between an embedded UT and a higher time argument in complement clauses, one important additional restriction is necessary: the embedded UT can be related to the matrix ET extensionally (the actual time) or intensionally (the time that the attitude holder believes it is when they hold a belief or make a claim). This is illustrated in (8). The context in this case is such that the attitude holder, Nova, is mistaken about the time and makes a statement about the time of Grey's leaving in terms/in relation to the time she believes it was when he left. Reporting her statement, the time of leaving can be given as the actual time of leaving, i.e., 2pm (an hour before the actual time of Nova's statement at 3pm) as in (8a), or as the leaving time according to Nova's belief, i.e., 4pm (i.e. an hour before the time she believed she made the claim). Thus, in the special case that the attitude holder is mistaken about the time (and the speaker knows this), a sentence like (8a) is possible, despite the embedded PAST event looking as if it occurs after the matrix time. The temporal dependencies, however, are still correctly met, since the

embedded ET of 4pm is a *de se* ("of oneself") Tense, and according to Nova's belief that Time is BEFORE the matrix ET.

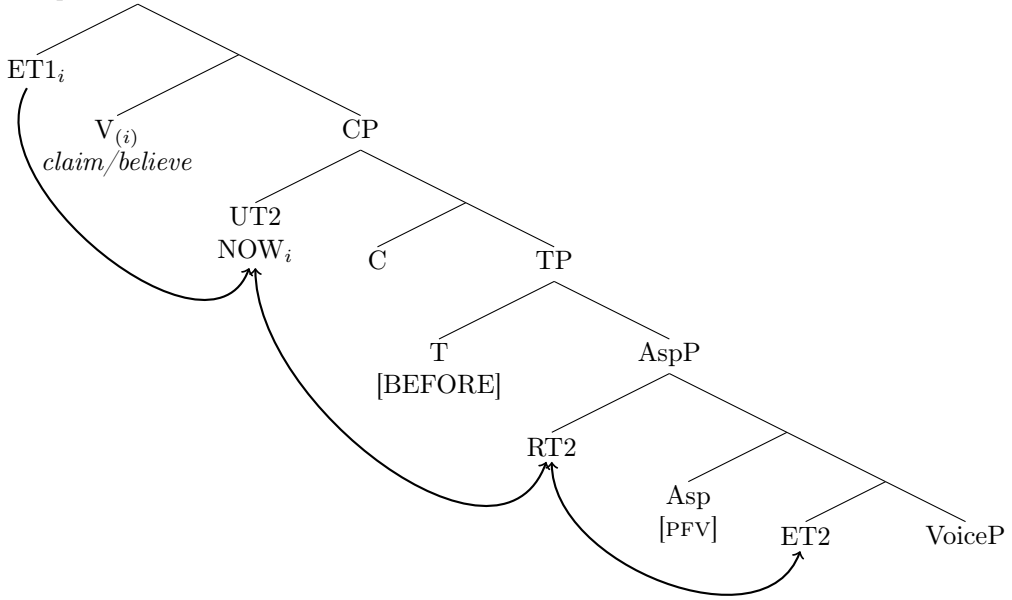
(8) Nova's watch is not working—it is 2 hours fast (when she checked it at the actual 3pm, it shows 5pm already). She knows that Grey left an hour ago.

a. She says: "Grey left an hour ago".
I tell Leo: At 3pm, Nova claimed that Grey left at 2pm. *de re*

b. She says: "Grey left at 4pm".
I tell Leo: At 3pm, Nova claimed that Grey left at 4pm. *de se*

To model the tense dependency found in complementation syntactically, I follow Stowell (2007) in relating the matrix ET to the embedded UT via a control/binding relation, with the additional restriction, possibly a presupposition, that an UT is always a short "NOW" interval (presumably the beginning of the matrix ET). I will come back to the reason for this below. The relevant parts of a complement clause configuration are given in (9). The *de re* construal simply involves a binding relation between ET1 and UT2. For the *de se* construal, I suggest (though this would need to be worked out in more detail) that it is the intensional verb itself that mediates the relation between ET1 and UT2 (indicated in (9) via indexation). For the examples in (8), UT2 would thus either correspond to 3pm (*de re*) or 5pm (*de se*). The rest of the tense computation proceeds as before: the embedded T orders RT2 BEFORE UT2, and Asp, if PERFECTIVE, makes RT2 include ET2. RT2 is modified by the time adverbials 2pm, (8a), or 4pm, (8b), and in both cases, RT2 is BEFORE UT2: in (8), RT2 (2pm) is one hour before the actual (*de re*) UT2 (3pm), and in *de se*, RT2 (4pm) is one hour before the (incorrectly) assumed UT2 (5pm).

(9) Complement clauses



The restriction in (7b)-(7c) also follows. Time adverbials, as given in these sentences, modify and thus restrict the RTs.[1] The time adverbial 'a year ago' restricts a matrix RT, which (due to PFV) includes the matrix ET, ET1 (the claim thus happened sometime in the previous year). ET1 then binds UT2 (we are only concerned with a *de re* construal here) and the embedded T orders the embedded RT2 BEFORE UT2, hence also BEFORE ET1. If RT2 is modified, hence further restricted, a well-formed interpretation can only

[1] In contrast to Demirdache and Uribe-Etxebarria (2004), I suggest that time adverbials or temporal clauses only modify RTs. Since there is an additional RT due to aspect, ambiguity can still be derived by modifying different RTs, and no direct modification of ET is necessary.

arise when the time adverbial is consistent with the ordering of RT2 BEFORE UT2/ET1. A time adverbial such as 'two years ago' is thus possible, but an adverbial like *yesterday*, that in this context refers to a time later than ET1, leads to a clash. In that case, RT2/ET2 would have to be before and after ET1 at the same time—before due to the embedded PAST/PERFECT, and after due to the adverbial *yesterday*. Obviously, this is not possible. In the relative clause in (7a), on the other hand, the embedded T can order UT2 with respect to UT1, since the clause has moved and thus ET1 is not the closest time argument to bind UT2.

The final point concerns the importance of Aspect, which is illustrated in (10). If a RT corresponds to a point or very short interval (such as the UT), only IMPERFECTIVE/PROGRESSIVE yields a possible outcome, since PERFECTIVE would require the ET to be included in the RT, which is typically not possible (see Pancheva and von Stechow 2004, Wurmbrand 2014b). For that reason, simple, non-progressive PRES cannot be interpreted as an ongoing event, but only as a generic habitual, see (10a) vs. (10b). The same is the case in embedded contexts, (10c) vs. (10d). Finally, this property is not restricted to PRES, but also found with PAST, whenever the RT is construed as too short to include the ET, as in (10e) vs. (10f). In (10e), the *when*-clause modifies the embedded RT and restricts it to the point of knocking, which is too short to include the ET of singing, thus excluding PERFECTIVE. IMPERFECTIVE, as in (10f), on the other hand, is possible.

(10)
a.	Nova sings in the kitchen.	only habitual
b.	Nova is singing in the kitchen right now.	ongoing possible
c.	Nova claims that Grey sings in the kitchen.	only habitual
d.	Nova claims that Grey is singing in the kitchen right now.	ongoing possible
e.	*Nova claimed that Grey sang in the kitchen when the mailman knocked.	*ongoing
f.	Nova claimed that Grey was singing in the kitchen when the mailman knocked.	ongoing

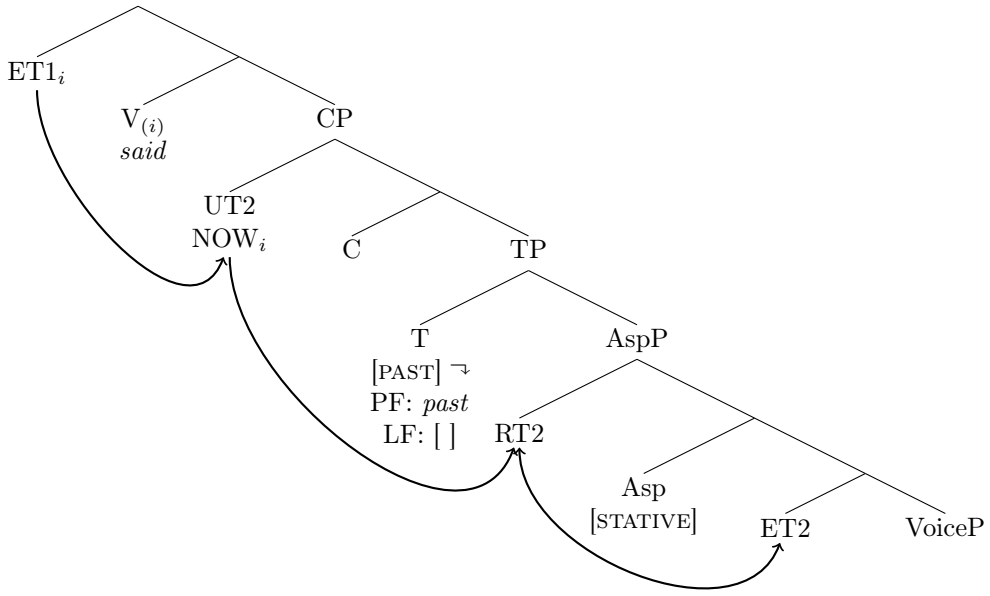
To conclude, a main take-home point of this section is that in complement clauses, whether finite or non-finite, the highest time argument is always dependent on a matrix time argument, which will be important to keep in mind when we turn to non-finite complements. Before doing so, however, I return to SOT and show how this phenomenon can be derived in the syntactic Tense model developed here.

3.3 SOT

From a syntactic perspective, there are two basic options for how to view the mismatch we find in SOT contexts. First, as suggested in Ogihara (1996), the SOT interpretation as well as the morphology–semantics mismatch can be derived via covert deletion of a tense feature. As shown in (11), the embedded T merges with a PAST feature, which is covertly deleted—i.e., after the structure is submitted to PF (hence PAST still feeds into *past*), but before it reaches LF (hence PAST does not feed into PAST). [2] The temporal calculation then proceeds as usual. The embedded UT2 is bound by the matrix ET1. Since there is no T value left, this means in the current model that the relation between UT2 and RT2 is not mediated by T, but instead UT2 identifies RT2 directly. The interpretation thus is that the time of the pregnancy, ET2, includes RT2, and due to the identification of RT2 with UT2, also ET1.

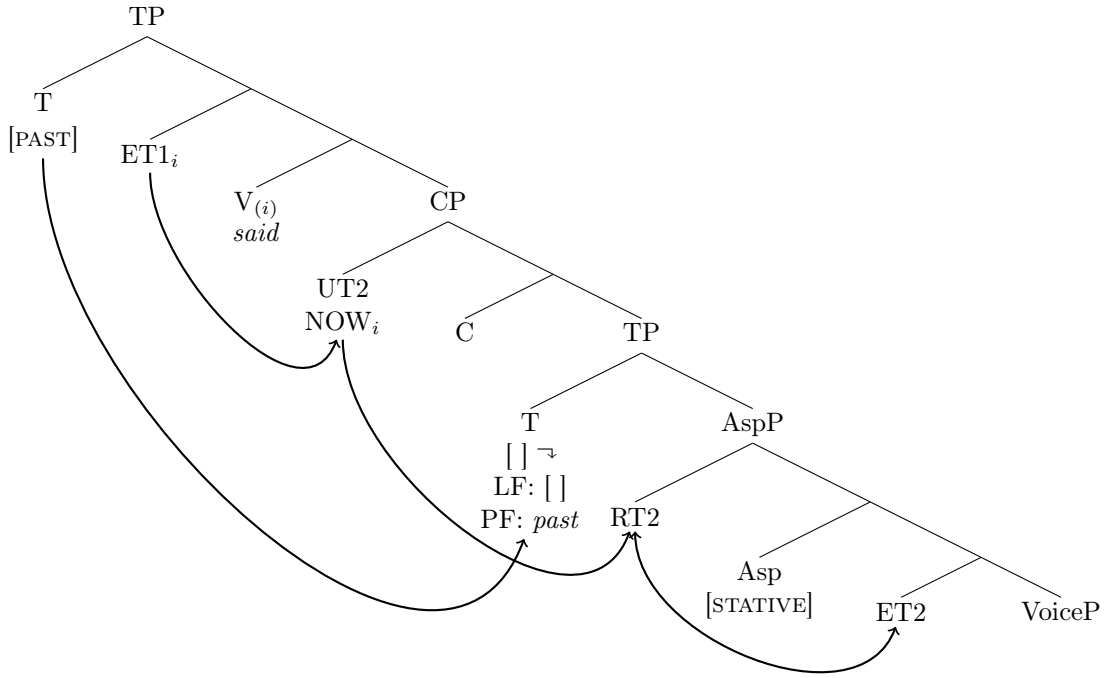
(11) Nova said that she was pregnant. SOT: T-deletion

[2] As shown in Ogihara (1996), the SOT deletion process is not arbitrary, but can only occur when the next higher T shows the same value. That is, an embedded PAST or PRES can only be deleted when there is a PAST or PRES, respectively, in the clause immediately above. There are other approaches to SOT (see, for instance, Stowell 2007), which assume an underlying PRES in an SOT clause, deriving the simultaneous interpretation via a relative PRES. The disadvantage of such an approach is that the syntax–PF mapping, as well as the lack of double access (see below) in SOT in contrast to overt *pres* are less obvious.



The second option for SOT is a T-copying approach where the embedded T node is inserted without any Tense value, but the PF value is acquired via feature transfer (see, e.g., Kratzer 1998, Stowell 2007). Concretely, as shown in (12), the embedded T is inserted empty and feeds as such into LF. The pronunciation value, on the other hand, is acquired via agreement with the matrix T. Importantly, this feature transfer mechanism only affects PF and not LF (e.g., the features transmitted are pure morphosyntactic features and not interpretable features).

(12) Nova said that she was pregnant. SOT: T-copying



Both approaches yield the same result (a structure where T is morphologically realized with a value that is not interpreted semantically), and the choice between the two approaches is mostly a matter of one's theoretical commitments to the operations involved (LF deletion vs. PF feature copying). The unifying aspect of both modeling options is that an LF interface operation applies, which Onea et al. (2023) have dubbed redundancy [ℜ]:

(13) ℜ: The output of an operation is insensitive to some feature specified in the input.

Such an ℜ rule also has the advantage of providing a way to approach cross-linguistic variation. As is well known, not all languages allow SOT (see Sharvit 2003a for an overview). If a language lacks this option (i.e., ℜ does not apply), a mismatch could not be derived and a TENSE value that feeds into both PF and LF (i.e., typically *pres*/PRES) has to be used.

3.4 Types of complementation

Although complementation shows many different types, the previous cross-linguistic and typological research on complementation (see Lohninger and Wurmbrand, to appear, for an overview) has shown that different semantic types of complementation align in an implicational way (not an absolute one) with the morphosyntactic options. While there is no universal definition of finiteness, a more abstract concept of clausal (in)dependence can be used to distinguish different types of complement clauses. Following Wurmbrand and Lohninger (2023), different classes of complementation can be ranked according to their complexity and independence—the more complex a structure (syntactically and semantically), the more independent and less transparent it is.

Complements of speech and belief verbs (I will refer to these as Proposition complements) are cross-linguistically the most independent, and in some languages (e.g., most Slavic languages), but not universally, they can only occur as (morphosyntactic) finite complements (see Wurmbrand et al. 2020). As shown in (14), non-finite Proposition complements are possible in English, and as for the temporal interpretation, these complements can either involve a simultaneous construal, (14a), or a back-shifted one, if the perfect auxiliary is used as in (14b).

(14) a. They claimed to be sitting around a camp fire.
b. They claimed to have been to the beach.

A second complementation class is what Wurmbrand and Lohninger (2023) refer to (following Ramchand and Svenonius 2014) as Situation complements (note that these terms should be seen mostly descriptive here). As illustrated in (15), *decide*-complements are irrealis (the embedded event is unrealized at the matrix time), triggering a forward-shifted interpretation and disallowing a back-shifted one.[3]

(15) a. They decided to go to the beach tomorrow.
b. *They decided to have gone to the beach.
(unless there is a meaning shift of *decide*)

The third broad complementation class involves complements such as the ones in (16), where the embedded Tense is most dependent and tightly linked to the matrix Tense, triggering a simultaneous (or overlapping) interpretation. Since these types of complements show no sign of any embedded TENSE/TENSE (Wurmbrand 2001, 2014b), Wurmbrand and Lohninger (2023) refer to them as bare Events (following, among others, also Rochette 1988, 1990, 1999).

(16) a. They managed to go to the beach (*tomorrow).
(unless *manage* is coerced into *manage to arrange*)
b. They began to go to the beach (*tomorrow).

[3]In some cases, and for some speakers, it is possible to shift the interpretation of *decide* to a performative or *consider*-like interpretation. In that case, (4b) may be possible, but it would then show all properties of a Proposition configuration (see Wurmbrand and Lohninger 2023 for further details).

Although there are many interesting finer-grained distinctions in complementation (see Givón 1980, Lohninger and Wurmbrand, to appear), I will restrict the further discussion to these three classes, since this three-way split is found cross-linguistically and shows clear observable differences in the syntax that allow us to establish a direct mapping between syntax and the interfaces. Before laying out the structures and tense properties of the three types of complements in detail, I provide a short summary of a range of properties to further justify the need to distinguish between these three classes (for data and further details see Wurmbrand 2001, 2014a, 2015, Wurmbrand and Lohninger 2023).

Tables 1 and 2 summarize the distribution of various (in)dependence properties in a number of languages. Table 1 lists properties that indicate independence, Table 2 lists dependence properties. As can be seen, Proposition complements obligatorily display the independence properties and prohibit the dependence properties, whereas Event complements show the dependence properties and overall do not allow the independence properties (notorious exceptions are German and Dutch where all three types of complements can involve all types of structures). The interesting case is Situation complements, which clearly lie in the middle: they either allow both dependence and independence properties (such as the types of clause introducers, finiteness), or they side with one of them. For instance, in Buryat, Situation complements, like Propositions, can be full CPs and, in contrast to Events, cannot be realized as converb constructions. On the other hand, in Croatian, Situation complements strongly prefer to be non-finite, like Events, whereas Propositions must be finite. Even mixed cases exist, as the distribution of subjects in Mandarin shows: Situation complements, like Propositions, allow overt (pronominal) subjects, but like Events and unlike Propositions, coreference is obligatory.

	Proposition	Situation	Event
German, Dutch (maximal structures)	CP	CP	CP
Bulgarian clause introducer	*če*	*če* (+FUT)	**če*
Greek clause introducer	*oti*	*oti* (+FUT)	**oti*
Polish clause introducer	*że*	*że*	**że*
Buryat	CP	CP	*CP
English finite	possible/required	possible	*
Croatian finite	required	dispreferred	*
Mandarin embedded overt subject	free reference	coreferent pronoun	*
Serbian overt subject (*da* clause)	possible	possible	*
Partial control	possible	possible	*

Table 1: Independence properties

	Proposition	Situation	Event
German, Dutch (reduced structures)	*	TP, *VP	TP, VP
Bulgarian clause introducer	**da*	*da*	*da*
Greek clause introducer	**na*	*na*	*na*
Buryat	*converb	*converb	converb
English non-finite	*/possible	possible	required
Croatian non-finite	*	possible/required	required
Clitic climbing Romance	*	*	possible
Clitic climbing Germanic, Slavic	*	possible	possible
Voice restructuring	*	*	possible

Table 2: Dependence properties

While the opposite behavior of Propositions and Events can be modeled in various ways (e.g., via full vs. reduced clauses, some notion of 'finite' vs. 'non-finite'), the optionality and flexible behavior of Situations

cross-linguistically (and of Events in some languages) have resisted a successful treatment with only a binary complementation distinction. Instead, following Wurmbrand and Lohninger (2023), the cross-linguistic distribution points to a scale of (in)dependence, with Propositions on the independence end, Events on the dependence end, and Situations in the middle. In the next section, I will provide the structures of the three types of complements, as well as their tense/aspect computations, and we will see how a syntax–first view can predict exactly this optionality.

4 Tense structures in non-finite contexts

4.1 Proposition complements

Proposition complements are syntactically the most complex in that they can only be fully finite in many languages and, even when non-finite construals are possible, they generally block clause-bound phenomena across them (unless meaning shifts apply; see Lohninger and Wurmbrand, to appear). An example is given in (17) from German, where Event and Situation complements allow the placement of a pronoun originating in the embedded clause in the matrix clause, but Proposition complements prohibit it. This phenomenon has been referred to as restructuring or clause union, and is generally assumed to be blocked across (full) CPs (see Bondaruk 2004, Dotlačil 2004, Marušič 2005). Following this syntactic perspective leads to the conclusion that Proposition complements always involve at least certain CP-layers.

(17) a. weil **ihr** der Grey versucht / beschlossen hat, den Salat zu stehlen.
since her.DAT the.NOM Grey tried / decided has the salad to steal
'since Grey tried/decided to steal the salad from her.'
b. *weil **ihr** der Grey behauptet hat, den Salat gestohlen zu haben.
since her.DAT the.NOM Grey claimed has the salad stolen to have
'since Gray claimed to have stolen the salad from her'

The structure for finite Proposition complements was given in (9). In non-finite Proposition complements in English, a difference arises, not just for the morphosyntax, but also the semantics of Tense. A well-known property of English PRES (in contrast to PAST) is that it must always be evaluated with respect to the speech time (the highest UT), even in complement clauses. English PRES is thus also referred to as indexical or absolute (see Enç 1987, Abusch 1998, Ogihara 1995, 1996). As shown in (18a), this leads to a so-called 'double access' reading when PRES/*pres* is embedded under a PAST, in that the embedded ET must include both the matrix ET (via embedded UT and RT) as well as the matrix UT due to the indexical nature of English PRES. In (18a) and (18b), the only interpretation would be one where the time of the pregnancy spans (at least) from the time of the claim/belief to the time of the utterance, which is impossible given the length of human pregnancies. Importantly, non-finite Proposition complements, (18c) and (18d) do not require a double-access construal.

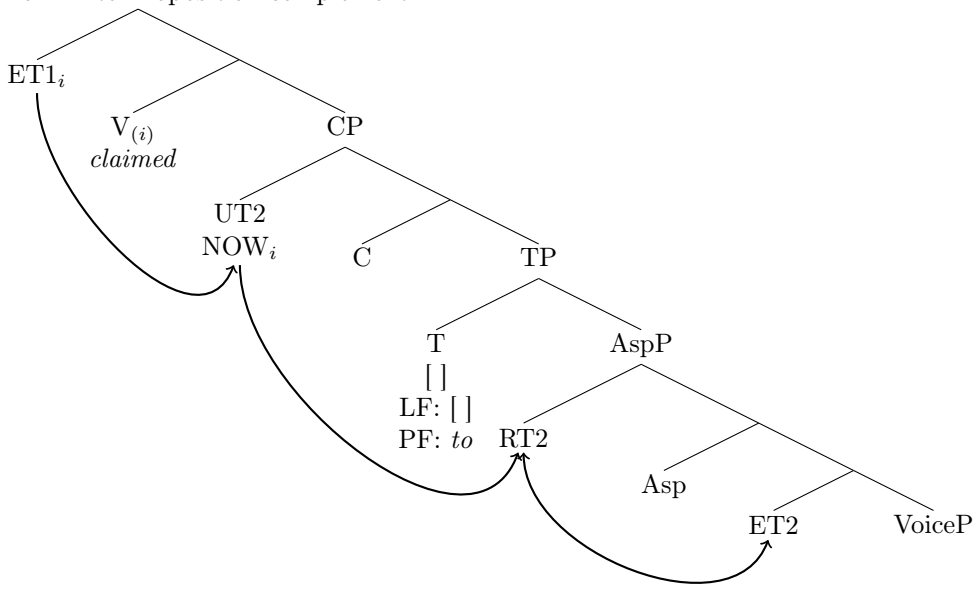
(18) a. #Five years ago, Julia claimed that she is pregnant.
b. #Five years ago, it was believed that Julia is pregnant.
c. Five years ago, Julia claimed to be pregnant.
d. Five years ago, Julia was believed to be pregnant.

[Wurmbrand 2014b: 432, (58)]

A way to understand this difference is to assume that non-finite Proposition complements, despite projecting (some layers of the) TP and CP-domains, lack a Tense value as in (20). This reduced T-content could be either a base-generated null Tense head as in Kratzer (1998), or a lack of Tense value due to SOT of an embedded PAST (but without pronunciation of *past*, presumably due to non-finiteness), as suggested in Pesetsky (2021). Under both approaches, we could refer to Tense in non-finite contexts as deficient in the sense of the Onea et al. (2023) notion of deficiency [$\mathfrak{D}$]:

(19) $\mathfrak{D}$: An operation that presupposes a certain feature applies to a grammatical entity that lacks it.

(20) Non-finite Proposition complement



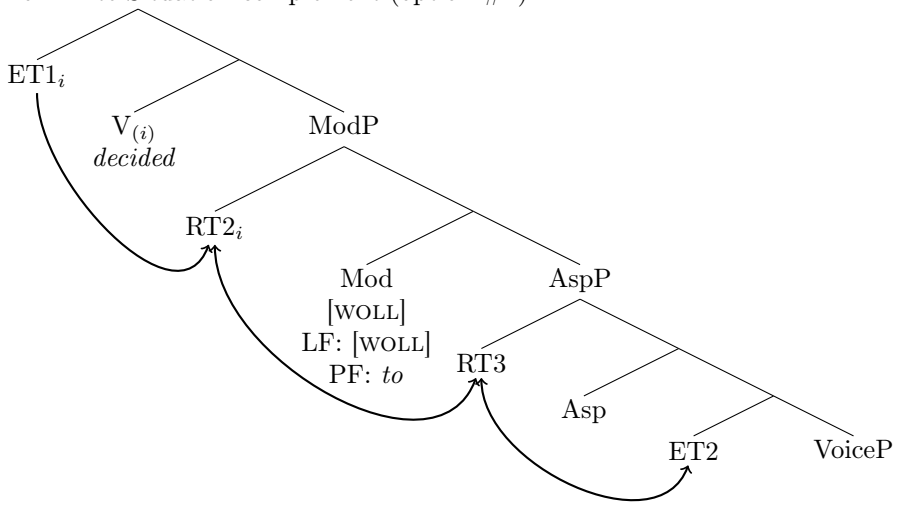
Independently of what specific path one takes, the important properties are that, at least at some level, a full clausal structure is present to make Proposition complements non-transparent syntactically, and the embedded non-finite Tense does not behave like a semantic absolute PRES in English. A ZERO tense value as outlined above allows us to have a rich syntactic structure, derive the non-finiteness in these constructions (a null Tense is spelled out as *to+infinitive* instead of *past/pres*, possibly it is also involved in the covertness of the subject), and yield the correct temporal interpretations. In addition to making non-finite Proposition complements non-transparent for operations such as pronoun movement or clitic climbing, the presence of an embedded CP is also motivated by the same aspectual effects found in finite complements, which, as I suggested above, point to the presence of a short UT interval. Parallel to (10), the non-finite complements in (21) block an ongoing interpretation of the embedded event, unless IMPERFECTIVE/PROGRESSIVE is used.

(21) a. Nova claims to sing in the kitchen. only habitual
b. Nova claims to be singing in the kitchen right now. ongoing possible

4.2 Situation complements

In many languages, Situation complements show transparency effects, as was illustrated in (17) (see Wurmbrand 2015, Wurmbrand and Lohninger 2023 for many other cases). If such placement of embedded elements in the matrix clause is blocked across CPs, Situation complements must have the option of not projecting a CP. I suggest that this is indeed the case and that one possible structure for Situation complements is as in (22).

(22) Non-finite Situation complement (option #1)

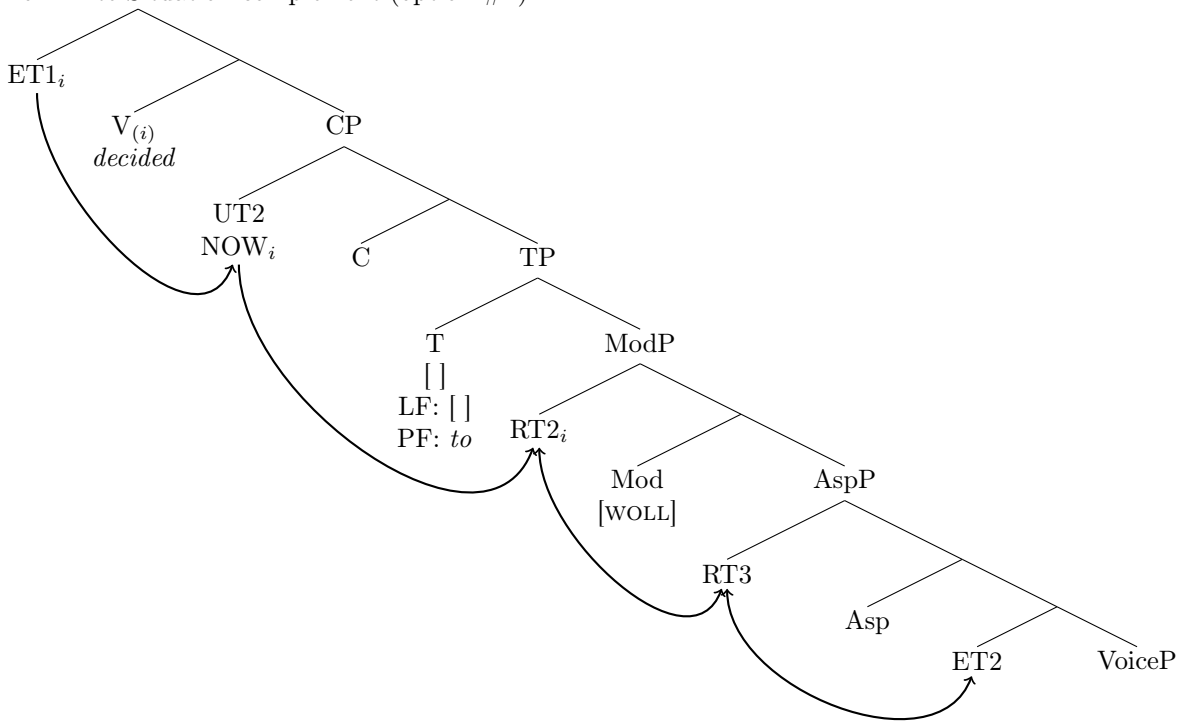


As for the temporal interpretation, RT2 is directly bound by ET1 (T being null does not contribute any specific relation, but behaves like a relative PRESENT). The modal WOLL then orders RT3 as AFTER RT2 (and ET1 by transitivity), and Asp gives the inclusion relation between RT3 and ET2. Since there is no T value, WOLL is not pronounced in languages like English, since there are only morphological forms for PRES+WOLL and PAST+WOLL (this could again be seen as a case of $\mathfrak{R}$, this time in the mapping between syntax and PF, where a value is interpreted but not pronounced, unless, as indicated in the structure, *to* is taken as the pronunciation of WOLL).[4] Lastly, unless the embedded RT3 is further restricted, both IMPERFECTIVE and PERFECTIVE are possible (RT3 refers to a future interval of unspecified length), as shown in Wurmbrand 2014b for English and Todorović and Wurmbrand (2015) for Serbian.

While the structure in (22) is motivated by transparency phenomena, I indicated above that it is not the only option for Situation complements. In section 3.4, we saw that Situation complements cross-linguistically can also look syntactically (but not semantically) like Proposition complements. Following the *synthesis* approach in Wurmbrand and Lohninger (2023), this optionality is expected. In that approach, syntax is, to a large extent, independent of semantics and may perform 'its own business'. The main restrictions are interface output conditions that evaluate, and possibly filter out, derivations that do not meet the constraints imposed by the interfaces. A main condition of a Situation configuration involving a verb like *decide* is that the content of the complement must be unrealized at the time of the matrix event. Importantly, such a condition can be met in different ways: by a reduced non-finite structure involving WOLL as in (22), by a full finite CP involving a future modal (*She decided that she will/would leave*), or by a full non-finite CP-structure as in (23). The irrealis requirement is still guaranteed by the modal WOLL, which orders the lower RT3 as AFTER RT2; RT2 is bound by the embedded UT2 (since T has no value), which in turn is bound by ET1.

[4]Involving an $\mathfrak{R}$ effect could again lead us to a more systematic implementation of morphosyntactic variation: keeping the syntactic structure constant, employing or not employing $\mathfrak{R}$ would yield different PF outputs. I thank a reviewer for prompting me to think about morphological variation in this way.

(23) Non-finite Situation complement (option #2)



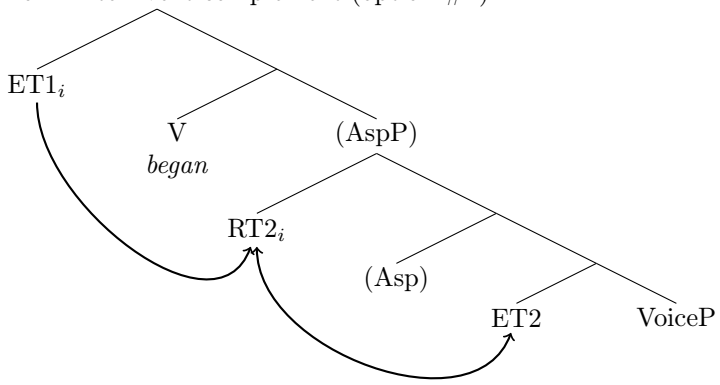
The structures in (22) and (23) differ SYNTACTICALLY, but, at least eventually, not SEMANTICALLY. If any transparency property is to take place, only the reduced structure will be possible, but otherwise either structure can be generated with the intended interpretation output. Assuming a model where syntax is not determined by semantics but is autonomous, optionality is not only unproblematic but it is in fact expected, as long as two syntactic derivations yield the same output.

4.3 Event complements

The last class of complements can occur as a syntactically very reduced complement, lacking embedded C, T, and sometimes even Voice properties. Matrix predicates in this class belong to the core of restructuring predicates and in some accounts are even treated as functional elements in the main clause (see Wurmbrand 2001, 2007, Cinque 2004, Grano 2015). As shown in Table 1, in many languages, these complements resist full clausal structures, but given that at least some languages allow full CP-complementation as well, this option must, in principle, still be available in the grammar. Let us start with the reduced structure in (24). Lacking CP and TP domains results in a direct binding relation between the matrix ET1 and the embedded RT2 (or ET1 and ET2 if Asp is also missing)[5], making them co-referent and thus yielding a simultaneous interpretation.

[5]Event complements differ regarding how reduced they are. In many cases, viewpoint Aspect is clearly present, which is why I include it as an option in the structure. It is also interesting to note that in Event complements, embedded Aspect may be restricted based on the matrix verb (e.g., in Greek, aspectual verbs like *start* can only occur with embedded *imperfective*, whereas *try, dare, forget* do not show this restriction; see Christopoulos 2022). This is expected if there is no CP/TP and the matrix verb can directly impose restrictions on the embedded Aspect.

(24) Non-finite Event complement (option #1)



Note that many Event complements, in contrast to Situations and Propositions, appear to resist *de se* interpretations, which could be seen as an effect of the missing CP and TP domains. As shown in (25), a Situation complement of a verb like *decide* allows both *de se* and *de re* interpretations.[6]

(25) Context: Nova loves to solve puzzles, and every day she does a puzzle. In the morning she thinks about when she would do her daily puzzle and today she decided that she will do it at 8pm. But she is mistaken about the time—she did not switch to daylight savings time, so what she thinks is 8pm is in fact only 7pm.

a. Nova decided to do her daily puzzle at 7pm. *de re* possible
b. Nova decided to do her daily puzzle at 8pm. *de se* possible

Event complements as in (26), on the other hand, either exclude a *de se* interpretation entirely, as is the case for complements of verbs like *begin* (or *manage*), or may only marginally allow it in complements of *try* (a relevant connected observation made in Sharvit 2003b is that *try* complements have an extensional component).[7]

(26) Looking at her watch, when it showed (the wrong) 8pm, she started doing her puzzle.

a. Nova began to solve her daily puzzle at 7pm. *de re* possible
b. #Nova began to solve her daily puzzle at 8pm. *de se* impossible
c. Nova tried to solve her daily puzzle at 7pm. *de re* possible
d. ?Nova tried to solve her daily puzzle at 8pm. *de se* impossible?

Finally, a cross-linguistically very restricted option for non-finite Event complements is to project a larger structure. Since Event complements, like Proposition complements (without Perfect) but unlike Situations, trigger a simultaneous interpretation, no WOLL can be present. In contrast to Proposition complements, however, ongoing episodic interpretations are possible in Event complements without requiring PROGRESSIVE/IMPERFECTIVE, as in (27).

(27) a. At 5pm, she tried to read a book.
b. At 5pm, she claimed to *read/be reading a book.

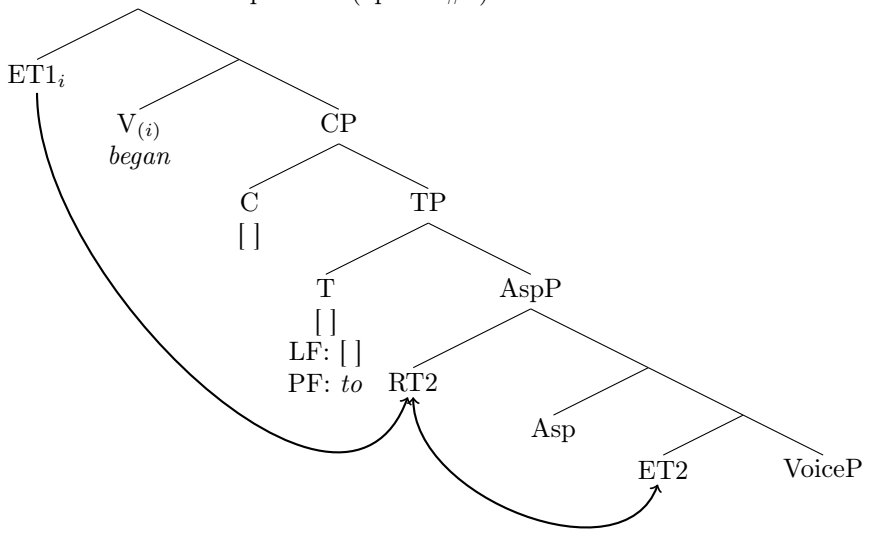
This difference, I suggest, lies in the lack of *tense*/TENSE/TENSE in Event complements. Thus, if a full clausal structure is present, it would have to be temporally deficient in both the CP and TP-domains as in

[6] See Satık and Wurmbrand (2022) for experimental evidence that *de re* interpretations, although restricted, are nevertheless not excluded in infinitives, not even for PRO.

[7] The data are not entirely clear at this point; speakers show much more uncertainty in cases like (26d), and further research, possibly via experimental testing, is necessary to fully establish the results. However, even if a *de se* interpretation is not excluded, there is clearly a difference between Proposition/Situation complements and Event complements, which goes hand in hand with the syntactic observation that the latter can involve highly reduced structures, lacking domains that responsible for adding time and world parameters to the structure.

(28), not including an embedded UT and lacking any other Tense values. Such a structure may be considered highly uneconomical, unless a language has other (syntactic) needs for having it (e.g., the lack of infinitives).

(28) Non-finite Event complement (option #2)



5 Conclusion

In this paper, I have developed a syntactic temporal model, following the approach that Tenses relate syntactic/semantic time arguments. Based on independent morphosyntactic properties, complement clauses can involve different levels of syntactic complexity, which goes hand in hand with the distribution of temporal heads and time arguments.

Regarding the classification of Tense in complementation, it may be tempting to see some of the differences outlined above in terms of notions such as "anaphoric" or "independent" Tense, where, for instance, the former characterizes Event complements and the latter Propositions. However, we have seen that this would be misleading in several ways. First, the highest time argument in all complement clauses is dependent on the matrix ET, even in finite Proposition complements (the syntactically most independent type of complement). Second, some form of binding (hence anaphoricity) is also involved in non-finite Proposition complements to derive the relative PRESENT interpretation, as well as the calculation of the RT whenever T has no value. Third, such binary notions do not cover the three-way split of complement clauses.

Finally, let us come back to the relation between Tense and Finiteness. Bianchi (2003) and Adger (2007), for instance, suggest that FINITENESS is responsible for identifying the embedded ET/RT with the UT and/or the relation of participants to the external logophoric center, the external speech event. While this is a possible approach for main clauses, it does not carry over to embedded clauses. Bianchi (2003, 7) already qualifies the claim that "A finite verb form can encode the relation of E/R [ET/RT] to S [UT]" with "at least in main clauses." In complement clauses, the temporal orientation is not determined by the speech time, but is always evaluated with respect to the matrix ET. Furthermore, according to Bianchi (2003, 7), "A non-finite form does not encode any relation to S [UT]." Again, this is true for complement clauses in general (with the only exception of deictic English PRESENT).

The system I have proposed leads to a different characterization of non-finite Tense. The properties discussed are summarized in Table 3.

	Proposition	Situations	Events
Tense dependence	matrix ET	matrix ET	matrix ET
Embedded Time arguments	UT, RT, ET	(UT), RT, ET	(RT), ET
T value	[ ]	[ ]	no T
Other possible temporal heads	Perfect, Mod	only WOLL	—
Non-finite overt Future	*	*	*

Table 3: Temporal organization of non-finite complements

To reiterate, all complement Tenses are dependent on the matrix ET. Similarly, the Time arguments (UT, RT, ET) are (calculated) the same as in finite clauses, whenever the domains hosting them are syntactically present (the only exception would be Event complements projecting an entire CP, which we have seen is cross-linguistically rather restricted). The only true difference between *finite* and *non-finite* clauses arises regarding the VALUE/VALUE of T. While finite complements typically involve a Tense value (PAST, PRES), non-finite complements, at least in English, may involve syntactic T, but only if this head hosts no value. Importantly, this correlation only goes one way: whenever *non-finite*, the T value is null, but not vice versa, since *finite* complements may also involve a null T value (at least SEMANTICALLY), as we have seen for SOT clauses and subjunctives.

To conclude, the syntactic TENSE system modeled here for complementation is in part independent of the semantics (i.e., the TENSE and time argument structure is not determined by semantics), but nonetheless allows us to feed important information into the semantic temporal computation. These include i) the general Tense/time argument dependency in complement clauses, making the temporal structure always relative to the matrix ET (not the matrix UT); ii) size differences, which may translate into differences in the availability of *de se* TENSE, embedded UT and/or WOLL; iii) a hub for PF–LF mismatches. We have seen that it is essential to carefully separate the notions *tense*/TENSE/TENSE, and by considering the different components of Tense, in particular also the syntactic structure, many things fall into place and a consistent system of the temporal properties of complement clauses can be formulated.

References

Abusch, Dorit. 1988. Sequence of Tense, Intensionality and Scope. In *Proceedings of the 7th West Coast Conference on Formal Linguistics (WCCFL 7)*, ed. Hagit Borer, 1–14. Stanford: CSLI Publications.

Abusch, Dorit. 1997. Sequence of tense and temporal de re. *Linguistics and Philosophy* 20:1–50.

Abusch, Dorit. 1998. Generalizing tense semantics for future contexts. In *Events and grammar*, ed. Susan D. Rothstein, 13–33. Dordrecht: Kluwer Academic Publishers. Type: Book Section.

Adger, David. 2007. Three domains of finiteness: A minimalist perspective. In *Finiteness: Theoretical and empirical foundations*, ed. Irina Nikolaeva, 23–58. Oxford: Oxford University Press.

Bianchi, Valentina. 2003. On finiteness as logophoric anchoring. In *Temps et point de vue/Tense and point of view*, ed. Jacqueline Guéron and Liliane Tasmovski, 213–246. Paris: University Paris Nanterre.

Bisang, Walter. 2007. Categories that make finiteness: Discreteness from a functional perspective and some of its repercussions. In *Finiteness: Theoretical and empirical foundations*, ed. Irina Nikolaeva, 115–137. New York: Oxford University Press.

Bondaruk, Anna. 2004. *PRO and control in English, Irish and Polish: A Minimalist analysis*. Lublin: Wydawnictwo KUL.

Christopoulos, Christos. 2022. Diagnosing Word Structure: The Greek Verb From the Bottom Up. PhD Thesis, University of Connecticut, Storrs.

Cinque, Guglielmo. 2004. "Restructuring" and functional structure. In *Structures and beyond: The cartography of syntactic structures*, ed. Adriana Belletti, volume 3, 132–191. New York: Oxford University Press.

Condoravdi, Cleo. 2002. Temporal Interpretation of Modals: Modals for the Present and for the Past. In *The*

Construction of Meaning, ed. David Beaver, Stefan Kaufmann, Brady Clark, and Luis Casillas, 59–88. Stanford: CSLI Publications.

Copley, Bridget. 2002. The Semantics of the Future. PhD Thesis, MIT, Cambridge, MA.

Cristofaro, Sonia. 2007. Deconstructing categories: Finiteness in a functional-typological perspective. In *Finiteness: Theoretical and empirical foundations*, ed. Irina Nikolaeva, 91–114. New York: Oxford University Press.

Demirdache, Hamida, and Myriam Uribe-Etxebarria. 2004. The Syntax of Time Adverbs. In *The Syntax of Time*, ed. Jacqueline Guéron and Jacqueline Lecarme, 143–179. Cambridge, MA: MIT Press.

Dotlačil, Jakub. 2004. The syntax of infinitives in Czech. Master's thesis, Arctic University of Norway, Tromsø.

Enç, Mürvet. 1987. Anchoring Conditions for Tense. *Linguistic Inquiry* 18:633–657. Publisher: MIT Press.

Fox, Danny, and David Pesetsky. 2005. Cyclic Linearization of Syntactic Structure. *Theoretical Linguistics* 31:1–46.

Givón, Talmy. 1980. The binding hierarchy and the typology of complements. *Studies in Language* 4:333–377.

Grano, Thomas. 2015. *Control and restructuring*. Oxford Studies in Theoretical Linguistics. New York: Oxford University Press.

Iatridou, Sabine. 2000. The Grammatical Ingredients of Counterfactuality. *Linguistic Inquiry* 31:231–270. Publisher: MIT Press.

Kaufmann, Stefan. 2005. Conditional Truth and Future Reference. *Journal of Semantics* 22:231–280. Publisher: Oxford University Press.

Klein, Wolfgang. 1994. *Time in Language*. London/New York: Routledge.

Klein, Wolfgang. 1995. A time-relational analysis of Russian aspect. *Language* 71:669–695. Publisher: Linguistic Society of America.

Kratzer, Angelika. 1998. More Structural Analogies Between Pronouns and Tenses. In *Proceedings of the 8th conference of Semantics and Linguistic Theory (SALT 8)*, ed. Devon Strolovitch and Aaron Lawson, 92–110. Cornell Univerity, Ithaca: CLC Publications.

Lohninger, Magdalena, and Susi Wurmbrand. ???? Typology of Complement Clauses. In *Handbook of clausal embedding*, ed. Manfred Krifka, Anton Benz, Werner Frey, Hans-Martin Gärtner, Matthias Schenner, and Marzena Żygis. Berlin: Language Science Press.

Marušič, Franc. 2005. On non-simultaneous phases. PhD Thesis, State University of New York, Stony Brook.

Modesto, Marcello. 2009. Inflected infinitives in Brazilian Portuguese as an argument both contra and in favor of a movement analysis of control. *Revista letras, Curitiba* 72:297–309.

Modesto, Marcello. 2016. Inflected infinitives and restructuring in Brazilian Portuguese. In *The Morphosyntax of Portuguese and Spanish in Latin America*, ed. Mary A. Kato and Francisco Ordoñez, Oxford Sudies in Comparative Syntax, 157–176. New York: Oxford University Press.

Nikolaeva, Irina, ed. 2007a. *Finiteness: Theoretical and empirical foundations*. Oxford: Oxford University Press.

Nikolaeva, Irina. 2007b. Introduction. In *Finiteness: Theoretical and empirical foundations*, ed. Irina Nikolaeva, 1–19. Oxford: Oxford University Press.

Ogihara, Toshiyuki. 1995. The Semantics of Tense in Embedded Clauses. *Linguistic Inquiry* 26:663–679.

Ogihara, Toshiyuki. 1996. *Tense, attitude, and scope*, volume 58 of *Studies in Linguistics and Philosophy*. Dordrecht: Kluwer Academic Publishers.

Onea, Edgar, Susanne Wurmbrand, Boban Arsenijević, Dalina Kallulli, Albert Wall, Eva-Maria Remberger, Steffen Heidinger, and Daniel Büring. 2023. Language Between Redundancy and Deficiency.

Pancheva, Roumyana, and Arnim von Stechow. 2004. On the Present Perfect Puzzle. In *Proceedings of the 34th annual meeting of the North East Linguistics Society (NELS 34)*, ed. Keir Moulton and Matthew Wolf, 469–484. Amherst: GLSA.

Pesetsky, David. 2021. Tales of an unambitious reverse engineer. In *The size of things I: Structure building*, ed. Sabine Laszakovits and Zheng Shen, 187–224. Berlin: Language Science Press.

Ramchand, Gillian, and Peter Svenonius. 2014. Deriving the functional hierarchy. *Language Sciences* 46:152–174. Publisher: Elsevier.

Raposo, Eduardo. 1987. Romance Infinitival Clauses and Case Theory. In *Studies in Romance Languages*, ed. Carol Neidle and Rafael A. Nuñez Cedeño, 237–250. Dordrecht: De Gruyter Mouton.

Reichenbach, Hans. 1947. *Elements of Symbolic Logic*. New York: The Macmillan Company.

Rochette, Anne. 1988. Semantic and syntactic aspects of Romance sentential complementation. PhD Thesis, MIT, Cambridge, MA.

Rochette, Anne. 1990. On the restructuring classes of verbs in Romance. In *Binding in Romance: Essays in honour of Judith McA'Nulty*, ed. Anna Maria Di Sciullo and Anne Rochette, 96–128. Ottawa: Association canadienne de linguistique/Canadian Linguistic Association.

Rochette, Anne. 1999. The selection properties of aspectual verbs. In *Beyond Principles and Parameters: Essays in memory of Osvaldo Jaeggli*, ed. Kyle Johnson and Ian Roberts, 145–165. Dordrecht: Kluwer Academic Publishers.

Roussou, Anna. 2000. On the left periphery; modal particles and complementizers. *Journal of Greek Linguistics* 1:63–93.

Roussou, Anna. 2009. In the mood for control. *Lingua* 119:1811–1836. Publisher: Elsevier.

Satık, Deniz, and Susi Wurmbrand. 2022. The unavailability of temporal *de re* in English infinitives. In *Proceedings of the 52nd annual meeting of the North East Linguistics Society (NELS 52)*, ed. Breanna Pratley, Özge Bakay, and Eva Neu, volume 3, 75–84. Amherst: University of Massachusetts, GLSA.

Sharvit, Yael. 2003a. Embedded Tense and Universal Grammar. *Linguistic Inquiry* 34:669–681. URL https://doi.org/10.1162/ling.2003.34.4.669.

Sharvit, Yael. 2003b. Trying to be Progressive: the Extensionality of *Try*. *Journal of Semantics* 20:403–445. Publisher: Oxford University Press.

von Stechow, Arnim. 1995. On the proper treatment of tense. In *Proceedings of the 5th conference of Semantics and Linguistic Theory (SALT 5)*, ed. Mandy Simons and Teresa Galloway, 362–386. Cornell University, Ithaca: CLC Publications.

Stowell, Tim. 1996. The Phrase Structure of Tense. In *Phrase Structure and the Lexicon*, ed. Johan Rooryck and Laurie Zaring, 277–291. Dordrecht: Springer.

Stowell, Tim. 2007. The syntactic expression of tense. *Lingua* 117:437–463. Publisher: Elsevier B.V.

Todorović, Neda, and Susanne Wurmbrand. 2015. (In)Finite possibilities of 'da': Restructuring the tense and aspect domains. ZAS.

Wurmbrand, Susi. 2001. *Infinitives: Restructuring and clause structure*. Berlin/New York: Mouton de Gruyter. Type: Book.

Wurmbrand, Susi. 2007. How complex are complex predicates? *Syntax* 10:243–288.

Wurmbrand, Susi. 2014a. Restructuring across the world. In *Complex visibles out there. Proceedings of the Olomouc Linguistics Colloquium (OLINCO 2014): Language use and linguistic structure*, ed. Ludmila Veselovská and Markéta Janebová, Olomouc Modern Language Series, 275–294. Olomouc: Palacký University.

Wurmbrand, Susi. 2014b. Tense and aspect in English infinitives. *Linguistic Inquiry* 45:403–447.

Wurmbrand, Susi. 2015. Restructuring cross-linguistically. In *Proceedings of the 45th annual meeting of the North East Linguistic Society (NELS 45)*, ed. Thuy Bui and Deniz Özyıldız, 227–240. Amherst: University of Massachusetts, GLSA.

Wurmbrand, Susi, Iva Kovač, Magdalena Lohninger, Caroline Pajančič, and Neda Todorović. 2020. Finiteness in South Slavic Complement Clauses: Evidence for an Implicational Finiteness Universal. *Linguistica* 60:119–137.

Wurmbrand, Susi, and Magdalena Lohninger. 2023. An implicational universal in complementation—Theoretical insights and empirical progress. In *Propositional Arguments in Cross-Linguistic Research: Theoretical and Empirical Issues*, ed. Jutta M. Hartmann and Angelika Wöllstein, 183–229. Tübingen: Narr Verlag.

Zagona, Karen. 1990. Times as temporal argument structure.

List of index items: Please include your suggested index items in a list at the end of the chapter on a separate page.

- Morphology, syntax, semantics of Tense
- PF-LF mismatches
- Time arguments
- Perfective/Imperfective
- Sequence of tense
- Double access
- Complement clauses
- Clausal (in)dependence
- Infinitives
- Finiteness
- Tense dependence
- WOLL
- Redundancy
- Deficiency

List of abbreviations: Please include any abbreviations used in a list at the end of the chapter on a separate page. (These will be included in a list of abbreviations at the beginning of the volume.)

- [SOT] sequence of tense
- [UT] utterance time
- [RT] reference time
- [ET] event time
- [LF] logical form
- [PF] phonological form
- [$\mathfrak{R}$] redundancy
- [$\mathfrak{D}$] deficiency