Only some "fake" pasts are real: contrasting counterfactuals and sequence of tense*

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Abstract

There are at least two domains where it has been proposed that past inflection is "uninterpreted" or "fake", because it does not contribute its ordinary back-shifted interpretation: *sequence of tense* and *counterfactuals*. Though only occasionally directly compared, both have been analyzed as cases where T^0 bears a formally uninterpretable tense feature that must be licensed by a higher counterpart. This paper, however, focuses on differences between the two environments, particularly in their interaction with aspect, and argues that these differences suggest that sequence of tense and counterfactuals cannot both be analyzed in terms of feature licensing. I conclude that of the two, only counterfactuals involve true "fake" past (i.e. syntactically licensed [uPAST]), while sequence of tense is better accounted for in other terms.

1 Introduction

There are at least two domains where it has been proposed that past inflection is uninterpretable, on the grounds that it does not appear to contribute its ordinary back-shifted interpretation: *sequence of tense* (SOT) and *counterfactuals* (CFs). Such morphology is sometimes called "fake", primarily in work on counterfactuals, following Iatridou (2000). Though these two domains are rarely directly compared, both have been analyzed as cases in which T^0 bears a formally uninterpretable tense feature that must be licensed by a higher counterpart.

(1) a. SOT: My sister told me that her friend **liked** frogs.
b. CF: If it **was** raining *now*, I **would** wear my boots.
c. CF: I wish it **was** raining *now*.

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Despite surface similarities, this paper focuses on differences in the behaviour of past tense between sentences like (1a) and those like (1b-c), particularly in their interaction with aspect, and argues that they cannot both be analyzed in terms of feature licensing. I conclude that of the two, only counterfactuals involve a truly "fake" past (i.e. licensed [uPAST]). I further suggest that this has implications for the featural representation of tense more generally, and that the use of particular morphology in "fake" tense contexts can be used as a diagnostic for such representations.

2 Sequence of tense and counterfactuals are similar

Both counterfactuals and sequence of tense have been analyzed as involving formally uninterpreted past tense features.[1] For sequence of tense, this view can be traced in generative work at least back to Ross (1967)'s sequence of tense rule, and in more recent work it has been argued that an uninterpretable past feature ([uPAST]) is somehow checked or bound by matrix tense (Ogihara, 1995; von Stechow, 2002; Grønn and von Stechow, 2010; Zeijlstra, 2012, a.o.).

In many Indo-European languages, including English, embedded clauses with past inflection can be interpreted as holding simultaneously with the event of a past tense matrix clause, as seen in (2).[2] On this simultaneous interpretation, the past morphology in the embedded clause corresponds neither to a relative past interpretation (past with respect to the matrix verb), nor to an absolute past interpretation (past with respect to now, in which case it could hold entirely after the matrix verb).

(2) a. My sister told me that her friend **liked** frogs.
b. The students thought that it **was** raining.

Licensing approaches to sequence of tense have suggested that the simultaneous interpretations available to embedded clauses like those in (2) arise when embedded past tense is not itself semantically interpreted, but is instead licensed via a syntactic relation with past tense in the matrix clause.

Many languages similarly exhibit past inflection without past interpretations in counterfactual clauses, including counterfactual conditionals and the complements of verbs like *wish*. This use of the past tense is widely attested, and has been frequently discussed in the generative literature (Anderson, 1951; Hale, 1969; Steele, 1975; James, 1982; Palmer, 1986; Fleischman, 1989; Iatridou, 2000; Van Linden and Verstraete, 2008, a.o.). James (1982) suggests that all languages with "fake" counterfactual past exhibit it in conditionals, while other environments are more variable: for this reason I focus on counterfactual conditionals here.

[1] In discussing counterfactual past, both Arregui (2009) and Romero (2014) directly suggest that counterfactuals should be compared to sequence of tense; by contrast, Grønn and von Stechow (2010) remark briefly on disanalogies between the two.

[2] As will be discussed in section 3, this holds only of stative or progressive predicates, not of perfectively-interpreted events. This contrasts with non-sequence-of-tense languages like Russian, as observed by Comrie (1985), where embedded past inflection necessarily produces a relative past interpretation. The meanings expressed in (2) would require embedded present inflection in Russian and other non-sequence-of-tense languages.

Relevant examples appear in (3) and (4). In (3), past inflection is compatible with a present counterfactual interpretation. The conditional in (4a) also exhibits past inflection, but is future oriented and so not formally counterfactual; it nonetheless contrasts with (4b), which contains no past inflection. Iatridou (2000) adopts the traditional grammatical term *future less vivid* to describe conditionals like (4a), which express that a future event is less likely than *future neutral vivid* examples like (4b). Future less vivid conditionals pattern morphosyntactically with counterfactuals in their use of past tense, across languages that exhibit fake past. I follow Iatridou, and much subsequent work, in treating them together, and using the term "counterfactual" to refer to both.

(3) If it were below freezing, the pond outside would be frozen.

(4) a. If it snowed tomorrow, we would cancel our trip.
b. If it snows tomorrow, we will cancel our trip.

In contrast to sequence of tense, the "fake" past morphology that appears in counterfactuals has generally been assumed to be semantically interpreted, though with a result different from its ordinary temporal meaning, and often with wider semantic scope (e.g. Iatridou, 2000; Ippolito, 2006, 2013; Arregui, 2009; Karawani, 2014; Schulz, 2014).[3] Authors such as Ritter and Wiltschko (2010, 2014) and Bjorkman (2011) have further pointed to morphosyntactic evidence that counterfactual past inflection is associated with a higher position than its ordinary temporal counterpart, suggesting that the appearance of past morphology in counterfactual clauses is due to a licensing relation between a high interpretable feature and an uninterpretable counterpart on T^0.

The evidence for a high structural position for counterfactual past comes from a number of sources. First, formal semantic analyses have typically required that past tense be interpreted with scope over both the antecedent and the consequent in counterfactual conditionals. Ippolito (2006, 2013), for example, argues that past morphology retains its usual temporal interpretation in counterfactuals, but is interpreted in a higher position in which it constrains the accessibility relation of a modal operator rather than the time of evaluation for any predicate. From a morphosyntactic perspective, this means that "pastness" is interpreted in a higher position than its morphology is realized.

Indeed, given that in many languages (including English) past morphology surfaces in both the antecedent and the consequent of counterfactual conditionals, any view on which the past tense makes a single contribution to counterfactual semantics requires that one or the other instance of past morphology be the result of licensing.

In some languages we see further morphosyntactic evidence that counterfactual past is associated with a structurally higher position than ordinary temporal past—though here the evidence is typically that counterfactual past occurs in the left periphery of the

[3]For all these authors, counterfactual past is "fake" in the sense that it does not contribute to the temporal location of the clause's event. They do differ, however, in whether they attribute a single (temporal) semantics to the past tense (Ippolito, 2006, 2013; Arregui, 2009), or assume that past tense reflects either modal or temporal semantics (Iatridou, 2000; Karawani, 2014; Schulz, 2014).

antecedent clause, rather than outside both antecedent and consequent. Palestinian Arabic, for example, allows two past tense auxiliaries (*kaan*) to occur in past-oriented counterfactual antecedents (Halpert and Karawani, 2012; Karawani, 2014), as illustrated in (5). Karawani (2014) suggests that one of these auxiliaries expresses "fake" counterfactual past while the other expresses "real" temporal past.[4] The fact that these two instances of past are able to co-occur demonstrates that they are associated with distinct syntactic positions.

(5) iza kaan-(no) kaan (ʔam) yruuħ ʔ-l-jaamʕ a
if be.PAST-(SUBJ.3SM) be.PAST.3SM PROG go.IMPF.3SM to-the-university
bi-l-bas,
in-the-bus
"If he had been going to the university by bus..."
[Palestinian: Karawani, 2014, (124b)]

Similarly, Aygen (2004) argues that in Turkish the past morpheme is structurally higher when interpreted as counterfactual than when temporally interpreted. The evidence for this comes from morpheme order: in the antecedent of an indicative epistemic conditional like (6a), the past suffix precedes the conditional marker, while in the antecedent of a counterfactual like (6b), the order is reversed.

(6) a. Indicative: V-PAST-COND
Dün gece Can erken yat-**dı-ysa** sabah erken kalk-abil-ir.
Last night John early sleep-PAST-COND morning early get-up-MOD-PAST
'If John went to bed early last night, he can get up early this morning.'

b. Counterfactual: V-COND-PAST
Dün gece Can erken yat-**sa-ydı** sabah erken kalk-ar-dı.
Last night John early sleep-COND-PAST morning early get-up-AOR-PAST
'If John had gone to bed early last night, he would have got up early in the morning.'

Assuming that morphological structure tracks syntax, as in Baker's (1985) Mirror Principle and much subsequent work, this is evidence that counterfactual past is structurally higher than its temporal counterpart.

Finally, we find evidence for a special relation between T^0 and C^0 in counterfactuals from languages where conditionals can be marked by verb movement from T^0 to C^0 (*conditional inversion*), illustrated in (7) for English.

(7) a. If I had known...
b. Had I known...

Iatridou and Embick (1994) show that conditional inversion is cross-linguistically linked to counterfactuals: outside the verb-second Germanic languages it is only possi-

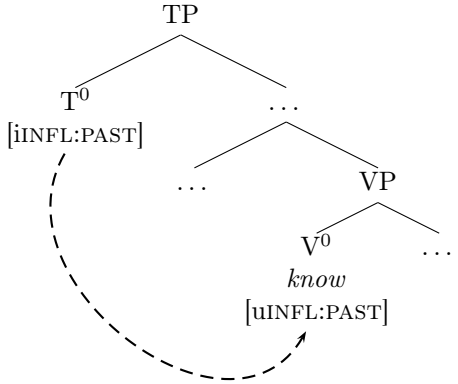
[4]This is in contrast to English, where "real" past is expressed by perfect morphology, which in finite main clauses is generally associated with a position lower than T^0.

ble in counterfactual antecedents.[5] Much current syntactic work assumes that syntactic movement occurs only when triggered by a feature-licensing relation (Chomsky, 1998, et seq.). If this is correct, then the availability of inversion in counterfactuals can be attributed to a licensing relation between interpretable "past" in C^0 in the antecedent and an uninterpretable counterpart in T^0.[6]

In sum, work on the occurrence of past tense in counterfactuals uniformly leads to the conclusion that there is a disconnect between the position in which past morphology is pronounced and the position in which past is interpreted, whether this latter position is in the left periphery of either the antecedent or consequent, or higher than both.

This, then, is the point in which counterfactuals and sequence of tense are similar: both involve past tense morphology without its usual interpretation, and in both cases we can view that morphology as being licensed by a higher interpretable occurrence of past (or past-like) features. The main difference, from this perspective, is that in counterfactuals this interpretable past is not independently pronounced, while in sequence of tense it is realized on the matrix verb.[7]

(8) I **knew** Latin (when I was younger). (*knew*=temporal past)

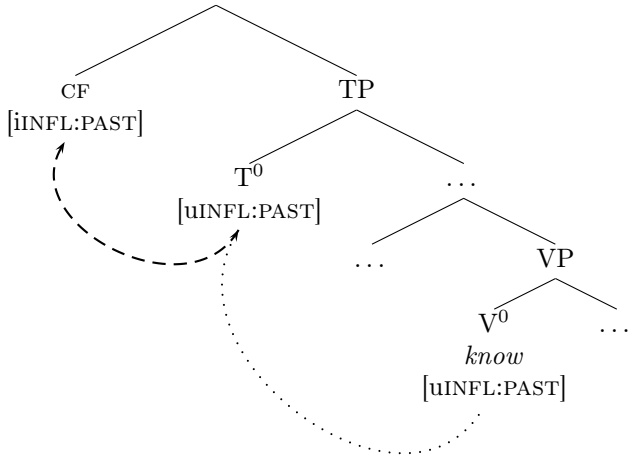


(9) If I **knew** Latin... (*knew*=counterfactual past)

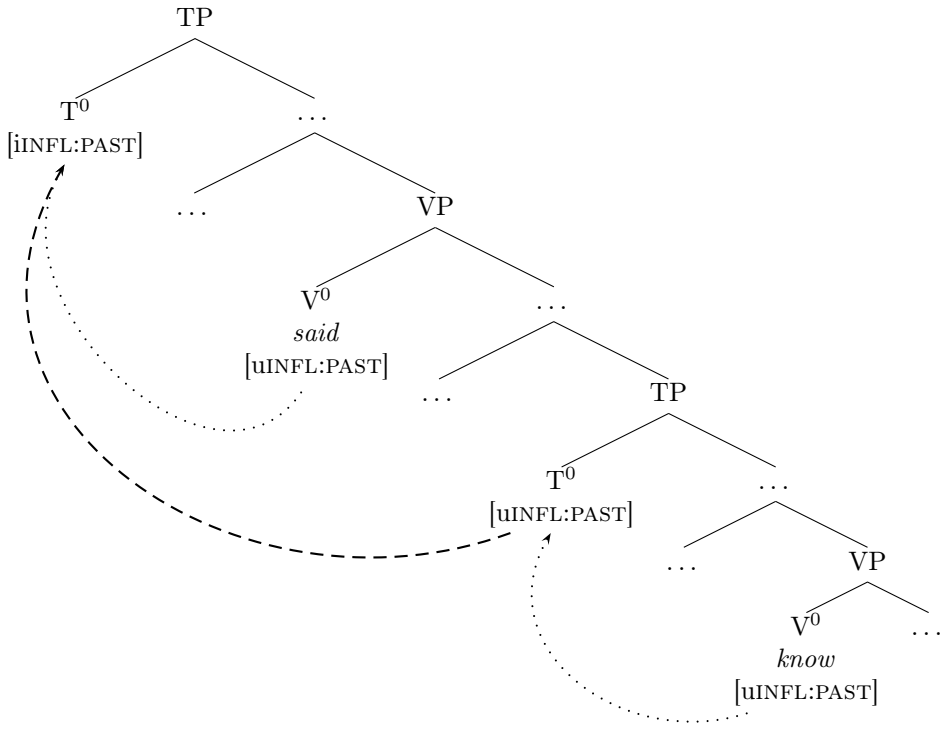
[5] Iatridou and Embick's typology is slightly broadened by Bjorkman (2011, 220-1) to include Estonian and Breton.

[6] Regarding the verb-second Germanic languages, assuming that they exhibit verb movement to C^0 in all finite clauses, we independently have to assume some other featural relation between T^0 and C^0 that can form the basis of movement. It is not unreasonable to suppose that whatever this other relation is, it can form the basis for inversion in non-counterfactual conditionals.

[7] For concreteness, the following trees consistently show a licensing relation between T^0 and the main verb, reflecting the fact that inflected verbs remain *in situ* in English. Of the formal accounts to be discussed in section 4, this is most in line with Grønn and von Stechow (2010); for Zeijlstra (2012) an uninterpretable [uPAST] feature on V^0 must be licensed directly by an interpretable [iPAST] feature (i.e. on C^0 in counterfactuals, and on matrix T^0 in sequence of tense).



(10) She said she **knew** Latin. (*knew*=sequence of tense past)



If this parallel is correct, and T^0 bears an uninterpretable past feature in both sequence of tense and counterfactual clauses, then this makes the prediction that their temporal interpretations should be similar in other ways. In particular, we predict that both should show the same interaction with temporal material lower in the clause. In other words, representationally parallel instances of T^0 would be predicted to com-

pose identically with "lower" temporal categories, e.g. viewpoint and situation aspect. This prediction is discussed further in the next section; what we see there is that the prediction is not borne out.

3 Sequence of tense and counterfactuals are different

Despite the similarities reviewed above, and despite the similar analyses that have been developed in the two cases, the temporal interpretations of sequence of tense and counterfactuals differ considerably. These differences are most visible in their interaction with aspect, both situation aspect and viewpoint aspect (Smith, 1991, et seq.). Sequence of tense and counterfactuals both distinguish states and imperfective events on the one hand from perfective events on the other; what differs is the way in which those categories affect the overall temporal interpretation.

To begin, it is well established that the simultaneous reading in sequence of tense occurs only when the embedded predicate is stative or imperfective. Perfectively interpreted embedded clauses, by contrast, exhibit only the unproblematic "relative past" back-shifted interpretation.

(11) a. The students claimed that they understood the problem.
(state → ✓simultaneous interpretation)
b. The students claimed that someone cancelled the exam.
*(event → *simultaneous interpretation)*

Thus in (11b), the only available interpretation is that the exam was cancelled before the students made their claim. The past tense morphology on *cancelled* can therefore be seen as expressing a relative past, situating the embedded evaluation time prior to the matrix event.

In (11a), by contrast, the most natural interpretation is that the state of the students understanding the problem holds at the time at which they made their claim. The past tense morphology on *understood* does not appear to contribute any past-shifting semantics on this reading.[8]

Counterfactuals with simple past inflection, by contrast, never exhibit back-shifted interpretations, regardless of their aspect or eventuality type. Stative and imperfective predicates most naturally result in present-orientation in counterfactuals, as in (12a). More interestingly, non-progressive eventive predicates are forward-shifted, as in (12b) (except when they are interpreted habitually or generically, imperfective interpretations that are not morphologically marked in English).

(12) a. If the students understood the problem, they would be calmer.
(state → present)
b. If someone cancelled the exam (tomorrow), the students would celebrate.
(event → future)

A second difference between sequence of tense and counterfactuals can be seen

[8] A relative past interpretation of the embedded clause in (11a) is available; it is only the simultaneous reading that gives rise to the sequence of tense puzzle, however.

in their interaction with the past perfect. Counterfactuals require the past perfect for backwards-shifted interpretation, as in (13); the past perfect is often described in such contexts as involving a layer of "real" past under the "fake" counterfactual past (Iatridou, 2000, et seq.).[9]

(13) If the students had understood the problem (yesterday), they would have been calmer.

The past perfect also forces back-shifted interpretations in sequence of tense contexts, as in (14). In such cases it eliminates the simultaneous interpretation otherwise available to states and imperfectives. Here, though, it fails to induce a second "layer" of past: the interpretations available in (14), with embedded past perfect, are uniformly also available to sentences with embedded simple past morphology, as in (11). In other words, the past perfect does not necessarily contribute its usual backshifted interpretation in sequence of tense contexts. It potentially serves to unambiguously express past-shifted readings of embedded states and imperfective events, but has no discernible interpretive effect on embedded perfective events like (14b).[10]

(14) a. The students claimed that they had understood the problem. (=(11a))
b. The students claimed that the professor had cancelled the exam. (=(11b))

A final significant difference between the two environments is that the so-called "double access" reading for embedded present in sequence of tense is entirely unavailable in counterfactuals, where present inflection is simply impossible. The double access reading arises in sentences like (15): as noted by Abusch (1994), among others, present embedded under past requires not only that the embedded predicate hold at the original time of speech (relative present), but that it continues to hold at the matrix time of evaluation (deictic present). Sentences like (15) express not only that the students (claim to) understand now, but that they also (claim to) have understood at some prior time (the point at which they made the claim).

(15) The students claimed that they understand the problem.

These types of readings are impossible in counterfactuals, not least because simple present inflection is not possible in the relevant contexts. A conditional with present

[9]The question of how past-under-past results in perfect morphology, given semantic differences between the simple past and the perfect, is generally not addressed. Further, there is another reading of sentences like (13): if the adverb *now* or *tomorrow* is used in place of *yesterday*, the interpretation is not back-shifted, but the counterfactuality is somehow strengthened. Such readings are discussed in more detail in Ippolito (2003) and Arregui (2009), and in Karawani (2014). They are also briefly discussed in Schulz (2014).

[10]In other contexts a distinct perfect interpretation is available. Consider, for example, the contrast between (ia) and (ib):

(i) a. The students claimed that in May the professor cancelled the exam.
b. The students claimed that in May the professor had (already) cancelled the exam.

While (ia) asserts that the exam was cancelled during the month of May, (ib) allows the reading, brought out by the adverb *already*, that the exam was cancelled prior to May.

inflection cannot receive a counterfactual interpretation, and counterfactual verbs like *wish* require past inflection in their complement.

3.1 Summary

The above-noted differences between sequence of tense and counterfactuals are summarized in Table 1.

	CFs	SOT
PAST + IMPF / states	simultaneous	simultaneous *or* back-shifted
PAST + PFV	habitual *or* forward-shifted	back-shifted
PAST + PERF	back-shifted	back-shifted
PRES	*n/a*	"double-access"

Table 1: *interpretation of tense and aspect in counterfactuals and sequence of tense*

These differences are unexpected if the formal content of T^0 is identical in the two contexts. If sequence of tense and counterfactuals both involve an uninterpretable past feature licensed by a higher interpretable counterpart, then they should remain identical from that point "down" in the clause sequence.

The systematic differences between the two suggest instead that the formal representation of tense might be different in these two contexts—that only one of them involves a true instance of "fake" or uninterpretable past.

4 Which fake pasts are truly fake?

If only one of counterfactuals and sequence of tense involves truly uninterpreted tense—i.e. [uPAST] on T^0—the question that immediately arises is: which one?

We can begin by asking what interpretations we would expect for a clause with uninterpreted past tense. The typical assumption is that such clauses will resort to a present-like interpretation, in the absence of any past tense feature. We might then further expect that clauses with uninterpreted past will show the same interaction with aspect that clauses with ordinary present tense do.

English present tense morphology allows present-oriented interpretation of states and imperfective events (progressive, habitual, or generic), as shown in (16). Perfective events, however, exhibit "planned" futurate interpretations when they occur with present morphology, as in (17).

(16) a. They understand the problem. *(state → now)*
b. My friend is worrying about the weather. *(progressive → now)*
c. The student walks to school every day. *(habitual → now)*

(17) a. We leave for the coast tomorrow. *(perfective → planned)*
b. The students learn about the Middle Ages next week. *(perfective → planned)*

Comparing these interpretations to those in table 1, it is counterfactuals, not sequence of tense, whose interactions with aspect most closely resemble those of the simple present. Though counterfactuals do not have planned interpretations, they do allow future-shifted interpretations. The simple past in sequence of tense, by contrast, more closely resembles ordinary simple past, which does not allow future or planned interpretations.[11]

(18) I left in one hour. *(simple past → *planned)*

(19) I said I left in one hour. *(simple past → *planned)*

A natural starting point, then, is to propose that counterfactuals involve a licensed [uPAST] feature, while sequence of tense arises from some other mechanism.

Indeed, an analysis of sequence of tense in terms of a licensed [uPAST] feature faces other difficulties besides its lack of interpretive parallels with the simple present. Specifically, the licensing relation that would be required to account for sequence of tense is non-local, stretching across a finite clause boundary. This is exactly the kind of configuration in which syntactic feature licensing is held to be impossible—in current Minimalist frameworks, this impossibility framed in terms of the status of CP as a *phase* (Chomsky, 2001).

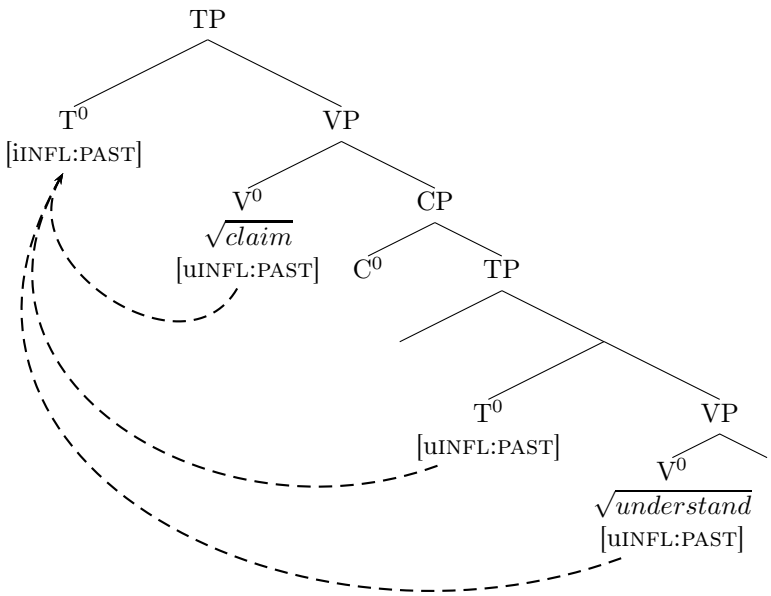
Let us consider the syntactic implementation of licensing in more detail, specifically the accounts of sequence of tense presented by Zeijlstra (2012), developed in terms of Upwards Agree, and by Grønn and von Stechow (2010), developed in terms of feature transmission under semantic binding (following Heim, 2008). These accounts are similar in many respects, and have the advantage of being explicit in the syntax they assume to underly a licensing account of sequence of tense semantics.

Zeijlstra discusses sequence of tense as part of a more general argument for Upwards Agree. The syntactic mechanism of Agree allows an uninterpretable or unvalued feature (a *probe*) to establish a relation with an interpretable or valued feature of the same type (a *goal*). The original definition of Agree requires that probes c-command goals: uninterpretable features probe *downward* to find potential goals (Chomsky, 2000). More recently, however, several authors, looking at diverse phenomena, have proposed that Agree should instead involve the reverse probing relation: uninterpretable features probe *upwards* to find potential goals (Wurmbrand, 2012a,b; Zeijlstra, 2012; Merchant, 2011; Bjorkman, 2011). This is particularly attractive in the domain of verbal inflectional features, whose morphological realization on a verb can be systematically lower than their apparent position of semantic interpretation (Wurmbrand, 2012a,b; Bjorkman, 2011). Wurmbrand (2012a) suggests that inflection doubling constructions in Germanic languages illustrate an instance where a single interpretable inflectional feature has two (lower) uninterpretable instances; Zeijlstra (2012) makes the same suggestion for sequence of tense, where the two identically-inflected verbs occur at a greater distance from one another (i.e. in separate clauses).

(20) The students claimed that they understood the problem.

[11] Past tense in both matrix clauses and sequence of tense does allow a planned reading when combined with the progressive, but this is a general property of the English progressive rather than of the past tense.

(21)



Zeiljstra requires a direct relation between embedded V^0 and matrix T^0, rather than a relation mediated by embedded T^0, because for him every Agree probe must find an interpretable goal; because embedded T^0 has uninterpretable past, it cannot check any lower past feature.

The mechanism underlying Grønn and von Stechow's (2010) account is similar to Agree, but not identical. They follow Heim's (2008), who proposes that the morphological features expressed on semantically bound pronouns (i.e. gender features) are not interpreted, but instead are transferred from the element that binds them. On pronominal approaches to tense Partee (1973)—where the semantic contribution of tense is a time argument whose reference is potentially restricted by features like [PAST]—same mechanism of feature transmission (should it exist) is expected to be available to tense. In the case of sequence of tense, Grønn and von Stechow (building on earlier work in von Stechow, 2002; Von Stechow, 2009) suggest that the time variable on the embedded T^0 is bound by a time argument of the matrix verb. It is this binding relation, for them, that allows a matrix [PAST] feature to be copied into the embedded clause.

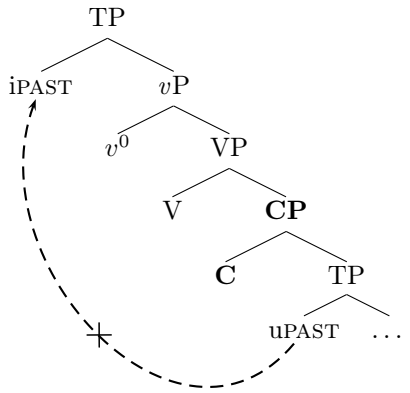
The Upwards Agree and feature transmission accounts are formally quite similar, and they encounter essentially the same difficulties of locality. These difficulties are of two basic types: the first is that they require a licensing relation to be established across a finite clause boundary, known to be a barrier for syntactic dependancies; the second is that they require in some cases licensing across other inflectional features, which for reasons of minimality should block the transmission of [PAST] from matrix to embedded T^0. Let us now consider both of these issues in somewhat more detail.

The issue of the intervening finite clause boundary is an issue of locality *domains*. In current work, this is expressed in terms of CP's status as a phase, or spell-out domain. On this type of approach, certain syntactic constituents are "spelled out" as soon as they are built in the computation, and sent to both morphological realization and semantic interpretation. As a consequence, any features in need of licensing or

valuation must be dealt with before the constituent is complete (or else must move into a higher domain before spell-out).

On both Zeijlstra's and Grønn and von Stechow's accounts, an uninterpretable tense feature on embedded T^0 is licensed by corresponding features in the matrix clause. Neither Zeijlstra nor Grønn and von Stechow directly address the issue of locality, but on the above assumptions about phase domains, embedded T^0 would be contained within the embedded CP phase. It would therefore be spelled out before the introduction of matrix T^0, the source of an interpretable [iPAST] feature. This feature is introduced too late in the derivation to allow the embedded verb to be realized with past morphology, or for its tense feature to be licensed. This is schematized for in (22) for an Upwards Agree licensing relation.[12]

(22)



For an Upwards Agree account, this is a semantic problem: the finite clause's phase boundary prevents [uPAST] feature on embedded T^0 (and, indeed, on the embedded main verb) from being checked prior to LF, and so that feature should cause a crash. (If Agree is also a mechanism of feature valuation, or is a precondition for valuation, this will also result in a morphological problem.)

For a feature transmission account, by contrast, the problem is not semantic, but

[12]Hedde Zeijlstra (p.c.) suggests that if the tense features of T^0 also occur on C^0 (i.e. "feature inheritance"), then they are outside the embedded spell-out domain (i.e. the complement of the phase head) and can be checked by matrix T^0.

This move would resolve the basic issue of feature checking for the Upwards Agree account, but it encounters two more. First, it requires that the embedded uninterpretable tense feature is introduced to the derivation already *valued* as past, despite being uninterpretable. This distinction between valuation and interpretability has been used to great effect since its introduction by Pesetsky and Torrego (2007), but in the case of sequence of tense this move appears to conflict with the idea that the embedded clause actually *receives* its tense value from the matrix clause.

Regardless of whether the embedded tense is unvalued or merely uninterpretable, however, a second problem is imposed by the further intervention of the matrix vP: v^0 is also a phase head, and so matrix v^0 introduces a second locality boundary between the embedded clause and matrix T^0. Movement of embedded tense features to C^0 is thus insufficient to put them in the same domain as potential checkers in the matrix clause: features on C^0 will be spelled out before their potential checker can be merged on T^0. Additionally, the [uPAST] features on the embedded verb could not be checked via feature inheritance in any event, as main verbs in English clearly remain below T^0 in English.

morphological. The actual semantic binding relations required by Grønn and von Stechow are not necessarily disrupted by the presence of a phase boundary; it is only the possibility of transmitting a [PAST] feature prior to the morphological realization of the embedded clause that is at issue. The embedded clause will be spelled-out before matrix T^0, the only source of morphological PAST, is merged, so the embedded clause should be realized with present morphology.

The second locality problem faced by a licensing approach to sequence of tense is a problem of *relative* locality: in some cases the relevant licensing relation would have to be established across another more local potential licensor. The relevant cases involve sentences like (23), where sequence of tense is triggered by a matrix clause that is not merely past, but past progressive.

(23) The students were claiming that they understood the problem.

The matrix progressive aspect is relevant because the progressive elsewhere blocks feature licensing relations between T^0 and lower verbs, and both Upwards Agree and feature-transmission accounts assume that sequence of tense involves the same mechanism that unites tense inflection with a verb in the same clause. Regardless of whether verbal inflection is licensed via Lowering (Chomsky, 1957; Embick and Noyer, 2001), Agree (Wurmbrand, 2012b,a) or via feature transmission (Grønn and von Stechow, 2010; von Stechow, 2002), it is clear that tense morphology cannot be licensed on a main verb across an intervening progressive: neither (24a) nor (24b) is a possible alternative to (24c).

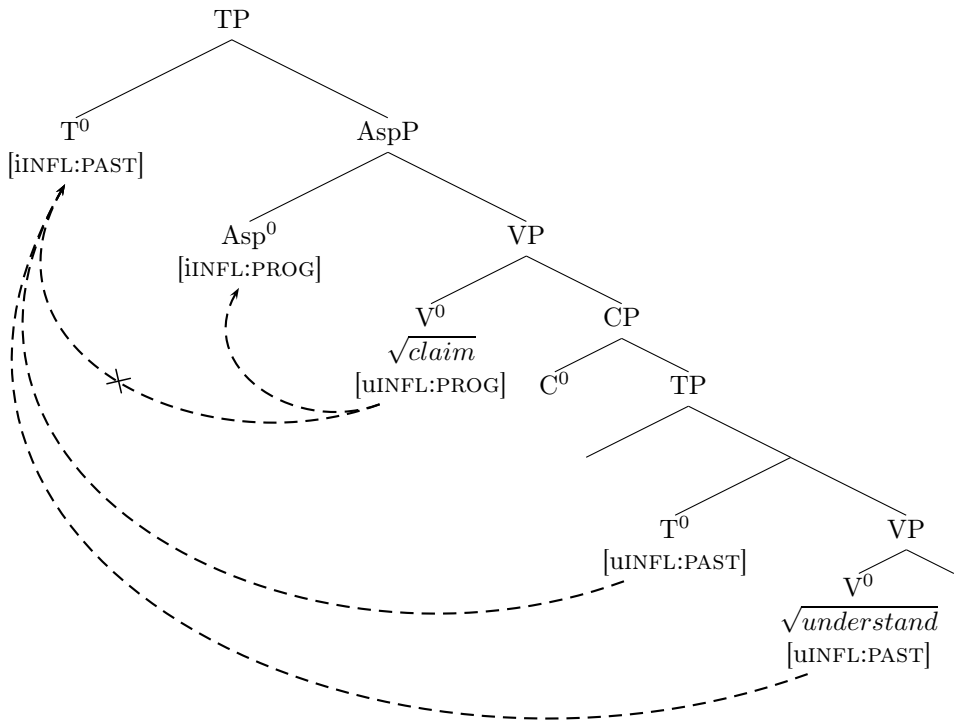
(24) a. *The students were laughed.
b. *The students were laugh-ing-ed.
c. The students were laughing.

The ungrammaticality of sentences like (24a-b) is most naturally understood in terms of minimality: the verb cannot establish a relation with T^0 because there is a closer element (plausibly a progressive Asp^0) with which it must establish a relation instead.[13]

To explain sequence of tense in (23), however, matrix T^0 must be able to establish a relation with embedded T^0 in precisely the context where it is unable to establish a similar relation with the (closer) matrix verb. The required licensing relations (including the impossible relation between the matrix verb and matrix T^0) are illustrated in (25) for the Upwards Agree account.

[13] Whether the intervention is due to the presence of the progressive aspectual head itself, or instead to the syntactic presence of an auxiliary *be*, is somewhat orthogonal to the discussion here; in any case, the closest source of inflectional features for both the matrix verb and all embedded heads will be the aspect head and its interpretable progressive features.

(25)



This structure demonstrates that for a licensing account to work, heads in the embedded clause need to be immune to a minimality effect that constrains the matrix verb. There should be no way for embedded heads to establish a checking relation with matrix T^0, given the intervention of a closer head with interpretable inflectional features.

This problem applies in a somewhat different way to Grønn and von Stechow's account. For them the embedded T^0 is bound by the matrix verb, rather than directly by matrix T^0, and so there is no issue of attempting to establish a relation across the intervening Asp^0 head. The different problem that arises here, however, is that the matrix verb simply lacks any [PAST] feature that could be transmitted to embedded T^0. If the embedded tense is bound by a matrix progressive-inflected verb, any inflectional features transmitted to it should be progressive, rather than past. A feature transmission approach to sequence of tense is feasible only if embedded tense can be bound by a head that itself bears past tense features; it is clear that this cannot be the case under progressive matrix clauses in English, as in (23). Once again, this is not an issue for the semantic account of tense binding, because the tense of the embedded clause can still be bound by the time of the matrix verb. The issue is whether that binding relation can account for the morphological presence of past morphology in the embedded clause.

To review, the licensing relations required to account for sequence of tense face serious syntactic challenges, because they require syntactic relation to be established across a finite clause boundary, or across a progressive (or other non-past-inflected) head. Given the strong evidence from other domains that feature licensing is indeed

constrained by syntactic locality (φ-agreement, WH-movement, negative concord, etc.), the fact that sequence of tense operates independently of well-motivated locality constraints constitutes strong evidence that it should not be accounted for in licensing terms.

Counterfactuals, by contrast, remain a viable domain for a feature licensing account: the locality issues outlined above do not arise in this case, where licensing would occur between a left-peripheral head bearing uninterpretable past tense (often unpronounced) and the next lower instance of T^0. If either of the two phenomena should be explained in terms of feature licensing, it thus appears that counterfactuals are the better candidate.[14]

5 Why is fake past present?

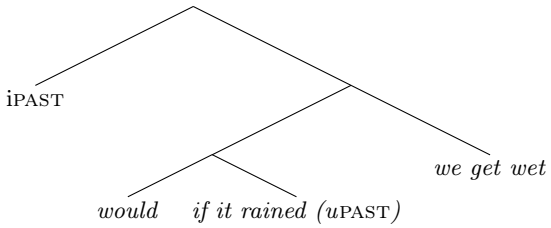
In work on both counterfactuals and sequence of tense, the availability of simultaneous or present-oriented readings has often been cited as evidence for the uninterpretability of tense features. Indeed, this type of argument appears in the previous section, in the suggestion that interpretive parallels between counterfactuals and the simple present constitute evidence for past being "fake" in the former.

Such arguments rest on the view that semantic present tense is somehow equivalent to the absence of any tense specification at all: in the absence of an interpretable [PAST] feature, whose role would have been to shift the time of evaluation to an earlier point, the clause is evaluated at the time of utterance. This view is also reflected in proposals that the present tense is interpretively or featurally "unmarked" relative to the past tense.

From a morphosyntactic perspective, however, it is unclear whether this intuition

[14]This simplifies somewhat. It is not clear exactly what syntactic position should be associated with interpretable past in counterfactuals, particularly in conditional clauses, for which the relation between surface syntax and compositional semantics remains somewhat obscure. The discussion above implicitly assumes something resembling the following structure for a counterfactual like *If it rained, we would get wet*. This simply adds an interpretable past feature above the compositional structure proposed by Kratzer (1981, 1986, et seq.) for conditionals, in which the semantic role of the antecedent is to restrict the domain of a modal operator:

(i)



Nothing hinges on the details of this representation, however, so long as [iPAST] occurs higher than both the morphologically past modal (e.g. *would*) and the antecedent clause, and no phase boundaries intervene between the interpretable past and the licensed uninterpretable past in either antecedent or consequent. There may be some question of the role of *if* as a complementizer (if complementizers necessarily occupy C^0, a phase head), but this issue is, I believe, more resolvable than the issues found in sequence of tense.

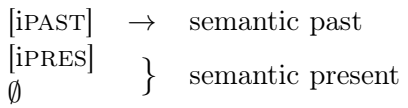


Figure 1: *Correspondence between featural representation and semantic tense.*

can be fully implemented, at least for languages like English, where there is evidence that the semantic present tense is not featurally "unmarked" (i.e. represented via the *absence* of syntactic features) in root contexts. This evidence comes from the existence of overt copulas and auxiliary BE even in the present tense, as well as the syntactic uniformity of T^0 across tenses, i.e. in terms of EPP effects (Bjorkman, 2011, under review): these facts suggest that the featural content of T^0 is consistent across the past and present finite tenses, containing a morphologically and syntactically visible tense feature in both cases.

Turning to present-oriented counterfactual clauses, we can now address the question of how their tense interpretation comes about. If we accept that T^0 in a counterfactual clause bears an uninterpretable past feature [uPAST], does it also bear an interpretable present tense feature [iPRES]?

Let us begin by considering an alternative, that counterfactual T^0 bears only its uninterpretable [uPAST] feature, and that its semantic present orientation arises from the absence of any interpretable tense feature. Given the evidence that simple present main clauses do have inflectional features, this would mean that the semantic opposition of present versus past in English would correspond to a three-way representational contrast in terms of features, as in Figure 1. The main objection to such a theory is one of economy, because it has semantic present represented either by the absence of any interpretable tense (in counterfactuals) or by the presence of an interpretable present feature (in main clauses).

By contrast, if present oriented counterfactuals instead do bear an interpretable present tense feature [iPRES], a question arises of how this feature is able to co-occur with an uninterpretable feature of the same type but a different value, i.e. [uPAST]. Even if such dual specification is syntactically licit, we would have to stipulate that [PAST] take precedence over [PRES] when it came to morphological realization.

This apparent conflict can be resolved by decompositional approaches to tense features, of the types pursued by Cowper (2003, 2005) and by von Stechow and coauthors (von Stechow, 2002; Von Stechow, 2009; Grønn and von Stechow, 2010). Such approaches decompose the representation of tense into a component of *anchoring* (or *deixis*), which provides the time relative to which a clause is interpreted; and *shifting*, an optional feature that introduces anteriority (or posteriority). Semantic past (relative to now) reflects the co-occurrence of an anchoring feature (e.g. [iANCHOR]) with [iPAST], while semantic present reflects that same anchoring feature in the absence of any shifting feature.

The advantage of such approaches, from a purely morphosyntactic perspective, is that they encode the intuition that the present tense is representationally simpler (i.e. "less marked") than the past, while nonetheless having a positive feature specification

PAST, ANCHORED	↔	*-ed* (i.e. simple past)
ANCHORED	↔	*-∅/-s* (i.e. simple present)

Figure 2: *Realization of features, intrinsically ordered by specificity.*

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for the present tense. We assume that morphological realization is insensitive to feature interpretability: because the past tense is featurally more complex than the past, any implementation of a subset principle in realization will cause the simple past to be inserted over the simple present, whenever possible. This is reflected by the realization rules schematized in Figure 2.

Such decompositions of tense features have been proposed independently of fake tense in counterfactuals. Yet in reconciling the realization of fake tense with its cooccurrence with real temporal interpretations, we find independent support for this more complex representational theory.

6 What about sequence of tense?

If sequence of tense is not explained in terms of feature licensing, how can it be explained instead? The focus of this paper has been on the morphosyntax of apparently "fake" inflection, rather than on its interpretation, but this question remains pressing.

Indeed, authors such as Abusch (1994, 1997) have proposed that embedded tense in sequence of tense is real, with both simultaneous interpretations and double access readings arising from interaction with the embedding predicate. The contribution of this paper is to provide an indirect argument in favour of this type of approach, by articulating not semantic but morphosyntactic challenges to feature licensing accounts.

This conclusion has implications for the typological investigation of inflectional feature systems. If counterfactual clauses have fake tense, then necessarily whatever verb forms occur in counterfactuals must be realizations of a morphosyntactic [PAST] feature. If sequence of tense is a semantic phenomenon, by contrast, a phenomenon that does not interact with feature valuation or licensing, then it could in principle arise from any representation that gives rise to an anterior interpretation, whether or not that representation contains a [PAST] feature. Sequence of tense could thus result in any morphology that is involved in past temporal reference, independent of whether that morphology realizes a morphosyntactic past feature.

In languages like French and Italian, for example, simple preterite (i.e. perfective) past forms have been entirely or partially supplanted by a compound past (developed from a compound perfect) in colloquial use. In both languages, this compound past participates in sequence of tense, but does not occur in counterfactuals, which require imperfective forms (Iatridou, 2009; Ippolito, 2004). The imperfective, by contrast, participates in both sequence of tense and counterfactuals.[15]

[15]This distribution has sometimes been taken as evidence that counterfactual clauses require imperfective semantics (Iatridou, 2009; Arregui, 2009; Ferreira, 2011). Bjorkman and Halpert (in press, 2012) argue, however, that the presence of imperfective is illusory in such contexts, with so-called "past imperfective"

Even in English, there is evidence that the perfect can participate in sequence of tense, in non-finite embedded contexts (Stowell, 2007), though the perfect is nonetheless insufficient to mark any clause as counterfactual. This is explained by divorcing the semantic anteriority of the perfect from its featural representation: if the perfect does not realize a [PAST] feature,[16] it will be unavailable to realize such a feature in counterfactual clauses.

7 Conclusions

Though both sequence of tense and counterfactuals have been analyzed as involving an uninterpretable past feature in need of licensing, differences in their interactions with aspect argue that the two should be given different representations. Of the two, only counterfactuals fit naturally within a feature licensing account, both in their range of temporal interpretations and in the configuration in which licensing must take place.

The semantic analysis of sequence of tense has been aside in this discussion, but we seem to be led to the conclusion that sequence of tense languages exhibit true semantic tense in embedded environments. An obvious question of interest for the line of reasoning pursued here is whether the difference between sequence of tense languages like English and non-sequence of tense languages like Russian can be made to follow from the respective organization of their temporal feature systems, rather than from the parametric presence or absence of an sequence of tense rule (Ross, 1967; Grønn and von Stechow, 2010).

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morphology being in fact underspecified for aspect. In other languages counterfactuals appear to require perfective morphology (Palestinian Arabic), or allow both perfective and imperfective aspect (Russian, Zulu).

[16]The conclusion that the perfect does not involve a [PAST] feature may not be fully justified: as we have seen, in English the perfect can express simple past meanings (distinct from interpretations available to the present perfect) in non-tensed contexts (i.e. in non-finite clauses or under modals), and in many languages the perfect has developed into a simple past (e.g. the German compound past, particularly in Austrian German) or a perfective past (e.g. the French *passé composé*). We might suppose on these grounds that the perfect does realize a [PAST] feature, but one that occurs in a different structural position, or a different structural environment, than a true past form, for example a [PAST] feature that does not co-occur with a feature [ANCHORED], or that occurs as the complement of another tense head (itself specified as present or past).

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