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What is a Tense, Anyway?

FABRIZIO CARIANI
University of Maryland, College Park, USA
MICHAEL GLANZBERG*
Rutgers University, New Brunswick, USA

We study three different conceptions of tense emerging from semantics, syntax and morphology, respectively. We investigate how they bear on the question of the relationship between tense and modality as they emerge in Cariani's The Modal Future *(2021).*

Keywords: Tense; modals; selection; semantics; syntax.

1. *Introduction*

One of the driving themes of Cariani's *The Modal Future* (2021, henceforth TMF) concerns the interplay of tense and modality in powering future reference. Building on prior work in semantics (Enç 1996; Condoravdi 2002; Kaufmann 2005; Copley 2009; Klecha 2014; Cariani and Santorio 2018, a.o.), Cariani argues that the devices languages recruit to power future-directed discourse are modals. In TMF's framing, an implicit corollary of this thesis is that because expressions like *will* are modals, they cannot also be tenses. Indeed, the book opens by contrasting a 'symmetric' paradigm in which languages have three tenses (past, present and future) with an alternative on which past and present are the 'just' tenses.

Does identifying modal features in *will*, or any other future expression, entail that it's not a tense? Answering this question in turn requires a grasp—preliminary as it might be—on the category of tense.

* This paper is the result of Cariani and Glanzberg collaborating on some themes in a commentary Glanzberg delivered on Cariani (2021) at the 2022 Philosophy of Language and Linguistics conference in Dubrovnik. The author of the book is treated here as a third person by both authors of this piece.

In this paper, we argue that the answer to this question is in an important sense indeterminate. There are multiple conceptions of tense which yield diverging answers to the question whether tense and modality are compatible—thus illuminating the relationship between tense and modality in a different way. We are aware that the territory can be carved in a much finer grained way than we are going to attempt here. The present paper stands as a public record on a series of ongoing conversation we hope to enrich and develop in future work.

2. *The semantic account of tense*

We begin our discussion by looking at the semantics of tense, and whether it can be used as the basis for a characterization of the category of tense itself. For the most part, we restrict our discussion to absolute, unembedded tenses. Though that leaves out some interesting subtleties, it is enough to illustrate what might be semantically distinctive about tense.[1]

2.1 *Two families of theories of tense*

The semantics literature offers up two families of theories about the meanings of tenses (Ogihara 2007). According to one, tenses are quantifiers over times—or perhaps quantifiers over intervals (Ogihara 1996; Kusumoto 1999, 2005). According to the other, tenses are pronoun-like, in that they make reference to times (or intervals) (Partee 1973; Heim 1994; Abusch 1997; Kratzer 1998). For illustration purposes, we will sketch a pronominal analysis. It is hard to say if either of these two approaches is more standard, for reasons we will return to below; but the pronominal approach is widely adopted, and a good representative of current work in the semantics of tense.

Pronominal analyses start with the observation from Partee (1973) that tenses pattern with pronouns in having deictic uses as in (1-a), anaphoric uses as in (1-b), and bound uses as in (1-c):

(1) a. Steve didn't turn the stove off.
b. Sheila had a party last Friday and Sam got drunk.
c. Whenever John came in, Sue left.

[1] Embedded tenses can display different semantic properties than their unembedded counterparts, and there is interesting cross-linguistic variation in how they do so. See Ogihara and Sharvit (2012) for a good survey of these issues. Absolute or 'simple' tenses provide one time, be it present or in the past. Following Reichenbach (1947) and then more recently Klein (1994), it has been observed that some tense constructions require more information, such as an utterance time or an event time. With these resources, more fine-grained distinctions among tenses can be made. The simple present roughly places the time given by the tense at the utterance time, while the simple past places the tense time before the utterance time. But, for instance, the perfect places the event time before the tense time. These relative tenses often overlap with aspect. For more on aspect, a good starting place is Smith (1997). For more on the perfect, see Portner (2011).

Taking this analogy seriously leads to a treatment of tenses as time pronouns.

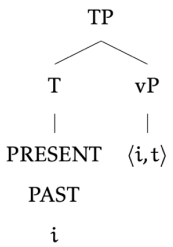
This turns out to be doable and elegant. Like any other pronoun, a tense picks up its semantic value—a time interval—from an assignment function, which can reflect context in deictic uses and the effect of a quantifier in bound uses. We also need to ensure they have the right temporal properties. Unbound present tense should generally pick out the time of utterance, and past tense should pick out times in the past. Following Heim (1994), it is common to see these properties as presupposed. The semantic value of a tense is a time, but it presupposes the location of the time with respect to now. Formally, let c be the context, let g be the assignment function, and let be the relation that two temporal points bear to each other when they are near enough to each other. Let be the utterance time of a context:

(2) a. $[\![\text{PAST}_i]\!]^{g,c}$ is defined only if $g(i) < t_c$; if defined, $[\![\text{PAST}_i]\!]^{g,c} = g(i)$

b. $[\![\text{PRES}_i]\!]^{g,c}$ is defined only if $g(i) \approx t_c$; if defined, $[\![\text{PRES}_i]\!]^{g,c} = g(i)$

Composition of tense with verb phrases is now relatively easy. We need to assume verbs and other predicates have a temporal argument position.[2] Once we combine a verb with its ordinary arguments, there is still a temporal position to be filled. Syntactically, the verb combines with its ordinary arguments at a position called vP, and tense is a position above that, called T. Ignoring modals (and aspect), we have a structure like:

(3)



Here, i is the name of the type of times (or intervals).

We will comment more extensively on the labels TP, T, and vP in the next section, as we look at the syntactic account of tense. For now, all we are assuming is that syntax provides us with a tense phrase, headed (in the case of English, at least) by one of two simple tenses, and taking as complement a verb phrase. Function-argument composition suffices for this case.[3]

[2] See Enç (1986), Heim (1994) and Abusch (1997) for discussion of this idea.

[3] Embedded tenses, which show up in attitude contexts, make all of this more complicated. But this is a good illustration about how a compositional semantics with tenses works.

The other prominent idea about tenses is that they are quantifiers over times. This can be implemented in a standard generalized quantifier framework, as found in many semantics textbooks (e.g. Heim and Kratzer 1998). Tenses are quantifiers that take as input predicates of times, of type . We then have:

(4) a. $[\![\text{PAST}_i]\!]^{g,c} = \lambda p_{\langle i,t\rangle}.(\exists t' < t_c (p(t') = 1))$

b. $[\![\text{PRES}_i]\!]^{g,c} = \lambda p_{\langle i,t\rangle}.(p(t_c) = 1)$ (semantically vacuous)

Composition is also not difficult. If we assume, as we did above, that the vP is of type $\langle i,t\rangle$, then it can compose with a quantifier directly. As we have mentioned already, there are complications about embedded tenses, and there are questions about how a quantifier winds up in a T position. But again, we have a relatively clear beginning of a semantic analysis of tense.[4]

These two approaches give different semantics to tenses, but they are surprisingly hard to tease apart empirically. Though the pronominal approach is designed to explain the Partee analogy with pronouns, so can the quantificational theory. The key ingredient in this explanation is the idea that the quantifier must be contextually restricted, and the general observation that quantificational restrictors can quite generally be involved in deictic and anaphoric uses.

The pronominal theory makes the temporal content of tenses presupposed, while quantificational theories make it asserted. This seems like a substantial difference, but again, it is hard to spot in the data. The reason is that the presuppositional status of temporal information is itself a delicate issue. On a pronominal theory, temporal information is treated like other features on pronouns, such as gender and number (called 'phi-features'). The content of these features is like presupposition, in that it is backgrounded, but it is not at all clear that it projects just like presupposition (e.g. Kratzer 1998; Heim 2008; Sudo 2012). Here is one illustration:

(5) John thinks it is 10:00.

Suppose this is uttered at 11:00. A standard account of how presuppositions project out of attitudes (Heim 1992) predicts that this presupposes that John thinks 10:00 is 11:00, or at least that 10:00 ≈ 11:00. But that is not right. Because the way tense projects is delicate, it is not easy to find clear examples decisively refuting either analysis.

[4] Philosophers might have been expecting a semantics of tense along the lines of tense logic (e.g. Prior 1957, 1967; van Benthem 1983). Indeed, some early work in semantics (e.g. Montague 1970) used such an analysis. Subsequent work has shown it not to be promising. As such work has focused on embedded tenses, we will not discuss it in detail. See among places Richard (1981), Enç (1986), King (2003), Kusumoto (2005), Glanzberg (2011), and Glanzberg and King (2020). For a general comparison of quantifier versus operator theories, see Cresswell (1990).

We might think that quantifier scope would distinguish the two theories. When quantifiers scope, their behavior looks different from what we get with presuppositions. But simple tenses do not really show much of any quantifier scope. They do not scope with negation, for instance:

(6) a. John cried.
b. John did not cry.

Both require there to be a time in the past when John did/did not cry. As we will see below, this does not reveal much. Syntactically, tense is already in a position that limits scope. So, this is compatible with a pronominal analysis, but also with a quantificational analysis that puts tenses in a syntactic position that limits scope.

Ogihara (1995) offers one argument in favor of a quantifier view:

(7) a. Did you see Mary?
b. I saw her, but I don't remember exactly when.

Ogihara claims the second sentence gets a purely existential reading, without any anaphora or binding. If so, it suggests we can sometimes get a purely quantificational reading of past tense.

But we doubt this is conclusive. What we need is a purely existential reading, along the lines we see with:

(8) John ate.

This has a reading (the most natural one) where John at something or another, and it is unconstrained what (perhaps beyond it being normal food). Ogihara's example seems to us not so unrestricted. It would be sufficient to have a contextually provided and fairly large time interval. If so, a pronominal theory can explain it.

2.2 *Semantics of tense vs. semantics of* will

There is no doubt much more to be said about the proper semantics for tense. What matters for our purposes is what happens if we adopt either approach as a necessary ingredient in the category of tense.

If we assume that all tenses must have the pronominal semantics in (2) or the quantificational semantics in (4), the questions we led with get to have straightforward answers. To start, under this assumption, tense and modality are naturally understood to be incompatible categories. Zooming in on English, under this assumption it is hard to escape the conclusion that *will* is not a tense (and similarly for other predictive expressions of English). Much of the argument in chapter 3 of TMF and the semantics literature it references is an argument to the effect that *will* is not well understood as meaning the same as:

(9) $[\![\text{FUT}_i]\!]^{g,c}$ is defined only if $g(i) > t_c$; if defined, $[\![\text{FUT}_i]\!]^{g,c} = g(i)$

That is to say, it is not well understood semantically as simply being the mirror image of past tense. Indeed, under the assumption it is not clear that English has a future tense.

T MF—following and expanding on Cariani and Santorio (2018) and Klecha (2014)—advances four arguments in defense of a modal theory of *will*. In rough summary, these are:

- *The argument from common morphology* (§3.2): *will* shares morphology with would; would is a modal, so is will.
- *The argument from present-directed uses (§*3.3*)*: *will* seems to have present directed uses that appear to have a vaguely modal flavor (as in *the president will be in his* office *by now).*
- *The argument from modal subordination (§*3.4*)*: *will* goes in for modal subordination, which is something that modals do. Cariani highlights this as the centerpiece of the overall argument.[5]
- *The argument from the acquaintance inference (§*3.5*)*: *will* appears to obviate the acquaintance inference, a property which it generally shares with other modals, and that distinguishes it from past tense.

Let us assume that these arguments collectively work to support a theory according to which *will* is given a modal semantics. The low-effort option for a modal semantics is to assimilate *will* to universal modals in a Kratzer-style semantics (Kratzer 2012). Let us notate the modal base $f(\cdot)$ and the ordering source $os(\cdot)$.[6] Furthermore, we package all the domain formation mechanics of Kratzer's semantics into a single domain-construction function, notated as domain (f,os,w) (see, e.g. von Fintel and Heim 2011, for more details). We then have:

(10) $[\![\text{will}]\!]^{g,c} = \lambda \mathbf{p} \lambda w. \forall w' \in \text{domain}(\text{f}, \text{os}, w'), \mathbf{p}(w')$

Cariani (2021) contrasts this with the selectional account, which in its simplest form looks like this: let *sel* be a function that inputs a set of worlds and a world, and outputs a 'selected' world in the modal base. Suppose further that *sel* is subject to two constraints, that we state as part of the entry in (11):

(11) a. centering : for all w and modal base f, if $w \in \text{f}(w)$, $\text{sel}(\text{f}(w), w) = w$

b. success : for all w and f, if $\text{f}(w) \neq \emptyset$, $\text{sel}(\text{f}(w), w) \in \text{f}(w)$.

c. $[\![\text{will}]\!]^{g,c} = \lambda \mathbf{p} \lambda w. \mathbf{p}(\text{sel}(\text{f}(w), w))$

Both the universal and the selectional entries above are in need of refinement. In particular, neither reflects the temporal orientation of *will* (this matter is discussed in chapter 7 of TMF). But however we decide to expand on them, it is clear that the end result is not going to match either the pronominal or the quantificational theory.

[5] The argument comes in for some interesting criticism in Boylan's (2023) review of the book and for some expansion in Cariani (forthcoming).

[6] Standard notation f or ordering sources is $g(\cdot)$, but we have already recruited 'g' for the assignment function.

Overall, our conclusion is that tense has a range of specific semantic properties, and the future *will* differs from tense in important ways. But if anything, this strengthens our confidence that we cannot read the nature of tense off its semantics. The empirical situation does not nail down what semantic type a tense must have; and the typing of tense semantically does not constrain the semantics of the future.

If we did assume that the semantics of tense—be it the referential or the quantificational variety—is a guide to the nature of tense, the cross-linguistic picture would also become significantly more puzzling. Some languages, including e.g. Romance languages, have dedicated morphology for future reference. Under the semantic conception of tense, this morphology only gets to count as *tense* morphology if it turns out that its correct semantics is as in (9). Not only does this seem to not be guaranteed *a-priori*, but insofar as the arguments for a modal semantics carry over to these other languages we cannot consistently assume that (i) the future morphology in Romance languages is a type of tense, (ii) that tenses are associated with a particular kind of lexical entry, and (iii) that the future in these languages is like the English future in demanding a modal semantics. Throughout Chapter 3 of TMF Cariani suggests that at least some of the arguments for a modal analysis of *will* do carry over to the Italian language.

If it turns out that the right semantics for simple tense in languages like English is referential, and the right semantics for the future *will* is modal, then we have a clear difference. But our discussion here has shown that even with simple past and present, we do not (so far) have a clear-cut semantic category. And of course, we also do not have to accept the background assumption that the category of tense is homogeneous in its semantic behavior. In the rest of this paper, we consider two more ways of conceptualizing tense that do not have this implication. When it comes to semantics, we doubt that there is really a goal of providing a definition of tense; rather, the goal is to provide semantic analyses of the various puzzling semantic properties of tense. Embedded tense has provided a rich diet of such puzzles, so there is much work to be done.

3. *The syntactic account of tense*

A glance at the syntax literature shows a special place for a functional category of T for Tense.[7] So, one answer to the question of the nature of tense is that it is what occupies a special syntactic position.

The basic idea is that clauses, the main units we utter and otherwise use, come in layers. It is not easy to put this idea in an entirely theory-neutral way, so we will make use of a common tradition in gen-

[7] This can be found in many contemporary syntax textbooks, such as Adger (2003) that we rely on heavily, as well as Carnie (2021). The main idea can be found in Chomsky (1986), and important work of Edmonds (1980) and Pollock (1989).

erative linguistics. We lean on the Chomskian project as it grows out of the 'Principles and Parameters' tradition (e.g. Chomsky 1986) and evolves into the 'Minimalist' tradition (e.g. Chomsky 1995). In this kind of framework, one important layer that occurs fairly high in a syntactic tree is Tense Phrase or TP. Tenses are heads of TPs.

We begin unpacking this idea by discussing two important layers. The first is now known as the vP layer. This is where basic descriptions of events occur, and it typically involves verbs, whose main job is to describe events and states. But to do so, verbs need to add the participants in the event. The verb *to give*, for instance, describes events of giving. But making a clause requires specifying who is doing the giving (the agent of the event), what is being given (the theme of the event), and a recipient (the 'goal' of the event). Thus, a verb needs to combine with its arguments: an intransitive verb requires one argument, a transitive two, and a ditransitive three. A verb can also combine with adjuncts that further specify the participants in the event. Some verbs, like *cut* take an instrument.[8] Syntactically, there is a place where a verb merges with its arguments and any appropriate adjuncts—a predicate meets its arguments and together they describe something (Glanzberg 2011). In current theories, this layer is called vP. Languages seem to have many types of predicates: some are formed by combining nouns and adjectives with other materials (e.g. copulas). But there is a special place for verbs in building clauses, that is captured by a vP analysis.

A vP is not a sentence. It is not really the kind of thing a speaker may utter, and it is not a full clause semantically or syntactically. Semantically, a vP describes an event and its participants, but it is neither temporally nor aspectually determinate. It does not locate the event in time, nor does it tell us if the event is completed or still happening. Syntactically, it leaves out all the inflectional elements that language requires for a clause.

Inflectional elements, like auxiliaries in English, live high in the syntactic tree, as has been clear since Chomsky (1957). Current theories indicate there is a very high layer of TP above vP, where temporal information is added. In most theories of the sort we are considering, T is the point where you get a fully inflected clause—the sort of thing we can normally assert, for instance. So, a TP is good candidate for being the first place where we get a 'sentence'. A sentence, in this theory, is headed by T. Also, in many theories, subjects of sentences get special treatment and occupy the syntactic position of the 'specifier' of TP. TP is the layer where subjects appear where they are supposed to.[9]

At this point of our description, we have identified two clausal layers. Next, we observe that they come in a distinct structural order:

[8] The status of these as arguments versus adjuncts is actually somewhat controversial, but we do not need to take a stand on this issue here. See among places Larson (1988) and Bhatt and Pancheva (2017).

[9] Any of the syntax textbooks we mentioned will explain this, but see also classic work of Stowell (1981) and McCloskey (1997).

the TP is higher in the clause than the vP. Evidence for this structure comes from a number of sources, including observations about word order. Here are some textbook examples, from Adger (2003). First, modal auxiliaries, including *will*, occupy a position outside of vP. We see this from the grammatical impossibility of certain inversions that would put them there:

(12) a. * Gilgamesh seek will/must/may Ishtar.
b. What Gilgamesh will/must/may do is [seek Ishtar].

The same holds for the auxiliary *do* and its inflected forms *does* and *did*:

(13) a. Enkidu did free animals.
b. * Enkidu free did animals.

So far, we have a rough division into two layers, one of which hosts inflectional elements. It is also telling that these inflectional elements have a close relation to tense. In this position, *will* and *do* appear inflected for tense, and indicate temporal information. So, at the very least, we can conclude with Chomsky that a very high inflectional layer is where we expect to find tense and related elements.

Why single out tense, TP, as a distinct layer and high among inflections. Why make T the head of a sentence?[10] Here matters get more delicate. One reason to think the TP layer is higher than the position of modals comes from the way modals—including *will* and *would*—inflect for tense. It suggests that a tense applies to a lower common modal, often labeled *woll*. When *woll* combines with present tense it spells out as *will*. When it combines with past tense it spells out as *would*.[11] Evidence that this is inflection for tense comes from the way it patterns with tense in embedded contexts:

(14) a. I thought she was happy.
b. * I thought she is happy.

(15) a. I thought she would go.
b. * I thought she will go.

Of course, the markings of tense over modality are also apparent in romance languages and other languages in which temporal reference is powered by a grammatical system of morphemes. For example, Italian necessity (*dovere*) and possibility (*potere*) modal auxiliaries, can inflect for past tense (*dovetti*/*potetti*), present (*devo*/*posso*), and future (*dovrò*/*potrò*).

Another relatively clear observation is that aspectual marking occupies a different position, lower than TP. By "aspectual marking", we mean the grammatical marking of perfective, imperfective, and pro-

[10] After all, in earlier theories, such as that of Chomsky (1981), what we had was an undifferentiated inflectional layer IP. Pollock (1989) was central to showing that we have multiple inflectional layers, with TP near the top.

[11] See Ogihara (1996) and Abusch (1997). Apparently the label *woll* was suggested by Mats Rooth.

gressive.[12] In English, the progressive appears below tense, as we see with:

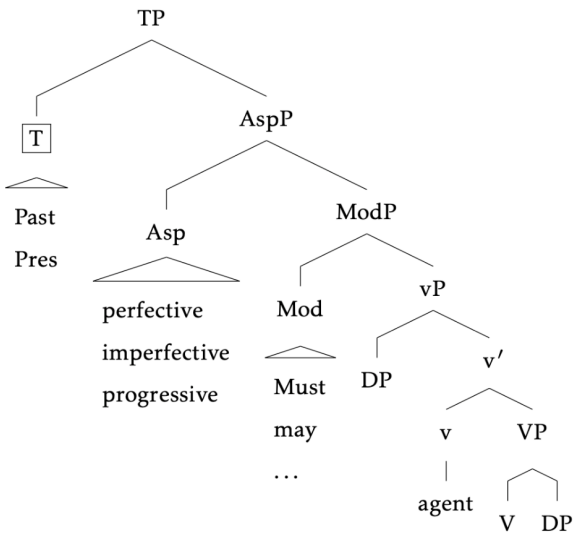
(16) a. (i) Sarah wrote a dissertation.
(ii) [PAST [Sarah write dissertation]]
b. (i) Bill was in love with Sarah.
(ii) [PAST [Bill in love with Sarah]]
c. (i) Sarah was writing a dissertation.
(ii) [PAST [PROG [Sarah write dissertation]]]

So far, we have TP appearing very high, and modals and aspectuals appearing below it, but above the vP. Beyond this, the situation gets even more complicated, and the evidence typically involves cross-linguistic comparisons. Much current work implies, or assumes, the existence of a stable hierarchy. The seminal paper for this is Cinque (1999). Setting aside some complications involving non-root modals, this hierarchy looks like this:

(17) Tense > Aspect > $\text{Modal}_{\text{root}}$

(Note that we have not justified the position of root modals with respect to aspect, nor the restriction to root and not epistemic modals (see Cinque 1999; Hacquard 2010).) Assuming this ordering indicates syntactic positions Asp and Mod and associated phrases AspP and ModP, the syntactic picture that emerges, closely enough, includes structure like:

(18)



[12] This kind of aspect is sometimes called 'viewpoint aspect' (Smith 1997). Semantically it indicates whether we see an event as completed or ongoing. For surveys of the grammar of aspect, see de Swart (2012), Zagona (2013), and the comprehensive Smith (1997).

We hasten to add that this is oversimplified and some of the claims built into it are controversial. It is common to see epistemic modals as occupying a position above T (e.g. Cinque 1999; Hacquard 2010), and yet there is a vivid debate concerning whether they may themselves embed under tense. Question forms are almost always assumed to project a layer above TP, usually called CP. Many theories in the 'cartographic' tradition posit much more above TP (e.g. Rizzi 1997).[13] We have not tried to say where negation fits in. It is traditionally placed below T (Pollock 1989), but the issue remains controversial (Zanuttini 2001). Furthermore, there is more syntactic complexity to T. It is often seen as central to issues of case, agreement, finiteness, and so on.

So, here is a plausible idea about what tense is: it is a syntactic position. And if we want to distinguish genuine tenses in English from *will*, we have syntactic resources to do it. Genuine tenses live in T, while *will* lives in Mod, along with other root modals. We could go even further, and claim that, at least in English, what lives in T has the kind of semantics we reviewed in the previous section, while what lives in Mod has a different, distinctively modal semantics. One of the main theses of TMF is that *will* has a very particular modal semantics. But even if all of that argument failed, we would still find clean distinctions both syntactically and semantically between genuine tenses and *will*. So perhaps our syntax and semantics give us independent ways of narrowing down on the same core phenomenon.

This outlook might appear very satisfying. It seems well-justified for English, as well as other languages that are relevantly like it. And it builds on the Cinque hierarchy which, together with its relatives, seems well-supported by cross-linguistic evidence. But there remains great room for caution. Our goal in asking about the nature of tense was more ambitious than to simply ask how we can spot tenses in English, German, and some other languages. We wanted something more fundamental. Whether we have that is much less clear.

One way to press this concern is to ask about the extent to which we have latched onto a phenomenon that is linguistically universal. Here, the situation is not so clear. One point that will become more central in the rest of our discussion is that many languages lack overt tense morphology altogether. That can make the question of whether a language has a T head very complicated. It is all the more complicated by the many different jobs we have asked T to do. What we are considering is in effect a proposal discussed by von Fintel and Matthewson (2008: 170), who put it like this: "All languages possess a syntactic head T whose function is to locate the reference time with respect to the utterance time." They quickly conclude that this is "probably false," though they then note that what is really needed is more work, and that there

[13] This is the enterprise of mapping the functional structure of languages, often relying on extensive cross-linguistic investigation. The already-mentioned Rizzi (1997) and Cinque (1999) are good examples.

may yet be generalizations like this to be uncovered, even if this one, as stated, is likely false.

Here is one illustration of the concerns that drive von Fintel and Matthewson. It is well known that Mandarin Chinese shows no overt tense morphology (and little morphology of any kind). One might claim that in spite of this, it has a phonologically null T position (Sybesma 2007). This would support the proposed universal. But there are other options. According to influential analysis by Lin (2006), there is no T node, and viewpoint aspect, syntactically AspP, does the work in Mandarin that tense does in English. If this analysis is on the right track, it might undercut the claim that a highest tense layer is a universal. If Lin is right, the work done by T in many languages might be shifted to AsP in others. This is not to say that the analysis is certainly correct,[14] but it illustrates the reasons for von Fintel and Matthewson's caution.

So, to put it over-simply, one possibility is that a different syntactic position, perhaps AspP, can do the work that TP does in English. Here is another interesting possibility, put forth by Matthewson herself (Matthewson 2006) for St'át'imcets (Lillooet Salish). Like Mandarin Chinese, St'át'imcets lacks tense morphology, and so might appear tenseless. In this case, and in contrast to Lin, Matthewson argues that St'át'imcets does have a T head. Unlike English, semantically what occupies that head more or less expresses being non-future. That means we can have a T head, but not have it filled by what we normally think of as tense in languages like English. Again, we have lost the simple identification of tense through overlapping semantic and syntactic properties, if we are seeking full linguistic universality.

We recommend Matthewson's discussion (in her section 7) of the various complexities of talk of languages being tenseless. For our purposes, we can leave the matter with the observation that, given the number of roles TP is asked to play in many theories, it is not a huge surprise that we can find detailed analyses of specific languages that divide up those roles differently, both syntactically and semantically. Thus, if in fact the particular combination of roles we find in English turns out not to be universal, that would not be very surprising. This illustrates the point that there are, we believe, important semantic and syntactic properties that go with tense, but perhaps not a straightforward standard for what a tense is that is cross-linguistically universal.[15]

We do note with satisfaction Matthewson's speculations at the end of her paper, where she suggests that it may be universal that the future is different from present or past. This is in keeping with the mo-

[14] There might be some other complications here: lexical aspect ('aktionsart') and scope and temporal adverbs are also important. Additionally, we would need to know what hosts subjects if AspP is the highest layer. (Lin (2010) addresses this issue in more detail.)

[15] Many other works substantiate this. Among them: Ritter and Wiltschko (2009), which discusses Blackfoot (Algonquin) and Halkomelem (Salish); and Bittner (2014), which discusses both Mandarin Chinese and Kalaaisut (Greenlandic).

tivating view of TMF. It is suggestive that major cross-linguistic work points in the same direction, albeit admittedly in a discussion which is explicitly labeled as speculative.

Also, we should note that the Cinque-style placement of T in a rigid hierarchy raises some very abstract questions about what good explanations in syntax should be. We will not go into detail, as the foundations of linguistic theory is not our topic here, but we can simply note that the Cinque hierarchy is data-driven but has seemed to many to be stipulated. (Much the same is claimed for other exercises in syntactic cartography.) One might wonder if other explanations can be found. This is of particular concern in the current literature, as it relates to some of the key goals of the 'minimalist program' in syntax (e.g. Chomsky 1995). We recommend the discussion of Ramchand and Svenonius (2014), which though opinionated in its conclusions, is judicious in its overview and gives a good sense of the issues. We also mention Ramchand and Svenonius as it raises the possibility that one might opt for a more coarse-grained functional hierarchy than Cinque offers, that will be less discriminating between tense and other inflectional elements. If that turns out right, the robust distinction between tenses and modals in syntax might vanish. We have already considered reasons that might be so cross-linguistically, but we should be aware that the theoretical situation is complex even for one language—English.[16]

Where does this leave our question about what a tense is, and whether a modal is a tense? As with semantics, syntax offers us important insights but nothing like a definitive criterion. Different analyses put the work of temporal modification in different positions, and the idea that there is a hard-wired and robust demarcation between tense positions and other high positions remains contentious, and may be more like a helpful theoretical idealization than a robust fact about language.

Yet there still seems to be sufficient evidence to distinguish English *will* from tenses. Our conclusion in the semantics discussion was that though semantic behavior alone does not cleanly demarcate tense, there are substantial differences between tenses and *will*. The analogous conclusion here is that even if we cannot say there is one universal syntactic position for tense, there are substantial syntactic differences between the positions of tense and those of operators like *will*. We cannot say for certain that these differences are universal, but they do appear to have *some* cross-linguistic robustness.

What, then, is a tense? Well, we can say with some specificity what a tense is in English, and others have said what it is in Japanese, Mandarin Chinese, St'át'imcets, and so on. These show some common elements, and some variation. The analysis from Lin (2006) gives a good

[16] It might be that there are syntactic generalities here yet to be found, as Matthewson hints at but does not claim. It might be that a more abstract level of description might yield better results. See, for instance, Wiltschko (2014).

illustration. According to this analysis, much of the standard semantics of tense is written into the semantics of aspectual markers. One is left wondering if the right way to describe things is there is no tense, or rather if aspect kindly absorbed the job tense might have done. We can say the same about Matthewson's analysis of what might occupy a TP position. So we have a bundle of features of tense, and jobs that it does, both semantically and syntactically. These seem to pattern strongly together. But the various parts of the bundle can be divided in somewhat different ways, as Lin's analysis illustrates. We do not think it is a great surprise that languages might divide up such a bundle in somewhat different ways.

4. *The morphological account of tense*

We have so far looked at tense in semantics and syntax. We have been cautious to avoid making global claims, but we have continued to offer two linked ideas. The distinctive properties of tense may come together differently cross-linguistically, but they show strong distinction between tenses and modals.

Another equally influential conception of tense focuses on the morphology. Tense is a grammatical system whose job it is to anchor situations to certain times, defined by their relation to the utterance time, in the process of fixing their truth conditions. According to Comrie's (1985: 9) extremely influential definition, tense is "grammaticalised location in time." What counts as a grammatical system is itself a vexed question, but plausibly a system of bound morphemes counts as such (a bound morpheme is one that only occurs as a proper part of a word). Comrie again says:

> The English past/non-past opposition is a clear instance of a grammaticalised opposition. It is quite impossible to construct an English sentence containing a finite verb that is neutral as between the two poles of this opposition, i.e. *John runs* is clearly non-past, and *John ran* is clearly past, and there is no third term that is neither. Moreover the expression of the distinction is by means of bound morphemes (taken to include morphophonemic alternation, i.e. anything that does not involve a separate word). (1985: 10)

Under this view, what it is for the sentence *I played soccer* to be tensed is that it features the English bound morpheme *-ed* with the verb; the semantic role of this morpheme is to locate the situation emerging from the whole verb phrase in the past.

Like the previous analyses, the idea that tense is part of a grammatical system of bound morphemes directly implies that the devices that achieve future reference in English—auxiliaries like *will* and phrases like *going to*—are not tenses. As we have noticed, *will* is inflected for tense, and furthermore it appears in complementary distribution with other modals:

(19) a. Enkidou will free animals.
b. Enkidou might free animals
c. Enkidou may free animals.

At the same time, the morphological approach turns the question whether a language has tenses—as well as the question which tenses a language has—into a rather brittle, language-variant matter. English has a bound morpheme for past tense (*–ed*); more controversially, English can be viewed as having the bound morpheme *–s* for third person singular present (otherwise it does not appear to mark the present tense).[17]

Romance languages typically offer of inflectional paradigms for past, present and future. Thus, French and Italian have a simple future:

(20) a. Nager / nuotare ("to swim")
b. Je nage / Io nuoto ("I swim")
c. Je nagerai / Io nuoteró ("I will swim")

Some languages, such as Mandarin Chinese, lack these bound morphemes entirely.[18]

We have already seen a few options for how to approach languages without bound tense morphemes. In some cases, as Matthewson (2006) argued for St'át'imcets, it might be there are unpronounced morphemes, that occupy syntactic T heads. Or it might be, as Lin (2006) argued for Mandarin Chinese, that there are other aspectual markers that do the work of tense. Now, one might take Lin's proposal, and the proposal of TMF as counterexamples to the morphological conception of tense. Tenses do not have to be realized by systems of bound morphemes, and if a word like *will* wants to behave like a tense, we should not deny it tense status just because it is not a bound morpheme. This will either send us back to the semantic conception of tense (thus to characterizing tenses as items with temporal meanings) or to the syntactic conception; or as we suggested above, to a view that looks for multiple features and how they are divided up in a given language.

There is, however, another way here. One may insist that the morphological conception of tense is roughly correct. The somewhat radical conclusion would be that when it comes to theorizing about items with temporal meanings, "tense" is an unhelpful category, because it only latches on a incomplete subset of the whole panoply of temporally significant expression. Such a category might serve an important purpose for typological investigations. It can be a useful one. But our discussion of semantics and syntax suggests it may miss some important underlying commonalities in languages that differ substantially in morphology.

Another unexpected conclusion one would draw here is that tense and modality are not incompatible categories (Cariani forthcoming). The very same item, say the Italian or French future tense may be

[17] For a descriptively oriented discussion of English, see Huddleston and Pullum (2002).

[18] In addition to the references above, see also Bochnak (2019).

both a tense because it satisfies certain morphological criteria and a modal because it bears semantic properties that naturally group it with modals. As we have seen, there are multiple ways one can examine tense, and it is not all that surprising that they can cross-cut eachother in some cases.

5. *Discussion and conclusions*

It may be that our main conclusion does not *have to* be stated out loud. But it's probably a good idea to do so anyway. There is not *one* clear answer with regards to the question *what is a tense?* Consequently, the question of whether tense and modality can overlap does not have a unified, fully determinate answer. What we can do, however, is explore the different things that are called "tense" in the context of linguistic research, articulate multiple precise conceptions and answer our motivating question against each of them.

Yet we have also suggested that even with multiple, partly overlapping notions of tense, patterns may still emerge. We, with Bochnak and Matthewson, suspect that a robust tense versus modal distinction can be found within the many overlapping ideas about tense. We recognize that this remains speculative, especially when it comes to the rich and confusing range of cross-linguistic data and theories available. But we think it an appealing speculation.

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