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THE MORPHOSEMANTICS OF PAST TENSE

NELS 45@MIT

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THREE THINGS THE ENGLISH PAST AND PERFECT HAVE IN COMMON

1. Past meaning

- a. John left.
- b. John has left.

2. Morphology, sometimes

- c. John went.
- d. John has gone.

THREE THINGS THE PAST AND PERFECT HAVE IN COMMON

3. Despite subtle differences in meaning, the meaning of the past is paired with the morphosyntax of the perfect in certain contexts:

- a. John left yesterday.
- b. #John has left yesterday.
- c. John might have left yesterday.

THE PROPOSAL

The perfect consists of low Past Tense, scoped over by another tense

The semantic contribution of the higher tense is responsible for the subtle semantic difference between past and perfect

Syntactic intervention of the higher tense is responsible for morphological differences

ROADMAP

1. Briefly argue for semantic unification, sketching an analysis
2. Explicitly make a morphosyntactic case for unification

SEMANTICS

BASICS

Tense and aspect have the same basic function:
relate time arguments Reichenbach (1947); Klein
(1994)

Reichenbachian schematic denotations for tense
and aspect:

- (1) a. $[[\text{PRES}]] \approx RT = ST$
b. $[[\text{PAST}]] \approx RT < ST$
- (2) a. $[[\text{PERF}]] \approx ET < RT$
b. $[[\emptyset]] \approx ET = RT$

BASICS

- (3) Yesterday, Daniels walked into the bar.

$$ET = RT < ST$$

- (4) MacNulty had been there (earlier).

$$ET < RT < ST$$

BASICS

A first rough cut: past and perfect can be unified on a relative theory of tense, where things like *RT* and *ET* just refer to the temporal arguments of various operators (e.g., Demirdache and Uribe-Etxebarria (2004); Cable (2013))

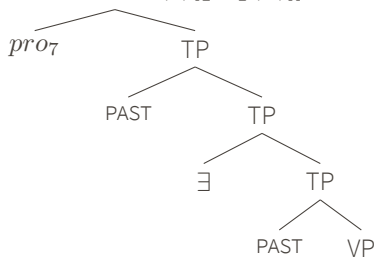
$$(5) \quad \llbracket \text{PAST} \rrbracket = \llbracket \text{PERF} \rrbracket = \lambda p \lambda t \lambda t' [t < t' \ \& \ p(t)]$$

Whether a temporal operator ends up ranging over *RT* or *ET* is just a question of where in the tree it is

BASICS

The first temporal argument of a tense may be satisfied by a null pronominal (cf. Partee, 1973, 1984), or bound quantificationally

(6) MacNulty had been there.

$$\lambda t[g(7) < t \ \& \ \exists t' < g(7)[[VP](t')]]$$


ADVERBIALS

Frame adverbials constrain *ET* (cf. Cable (2013))

- (7)
- I have eaten exactly three times **today**.
 - $ET < RT = ST$
 - $ET \in \llbracket \text{today} \rrbracket$
- (8)
- MacNulty had been there **the day before**.
 - $ET < RT < ST$
 - $ET \in \llbracket \text{the day before} \rrbracket (RT)$

AN OLD FACT

The present perfect, unlike the past or other perfects, is incompatible with past time adverbials.

(McCawley, 1971, 1988, a.o.)

(9) a. #I have eaten lunch yesterday.

b. I have eaten lunch today.

(10) a. I ate lunch yesterday.

b. I ate lunch today.

(11) a. MacNulty had been there the day before.

b. Asia should have been home yesterday.

SEMANTIC ANALYSIS IN BRIEF

Temporal adverbials attach high, and are thus subject to a constraint that they be within the temporal range established by tense

Crucially, however, the higher tense constrains the temporal frame adverbial and RT independently -- so they need not overlap

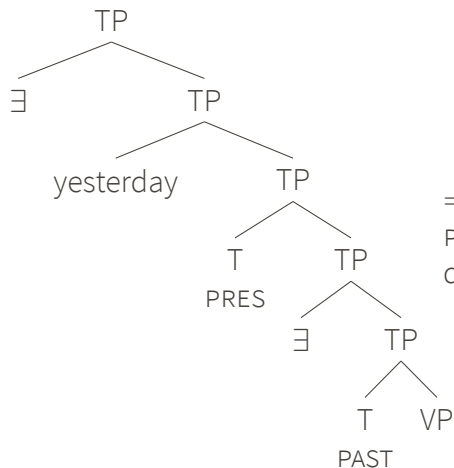
SEMANTIC ANALYSIS IN BRIEF

But following the framework of Klecha (2014) temporal-frame-setting operators 'trickle down' to constrain the time arguments of quantifiers embedded in their complements, i.e., ET

This can be achieved by adopting a Branching Times framework, in which the typical notion of 'possible worlds' are replaced with 'histories', which encode temporal information

DERIVING THE CRUCIAL PROPERTY OF THE PRESENT PERFECT

(12) #Yesterday John has eaten breakfast.



$= \lambda t \lambda h [\exists u \in \text{PRES}(t, h) [\exists v \in \text{PAST}(u, \text{YEST}(h)) [\text{VP}(\text{YEST}(h), u)]]]$
 defined iff $\text{YEST}(h) \circ \text{PRES}(t, h)$

DERIVING THE CRUCIAL PROPERTY OF THE PRESENT PERFECT

Other differences between the past and the present perfect can be attributed to this

- (13) A: I saw Jenna at the party last week.
a. Oh, I haven't talked to her.
a'. Oh, I didn't talk to her.

The implicit frame adverbial at play in (13a) must overlap speech time, unlike the one in (13a')

(Many other issues to be addressed ultimately; cf. Portner, 2003; Iatridou et al., 2003)

MORPHOSYNTAX

THE SYNTACTIC ANALYSIS IS BASED ON TWO INSIGHTS

The role of finiteness: morphological past tense is the highest functional head in a finite clause. Elsewhere, past T is morphological perfect (Hoffman 1966/1976; McCawley 1971, 1988)

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To simplify, we assume no distinction between *be* and *have* as auxiliaries, although the final analysis could implement this, as in Bjorkman 2011

THE MOVING PARTS

THE FEATURES: [FIN]

Privative feature on Fin head. It ends up on the highest V, triggering finite morphology

THE FEATURES: [TNS]

[TNS] encodes tense semantics:

- [TNS:PRS] on present T
- [TNS:PST] on past T

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[INFL] is present in past T and modals:

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More than one [INFL] also results in feature conflict, triggering *have*-support

MORPHOPHONOLOGY

Finite past vs. past participle morphology at
Vocabulary Insertion:

- (14) a. [INFL:PRT, FIN] → *-ed*
b. [INFL:PRT] → *-en*

Wiese 2008; Bobaljik 2012: representations of this
type explain stem ablaut patterns in Germanic

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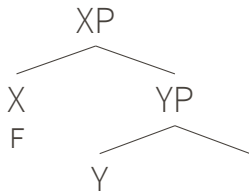
Present tense is also finite:

- (15) [FIN, 3SG] → *-s*

HOW TO MOVE THE PARTS

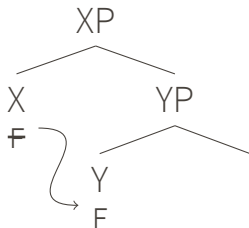
LICENSING: FEATURE TRANSMISSION

Inflectional features must be licensed on a V by **Feature Transmission**, i.e. feature movement:



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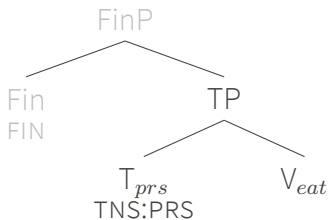
Feature Conflict: F cannot be transmitted to a head that already has a feature of the same type

THE PARTS MOVING

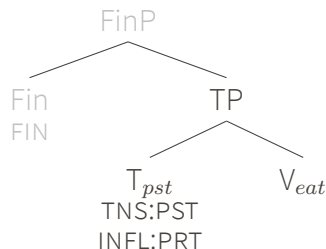
SIMPLE TENSES

Only one T; no Feature Conflict

(16) Simple present



(17) Simple past

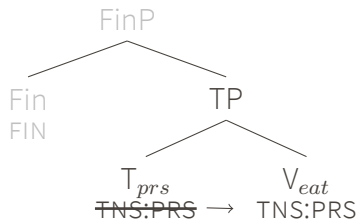


Merge of T

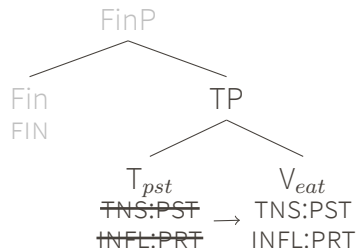
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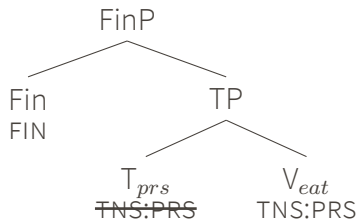


Transmission from T to V

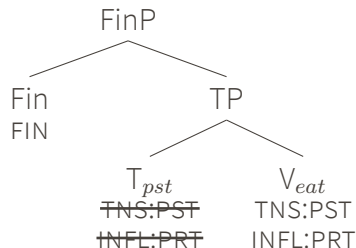
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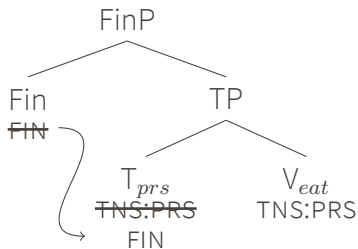


Merge of Fin

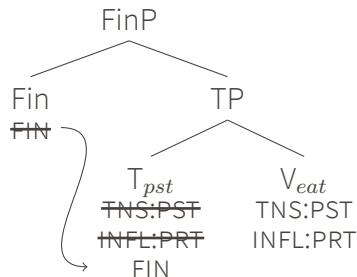
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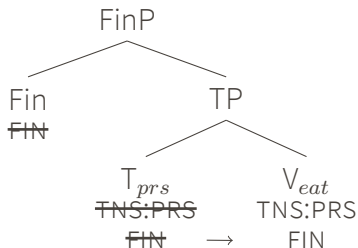


Transmission of [FIN] all the way to V

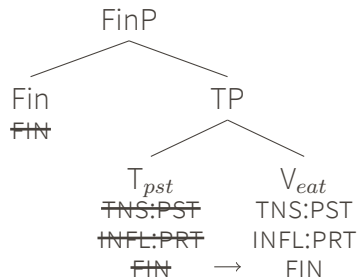
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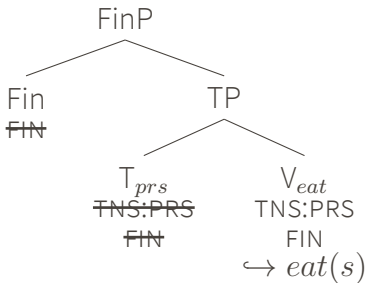


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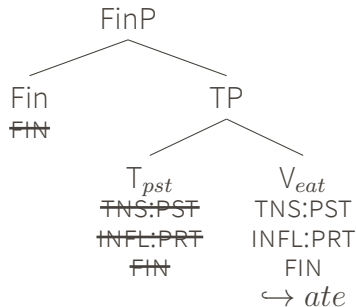
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Spellout

A COROLLARY: FEATURE VACANCY

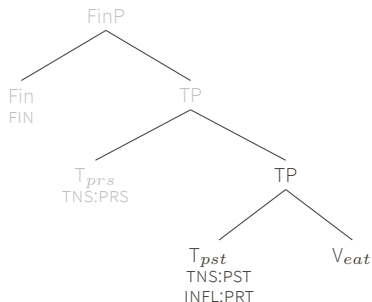
Since Feature Transmission is movement, Feature Conflict can be avoided by

Feature Vacancy: if a head H with a feature of type T transmits it to another head, a new instance of T can be transmitted to H

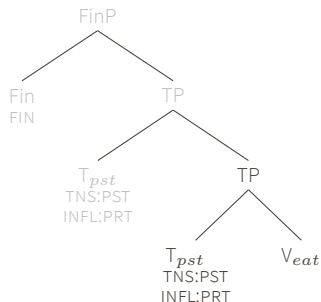
PERFECT MORPHOLOGY

More than one T: Feature Conflict and *have*-support

(18) Present perfect



(19) Past perfect

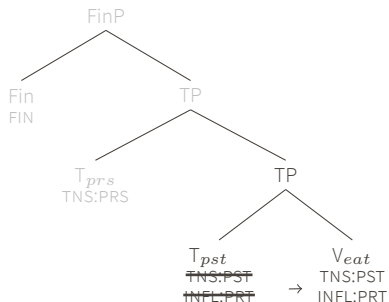


Merge of lower T

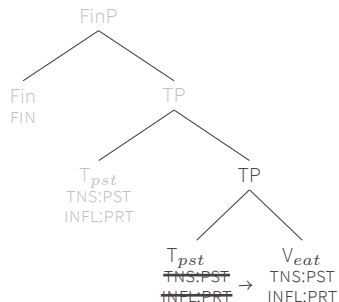
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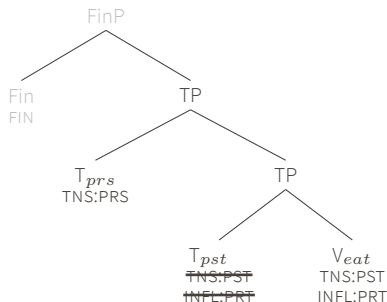


Transmission from lower T to V

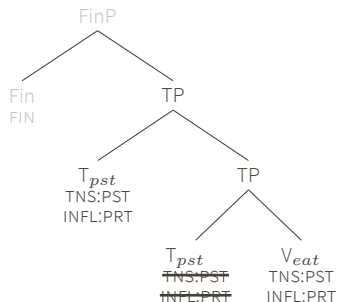
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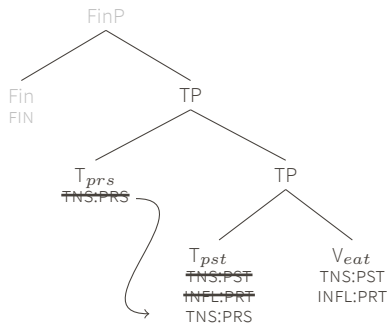


Merge of higher T

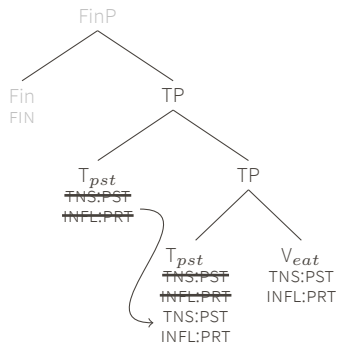
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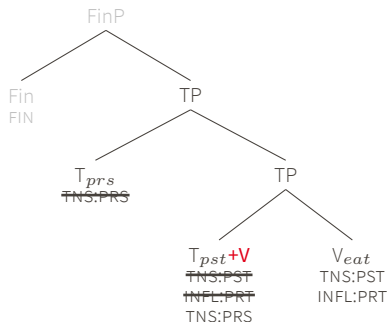


Vacancy allows Transmission from high to low T

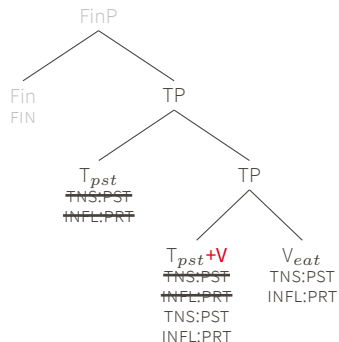
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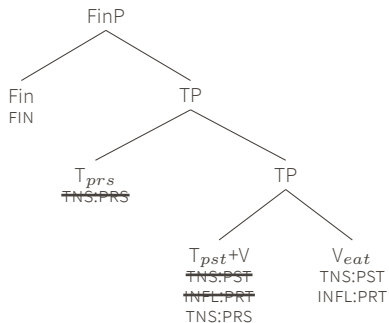


Conflict prevents Transmission to V → V-support

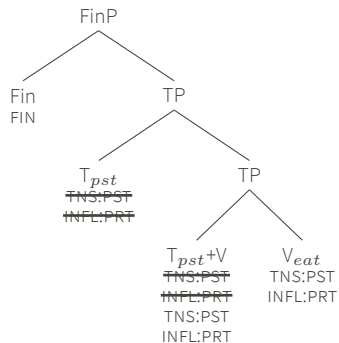
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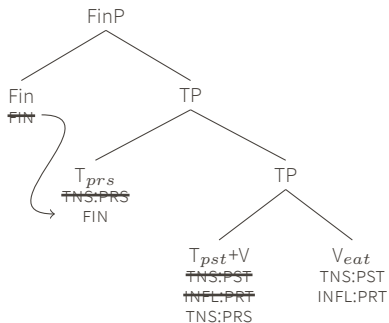


Merge of Fin

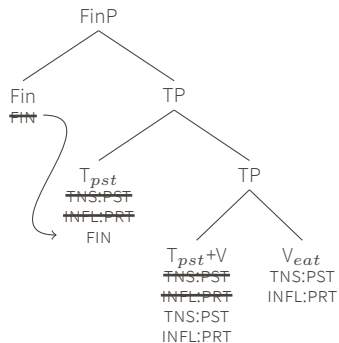
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More than one T: Feature Conflict and *have*-support

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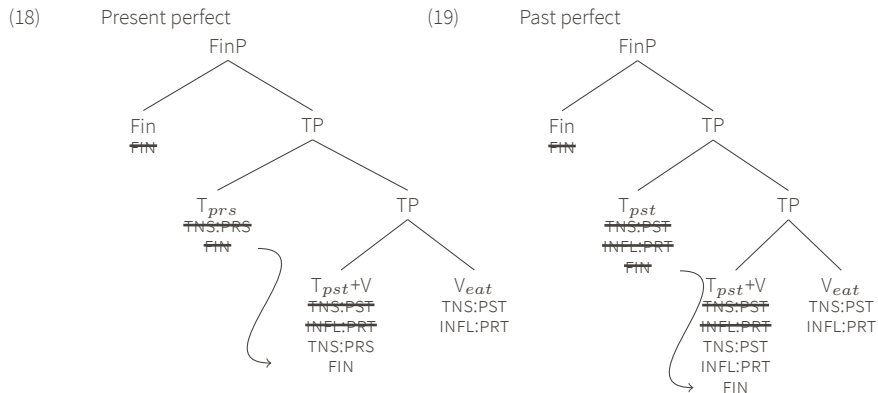
(19) Past perfect



Transmission of [FIN] to V-supported lower T

PERFECT MORPHOLOGY

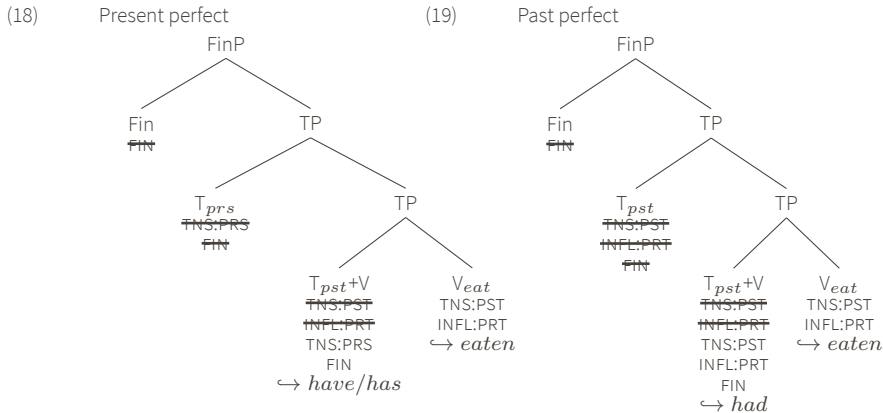
More than one T: Feature Conflict and *have*-support



Transmission of [FIN] to V-supported lower T

PERFECT MORPHOLOGY

More than one T: Feature Conflict and *have*-support



Spellout

MODALS AND TENSE

Modals are generated above T:

(20) John might eat.
John [Mod [T_{pres} eat]

(21) John might have eaten.
John [Mod [T_{pst} eat]

MODALS AND TENSE

Modals are generated above T:

- (20) John might eat.
 John [Mod [T_{prs} eat]]
- (21) John might have eaten.
 John [Mod [T_{pst} eat]]

Evidence that *might eat* has present T (Klecha 2014):

- (22) John might clean the bathroom tomorrow.

Nonpast reading can't come from the modal or the verb

MODALS AND TENSE

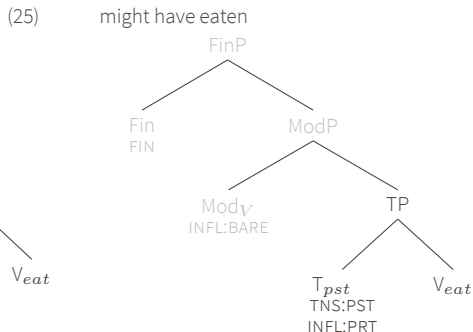
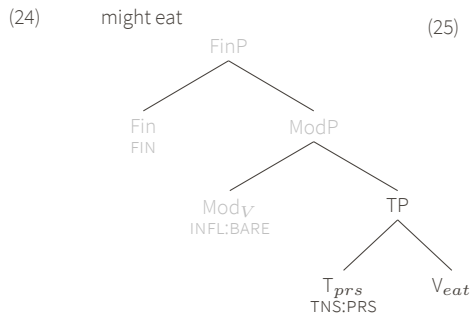
Evidence that *might have eaten* has past T
(McCawley 1971, 1988):

- (23)
- a. John left yesterday.
 - b. #John has left yesterday.
 - c. John might have left yesterday.

Perfect morphology is paired with past tense semantics

THE DERIVATION WITH MODALS

Conflict and *have*-support only in past, not present T

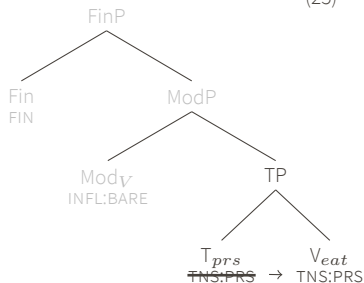


Merge of T

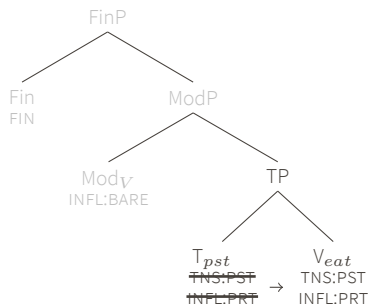
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(24) might eat



(25) might have eaten

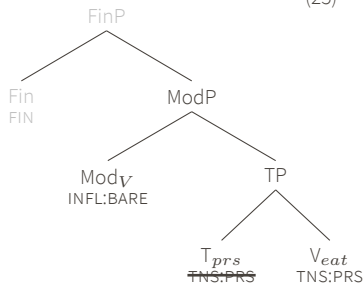


Transmission from T to V

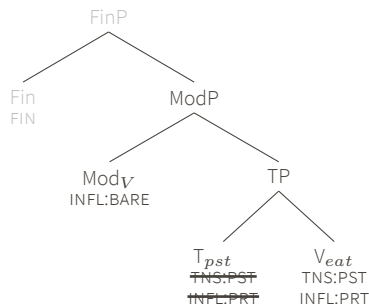
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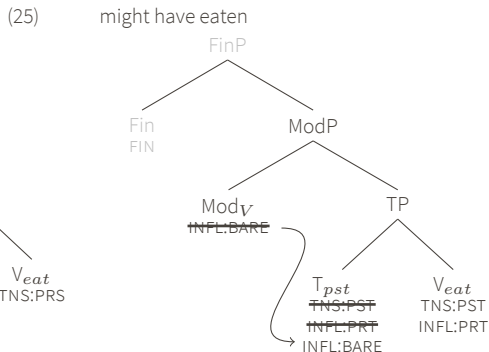
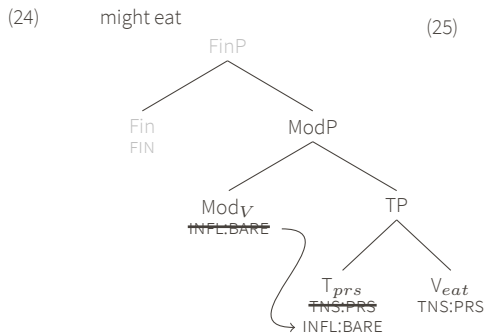
(25) might have eaten



Merge of modal

THE DERIVATION WITH MODALS

Conflict and *have-support* only in past, not present T

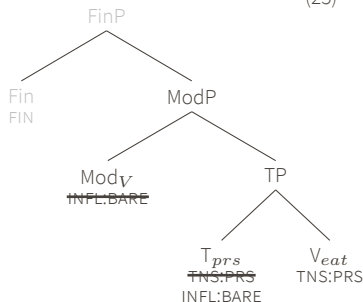


Transmission from modal to T; Vacancy allows this in the past

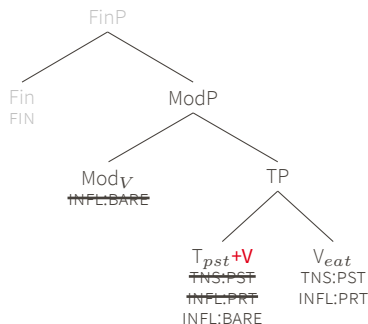
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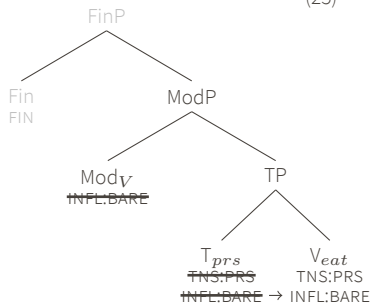


Past only: Conflict prevents Transmission to V → V-support

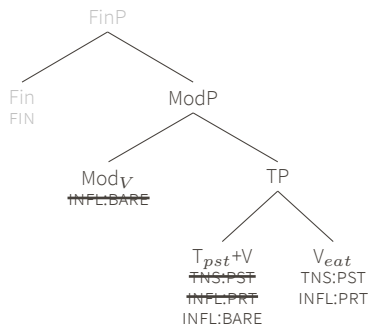
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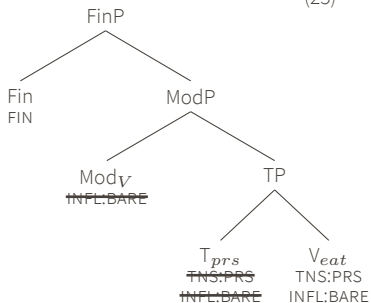


Present only: Transmission to V, no Conflict

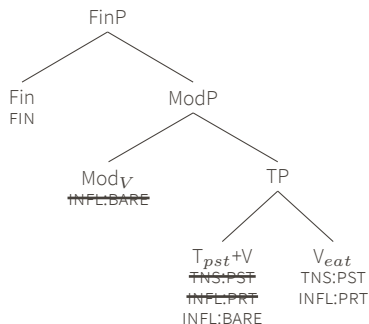
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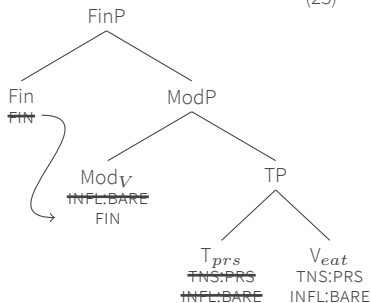


Merge of Fin

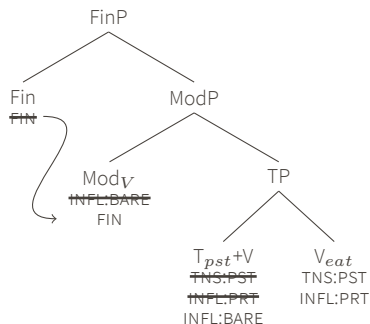
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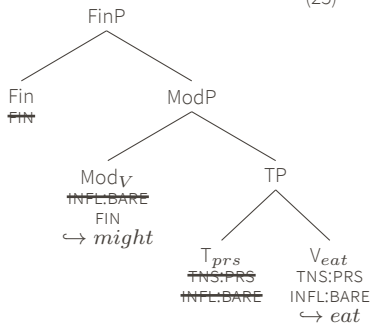


Transmission of [FIN] to modal with V-feature

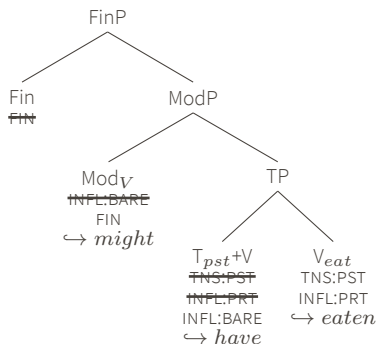
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Conflict and *have*-support only in past, not present T

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Spellout

FINAL COMMENTS

WHAT FEATURE TRANSMISSION IS NOT

Feature Transmission looks like Affix Hopping
(Chomsky 1957)

WHAT FEATURE TRANSMISSION IS NOT

Feature Transmission looks like Affix Hopping
(Chomsky 1957)

But Affix Hopping has no natural way of encoding
Feature Conflict

FEATURE TRANSMISSION IS NOT AGREE

No interpretable/uninterpretable (valued/unvalued) pairs, no copying/checking

FEATURE TRANSMISSION IS NOT AGREE

No interpretable/uninterpretable (valued/unvalued) pairs, no copying/checking

Features are **moved** from higher head to lower head

This explains why the features are only pronounced on the lower head. It doesn't look like agreement (cf. Bjorkman's (2011) morphological realization principle)

FEATURE TRANSMISSION IS NOT AGREE

Once we see that the perfect is the same as the past, a Bjorkman-style Agree analysis breaks down, as it relies on a single feature [INFL]

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The crucial cases involve present tense, which triggers *have*-support in the perfect, but not with modals

CONCLUSIONS

The past and the perfect have a common semantic core: anteriority, encoded in T_{pst}

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This explains the neutralization of the past/perfect distinction in nonfinite contexts

FURTHER ISSUES

The past and the perfect in other languages

The English passive also involves a past participle and V-support, even with present tense and modals

- Bjorkman, Bronwyn. 2011. BE-ing default: The morphosyntax of auxiliaries. Doctoral Dissertation, MIT, Cambridge, Mass.
- Bobaljik, Jonathan. 2012. *Universals in comparative morphology*. Cambridge, Mass.: MIT Press.
- Cable, Seth. 2013. Beyond the past, present, and future: Towards the semantics of 'graded tense' in gĩkũyũ. *Natural Language Semantics* .
- Chomsky, Noam. 1957. *Syntactic structures*. The Hague: Mouton.
- Demirdache, Hamida, and Myriam Uribe-Etxebarria. 2004. The syntax of time adverbs. In *The syntax of time*, ed. Jacqueline Guéron and Jacqueline Lecarme, 143--179. MIT Press.
- Hoffman, T. Ronald. 1966/1976. Past tense replacement and the modal system. In *Notes from the linguistic underground*, ed. James McCawley, 85--100. New York: Academic Press.
- Iatridou, Sabine, Elena Anagnostopoulou, and Roumyana Pancheva. 2003. Observations about the form and meaning of the perfect. In *Perfect explorations*, ed. Artemis Alexiadou, Monika Rathert, and Arnim von Stechow, 153--204. Mouton de Gruyter.

- Klecha, Peter. 2014. Modal constraints on temporal reference. In *Proceedings of NELS 43: Volume 1*, ed. Hsin-Lun Huang, Ethan Poole, and Amanda Rysling, 239--252. GLSA, University of Massachusetts, Amherst.
- Klein, Wolfgang. 1994. *Time in language*. London: Routledge.
- McCawley, James. 1971. Tense and time reference in English. In *Studies in linguistic semantics*, ed. Charles Fillmore and D. Terence Langendoen, 96--113. New York: Holt, Rinehart and Winston.
- McCawley, James. 1988. *The syntactic phenomena of English*. Chicago: University of Chicago Press.
- Partee, Barbara. 1973. Some structural analogies between tenses and pronouns in english. *Journal of Philosophy* 70:601--609.
- Partee, Barbara. 1984. Nominal and temporal anaphora. *Linguistics and Philosophy* 7:243--286.
- Portner, Paul. 2003. The temporal semantics and modal pragmatics of the perfect. *Linguistics and Philosophy* 26:459--510.
- Reichenbach, Hans. 1947. The tenses of verbs. In *Elements of symbolic logic*, 287--298. New York: The Macmillan Company.
- Schütze, Carson. 2003. When is a verb not a verb? *Nordlyd* 31:400--415.

Wiese, Bernd. 2008. Form and function of verbal ablaut in contemporary standard German. In *Explorations in integrational linguistics*, ed. Robin Sackmann, volume 285, 97--151. Amsterdam; Philadelphia; J. Benjamins Pub. Co; 1999.