

## Re-Structuring Aspect in Onondaga<sup>1</sup>

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- Iroquoian expanded aspect constructions are well-documented in the descriptive literature (Chafe, 1961, Lounsbury, 1949, 1953, Michelson & Doxtator, 2002), but they have received little attention from a generative perspective.
- Fieldwork data from Onondaga suggest these constructions correlate with situations where the Reichenbachian (1947) time of event (TE) is distinct from the time of reference (TR).
- We report on some properties of expanded aspect in Onondaga and propose an analysis based on tense interpretations with a Reichenbach-ian flavor from a generative perspective (Demirdache & Uribe-Etxebarria, 2000, Klein, 1995, Mezhevich, 2008, Smith, 2004, Zagana, 1995)

### Road map

1. Simple aspect
2. Expanded aspect
3. The Representation of Tense and Aspect
4. Analysis
5. Conclusions

## 1. Simple Aspect in Onondaga

The following chart (based on Lounsbury, 1949, 1953) illustrates the order of morphemes for Northern Iroquoian languages. The elements contained in double edged boxes are required in all verbal constructions.

**Table 1: Verbal Template for Northern Iroquoian**

pre- pronominal prefixes	pronominal prefixes	SRFL or REFL	Incorporated Noun	Verb √	Derivational suffixes	aspect suffixes	Expanded aspect suffixes
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Simplex constructions in Onondaga consist minimally of a verb root, agreement (pronominal prefixes), and one of the three aspect markers: habitual (HAB), stative (STAT), and punctual (PUNC).

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Of these, PUNC is temporally deictic (i.e., indicates time of reference) and requires a modal prefix, such as future (FUT) or factual (FACT), shown in (1).

- (1) a.     $\text{əkhenowəhgwa}^?$  <sup>2</sup>  
            $\text{ə-}$      $\text{khe-}$              $\text{nowəhk-}$      $\text{a}^?$   
           FUT- I:her/them- love-            PUNC  
           ‘I will love her/them.’
- b.     $\text{wa}^?\text{hayəthwa}^?$   
            $\text{wa}^?$ -  $\text{ha-}$              $\text{yəthw-}$   $\text{a}^?$   
           FACT- 3SG.M.NOM- plant- PUNC  
           ‘He planted it.’
- c.     $\text{a}^?\text{sehde}^?$   $\text{wa}^?\text{khyad}^?$   
            $\text{a}^?\text{sehde}^?$      $\text{wa}^?$ -  $\text{k-}$              $\text{hyat}^?$   $^?$   
           yesterday    FACT- 1SG.NOM-    write- PUNC  
           ‘I wrote it yesterday.’
- d.     $\text{əhayəthwa}^?$   
            $\text{ə-}$      $\text{ha-}$              $\text{yəthw-}$   $\text{a}^?$   
           FUT- 3SG.M.NOM- plant- PUNC  
           ‘He will plant (it).’

HAB and STAT,<sup>3</sup> on the other hand, are **durative** (imperfective and perfective, respectively) and cannot appear with modal prefixes (see (2) and (3), respectively):

<sup>2</sup> The following abbreviations are used: ACC = accusative, BEN = benefactive, CIS = cislocative, DIS = dislocative, DUC = dualic, EPEN = epenthetic vowel, F = feminine, FACT = factual, HAB = habitual, HAB.PST = habitual past, JOIN = joiner vowel, epenthetic vowel between incorporated noun and verb root, M = masculine, MOD = modalizer, NE = element of unclear function found in nominal expressions, NOM = nominative, NT = neuter, OPT = optative, PRES = present tense, PUNC = punctual, PURP = purposive, REFL= reflexive, SG = singular, SRFL = semi-reflexive, STAT = stative, STAT.PST = stative past,  $\sqrt{\quad}$  = root.

<sup>3</sup> Note that while the STAT is usually rendered with the present perfect in English (in order to signal a state that is the result of some previous action), depending on the meaning of the root, it can also be used in the progressive (Chafe 1980, Woodbury 2003). However, Abbott (2006) argues that this is an option only when HAB is unavailable to the respective root, so perhaps this is not really a distinct use of the STAT. Rather, the morpho-syntactic properties are those of HAB, with the STAT morpheme inserted post-Spell-Out. See (i) from Woodbury (2003: 589):

- |        |   |         |  |
|--------|---|---------|--|
| (i) a. | $\text{hoda}^?\text{ks.}$                       | (ii) a. | $\text{hoda}^?\text{wih.}$                       |
|        | $\text{ho-}$ $\text{ita}^?\text{k-}$ $\text{s}$ |         | $\text{ho-}$ $\text{ita}^?\text{w-}$ $\text{ih}$ |
|        | 3SG.M.ACC- sleep- HAB                           |         | 3SGM.ACC- sleep- STAT                            |
|        | ‘He is sleepy.’                                 |         | ‘He is asleep/sleeping.’                         |

See also Foster (1986) for comments on the terminology used in describing aspect in Iroquoian.

(2) HABITUAL (IMPERFECTIVE)

- a. hayəθwas  
 ha- yəθw- as  
 3SG.M.NOM- plant- **HAB**  
 ‘He plants / He is planting.’
- b. khenowəkhwa’ ne’ Meri  
 khe- nowəkw- ha’ NE Mary  
 1SG.NOM:3SG.F.ACC- love- **HAB** NE Mary  
 ‘I love Mary.’
- c. henəshənyənək  
 he- nəsh- qny- ɛni- k  
 1.SG.NOM:3.SG.M.ACC- house- make- BEN- **HAB**  
 ‘I’m making a house for him.’
- d. gadeyəsdə:nik  
 k- atə- yəst- ɛni- k  
 1SG.NOM- SRLF- teach- BEN- **HAB**  
 ‘I am a teacher.’

(3) STATIVE (PERFECTIVE)

- a. ohahaná:wəh  
 o- ahah- a- nawə- h  
 3.SG.NT.ACC- road- JOIN- wet- **STAT**  
 ‘The road is wet.’
- b. hohdəh  
 ho- ahtə- h  
 3.SG.M.ACC- disappear- **STAT**  
 ‘He has disappeared.’
- c. gonehayəθwih  
 ko- nəh- a- yəθw- ih  
 3F.ACC- corn- JOIN- plant- **STAT**  
 ‘She has planted corn.’

- Note further that, following Smith (2004), the default for tenseless languages is that unbounded eventualities are taken as present and bounded ones are taken as past.

Given the data in (2)–(3), where **HAB** aspect (unbounded) is seen to be simple/continuous present and **STAT** aspect (bounded) is seen to be past in Onondaga, it seems that these constructions are ‘tenseless’, which would explain absence of modal prefix.

However, the language has the option of adding a modalizer suffix, *-(e)k*, to the aspectual stem and, in this case, a modal prefix is permitted, see (4), (though we have not found any examples with FACT, see below).

- (4) a. dyęgwa' akhenowękhwak  
 tyękwa' a- khe- nowęhkw- ha'- ek  
 maybe OPT- 1SG.NOM:3SGF.ACC- love- HAB- MOD  
 'Had I loved her.'
- b. ęgayęthwik  
 ę- ka- yęthw- ih- ek  
 FUT- 3SGF.ACC- plant- STAT- MOD  
 'It will have been planted.'<sup>4</sup>
- c. ęhayęthwasek  
 ę- ha- yęthw- as- ek  
 FUT- 3SG.NOM- plant- HAB- MOD  
 'He will plant.'

Note that (4)c is somewhat similar to (1)d. However, in (1)d, the potential presence of 'it' seems to place the focus on a particular/unique situation, whereas (4)c is more general, perhaps habitual.

Whether the MOD head is a T head or something else will become clearer once we also consider expanded aspect.

**SUMMARY:**

- **punctual aspect** (PUNC)
  - temporally deictic
  - requires mood marker (FUT, OPT, or FACT)
  - merges in (heads) T<sup>0</sup>
- **durative aspect** (HAB and STAT)
  - not temporally deictic
  - cannot appear with mood marker unless accompanied by a modalizer (MOD)
  - merges in (heads) Asp<sup>0</sup>
  - is untensed

## 2. Expanded Aspect in Onondaga:

Interestingly, the durative aspect forms can only express past reference if this base structure is augmented by additional aspect markers, rather than by the FACT modal prefix. Specifically, 'habitual past' and 'stative past' require that both HAB (5)a, b and STAT (6)c, d interact with another aspect marker.

<sup>4</sup> Note that, according to Woodbury (2003:30), stative aspect has a passive-like flavor when the agent is unspecified.

(5) HABITUAL PAST:

- a. hɔwakhɔnyɛnihgwa?  
 hɔwa- khw- ɔny- ɛni- k- kwa?  
 3SGF.NOM:3SGM.ACC - food- make- BEN- HAB- HAB.PST  
 ‘She used to cook for him.’
- b. khenowɛkhwahgwa?  
 khe- nowɛkw- ha?- kwa?  
 1SG.NOM:3SG.F.ACC- love- HAB- HAB.PST  
 ‘I used to love her.’
- c. thayɛthwasgwa?  
 t- ha- yɛthw- as- kwa?  
 CIS-<sup>5</sup> 3SGM.NOM- plant- HAB- HAB.PST  
 ‘He used to plant.’

(6) STATIVE PAST:

- a. hɔwakhɔnyɛnihna?  
 hɔwa- khw- ɔny- ɛni- h- na?  
 3SGF.NOM:3SGM.ACC-food- make- BEN- STAT- STAT.PST  
 ‘She had cooked for him.’
- b. agida?wihna?  
 wak- ita?w- ih- na?  
 1.SG.ACC- sleep- STAT- STAT.PST  
 ‘I had been sleeping.’
- c. shagoyɛthwɛni:hna?  
 shako- yɛthw- ɛni- ih- na?  
 3.SG.M.NOM:3.ACC- plant- BEN- STAT- STAT.PST  
 ‘He had planted it for her.’

Traditionally, *-na?* and *-kwa?* have been analyzed as being mono-morphemic (Lounsbury 1953, Woodbury 2003).

We continue doing so here, using the traditional labels such as STAT.PST (so called because it appears with stative aspect) and HAB.PST (so called because it appears with habitual aspect) that may not be entirely appropriate given, at least the following:

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<sup>5</sup> The cislocative (CIS) usually indicates movement towards the speaker or person of reference. In this context, however, it indicates remoteness in time.

⇒ *-naʔ* appears with purposive aspect, see (7), which we do not focus on here, given its lexical conditioning:

- (7) **PURPOSIVE PAST: (foiled intention)**  
hadowæthenaʔ  
ha- atowæt- h- eʔ- naʔ  
he- hunt- **DIS-** **PURP-** **STAT.PST** <sup>6</sup>  
‘He had intended to hunt’ (Woodbury 2003: 38)

Insofar as the FUT modal prefix is concerned, both HAB and STAT expanded aspect stems can combine with it. This is shown in (8) and (9).

- (8) **FUTURE HABITUAL:**  
əhesninowəkhwahgwaʔ (Woodbury, 2003: 716)  
ə- hesni- nowəkw- haʔ- kwaʔ  
**FUT-** **2DU.NOM:3.SG.M.ACC-** love- **HAB-** **HAB.PST**  
‘You two will be acting kindly towards him.’

- (9) **FUTURE STATIVE:**  
a. əwagegihnaʔ  
ə wak- ek- ih- naʔ  
**FUT-** **1.SG.ACC-** eat- **STAT-** **STAT.PST**  
‘I might have eaten it’  
b. əwagegik  
ə wak- ek- ih- ek  
**FUT-** **1SG.ACC-** eat- **STAT-** **MOD**  
‘I will have eaten it.’

➤ Interestingly, when HAB.PST and STAT.PST are involved, a more modal flavour emerges, see (8) and (9)a. We address this in the next section.

➤ FACT cannot occur with expanded aspects (although more field work needs to be done to verify this); see (10):

- (10) a. \* waʔwagegihnaʔ  
waʔ- wak- ek- ih- naʔ  
**FACT-** **1.SG.ACC-** eat- **STAT-** **STAT. PST**

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<sup>6</sup> The dislocative (DIS) is a future suffix meaning ‘going to’ and showing intention (or movement, elsewhere); it is used with purposive aspect. Perhaps a low mood head --

- b. \* waʔwakhnegihəʔnaʔ  
 waʔ- wak- hnekiR- h- ɛʔ- naʔ  
 FACT- 1SG.ACC- drink- DISL- PURP- STAT.PST

➤ We assume, FACT is realis, while FUT can be interpreted as either realis (with simple future reference) or irrealis (with modality). Realis requires temporal deixis, while irrealis does not.

➤ That realis Mood and temporal deixis are intrinsically linked is further supported by data in (11):

- (11) a. onihsih dwagejihnaʔ  
 onihsih t- wak- ek- ih- naʔ  
 long.time.ago CIS- 1SG.ACC- eat- STAT- STAT.PST  
 ‘I had eaten (at one time)’
- b. onihsih dwakhyadqʔ  
 onihsih t- wak- hyatq- ʔ  
 long.time.ago CIS- 1SG.ACC- write- STAT  
 ‘I had written it a long time ago.’
- c. \* onihsih waʔkhyadqʔ  
 onihsih waʔ- k- hyatq- ʔ  
 long.time.ago FACT- 1SG.NOM- write- PUNC  
 (‘I wrote it a long time ago.’)

➤ Note that while FACT appears with PUNC with specific time reference (e.g. *aʔsehdeʔ* ‘yesterday’ in (1)c, the data in (11) show that it cannot appear with non-specific TR. *Onihsih* ‘at one time’/ ‘a long time ago’ specifies TE.

**Summary:**

HAB + HAB.PST → past imperfective reading (“used to”)

STAT + STAT.PST → pluperfect reading (“had done sth”)

expanded aspect suffixes (HAB.PST and STAT.PST) and modalizer (MOD) can appear with future (FUT) but not factual (FACT)

FUT ... HAB + HAB.PST → future progressive (“will be doing sth”)	}	irrealis
FUT ... STAT + STAT.PST → future conditional (“might have done sth”)		
FUT ... STAT + MOD → future perfect reading (“will have done sth”)		realis

MOD establishes temporal deixis → can support realis reading of FUT

HAB.PST and STAT.PST obligatorily lack temporal deixis

HAB and STAT are unmarked for temporal deixis

### 3. The Representation of Tense and Aspect

Following Reichenbach (1947), Klein (1995), and Smith (1997), Tense and Aspect each relate two times. Using Reichenbach-ian labels, Aspect establishes a relationship between TE (time of event) and TR (time of reference), while Tense establishes a relationship between TR and TS (moment of speech):

- With simplex constructions only the relationship between TS and TR is relevant, and either TR precedes TS (i.e., TE, TR – TS), in the past, or TR follows TS (i.e., TS - TR, TE), in the future. However, TE and TR are not distinct.
- With expanded aspect (complex constructions), the relationship between TR and TE is no longer one of synonymy and both need to be distinguished structurally.

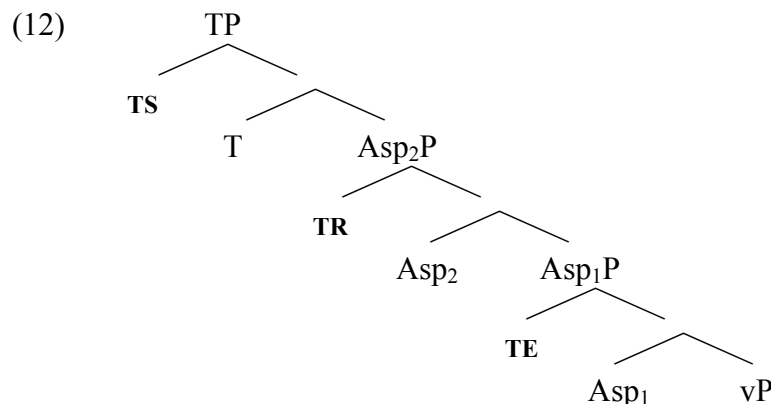
Relying on the analyses of Demirdache & Uribe-Etxebarria (2000, 2004), Mezhevich (2008), Stowell (Stowell, 2007), Zagona (1995), we propose modified syntactic structures that view Tense and Aspect as dyadic temporal predicates which take time-denoting arguments.

Tense and aspect are temporal predicates, which take temporal arguments (event time - TE, reference time - TR, speech time - TS) as their arguments.

The predicates (AFTER, BEFORE, WITHIN) specify a particular temporal semantic relationship between their arguments (Stowell, 2007). They can be thought of as different “flavours” of  $T^0$  and  $Asp_2^0$  (the same way we talk of different flavours of  $v^0$ ).

$AFTER_T$  takes (TS and TR) as its arguments, TS takes place after TR

$AFTER_{Asp}$  takes (TR and TE) as its arguments, TR takes place after TE



$Asp_1$ : external argument is TE and internal argument is the vP event

$Asp_2$ : external argument is TR and internal argument is TE

T: external argument is TS and internal argument is TR

We further assume:

- Rizzi's (1997 et seq.) expanded CP domain, with Force (here C) and Fin (here Mood).
  - Fused (or merged) heads, as in Giorgi and Pianesi (1997). Note that what is crucial to merged heads is feature-sharing (i.e. in this case, temporality) and the absence of an intervening specifier (i.e. here, a shared temporal argument specifier).
- T, Asp heads can fuse iff the temporal arguments expressed by the heads in question are not distinguished.
- Thus, if TR and TE are identical, Asp<sub>2</sub> and Asp<sub>1</sub> fuse, forming an Asp<sub>1,2</sub>P

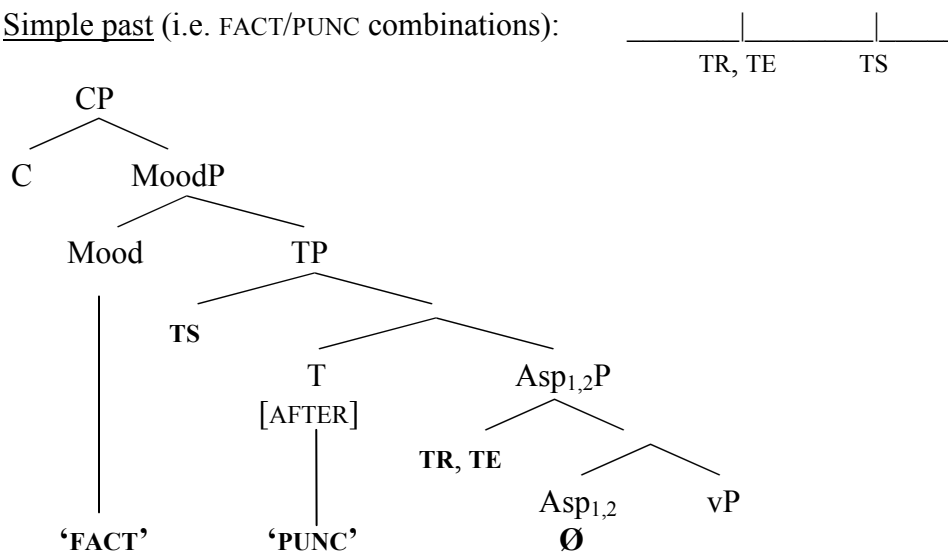
#### 4. Analysis

➤ We discuss here the structural representations of simple and expanded aspects, showing how the observed patterns fall out from the theory of tense and aspect described above and the properties of the individual lexical items related to tense and aspect in Onondaga.

##### 4.1 Structural representations of simple aspect

➤ Recall that with simple aspect, the relation between TR and TE is not syntactically active, so the two Asp heads fuse, forming a complex Asp<sub>1,2</sub><sup>0</sup>.

(13) Simple past (i.e. FACT/PUNC combinations):

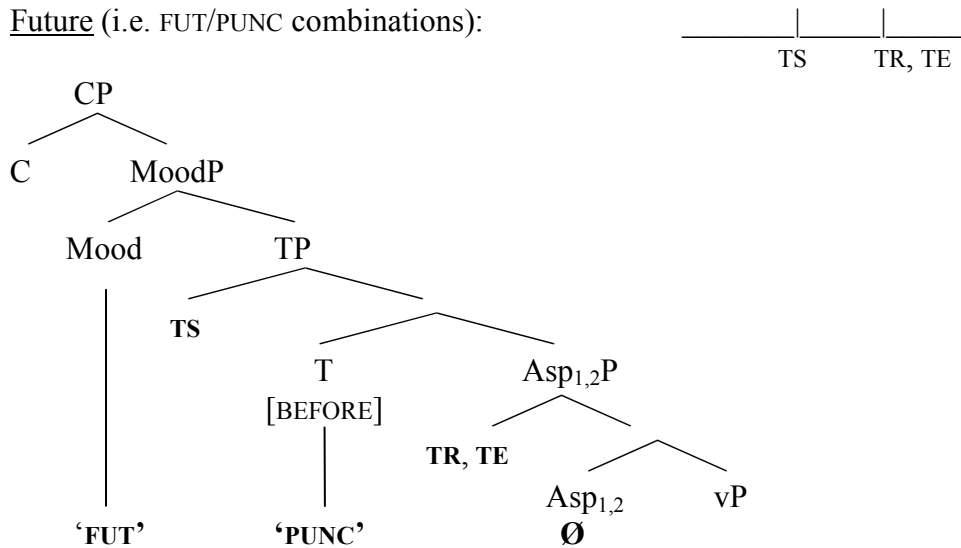


Note: Assume Verb Raising to T (via Head Movement) throughout

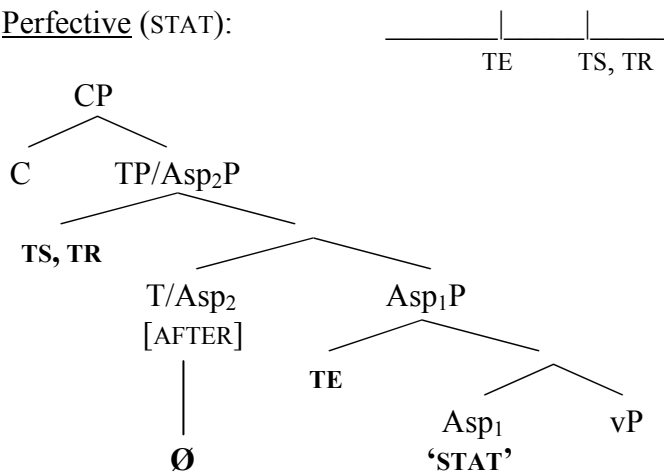
- In this case TE is identical to TR => Asp<sub>2</sub> is not distinct from Asp<sub>1</sub>
- The merged Asp<sub>2</sub>/Asp<sub>1</sub> head is represented here as Asp<sub>1,2</sub>
- Asp<sub>1,2</sub> has no temporal ordering specification, so no morpheme insertion
- T<sup>0</sup> is AFTER

- PUNC is inserted in T whenever: (i) T projects as a distinct head (i.e. TS distinct from TR), (ii) there is temporal deixis from C (represented by Realis Mood); and (iii) Asp is not specified
- Realis Mood projects when there is temporal deixis
- (14) is the same, except T<sup>0</sup> is BEFORE

(14) Future (i.e. FUT/PUNC combinations):

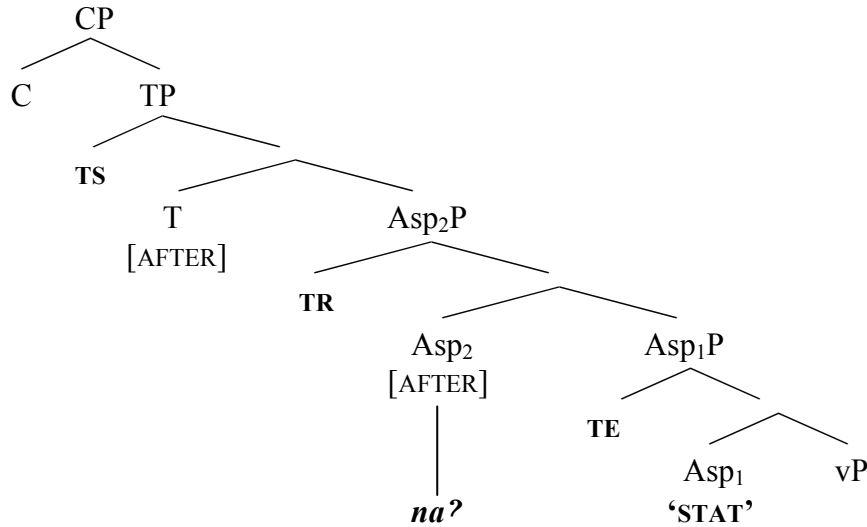


(15) Perfective (STAT):



- In this case TS is identical to TR and AFTER TE
- T does not project independently, so no temporal deixis and Mood is absent
- STAT morpheme is inserted when selected by a temporal predicate specified [AFTER]



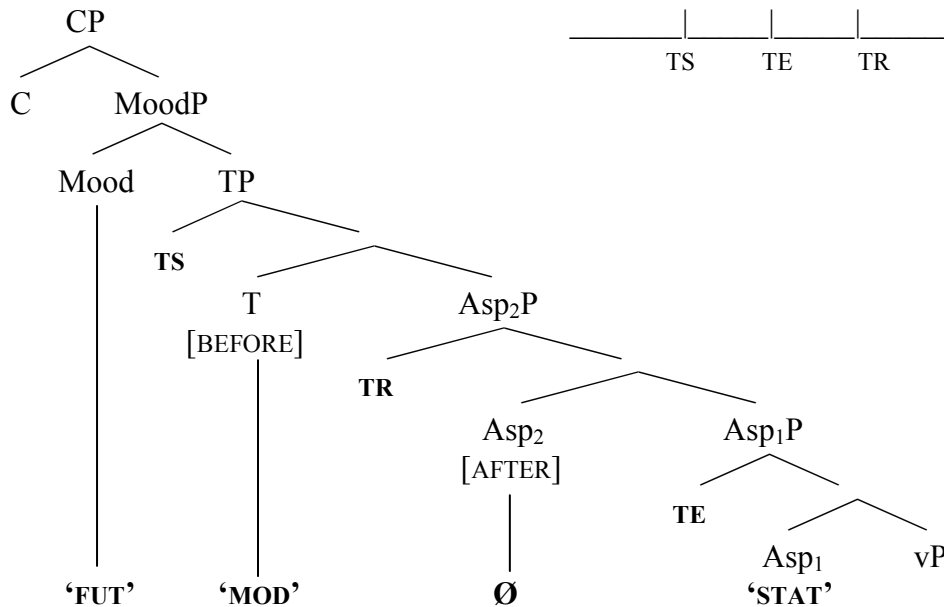


- STAT is inserted in Asp<sub>1</sub> as selecting predicate is specified [AFTER]
- *-na?* is inserted in Asp<sub>2</sub> when it contains Asp<sub>1</sub> 'STAT' (head-moved there)
- T projects independently and has its own value, but is instantiated as Asp<sub>2</sub> 'STAT.PST' (head-moved there) rather than PUNC.
- No realis Mood or temporal deixis available with stative

(18) Realis Stative Future :

ewagegik  
 e- wak- ek- ih- ek  
 FUT- 1SG.ACC- eat- STAT- MOD  
 'I will have eaten it.'

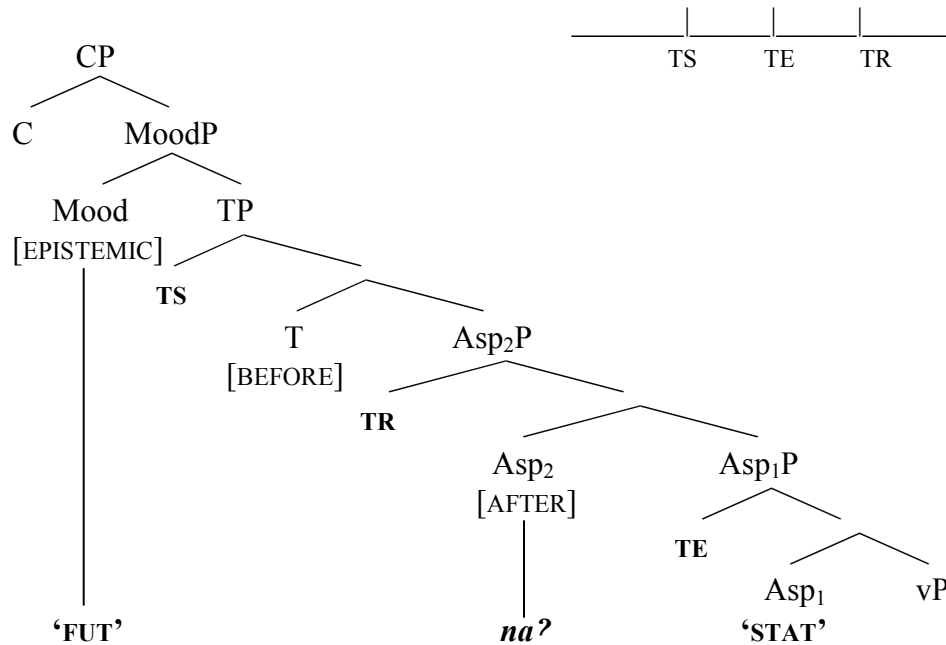
(9)b, repeated from above



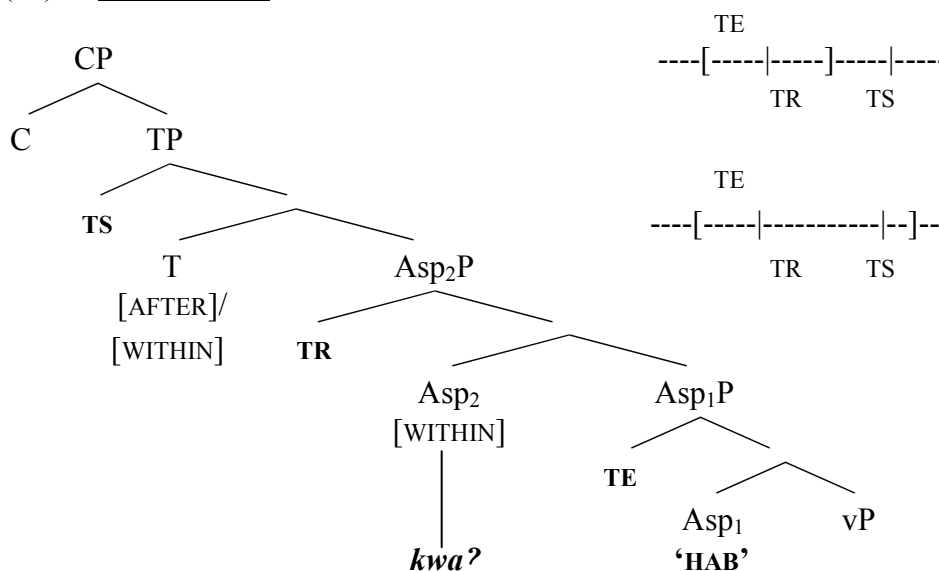
- In this case TS is BEFORE TR which is AFTER TE
- STAT inserted in Asp<sub>1</sub> as selecting predicate is specified [AFTER]
- Realis Mood is present, so T will be temporally deictic
- a dummy 'MOD' is inserted in T<sup>0</sup> instead of 'STAT.PST' in Asp<sub>2</sub><sup>0</sup>, as statives are in conflict with temporal deixis

However: Irrealis Mood does not trigger temporal deixis, so ok with stative Asp<sub>2</sub> 'STAT.PST', as seen in (19).

(19) Irrealis Stative Future :



(20) Habitual Past:





- Irrealis Habitual Future, on the other hand, will allow *-kwa?* inserted in Asp<sub>2</sub>, as no temporal deixis is at stake; tree not shown, but identical to (19).

<b>Summary:</b>		
STAT	Asp <sub>1</sub> <sup>0</sup>	inserted when Asp <sub>2</sub> <sup>0</sup> is [AFTER]
HAB	Asp <sub>1</sub> <sup>0</sup>	inserted when Asp <sub>2</sub> <sup>0</sup> is [WITHIN]
PUNC	T <sup>0</sup>	inserted when Asp <sub>1</sub> <sup>0</sup> and Asp <sub>2</sub> <sup>0</sup> are fused
STAT.PST	Asp <sub>2</sub> <sup>0</sup>	inserted when Asp <sub>2</sub> <sup>0</sup> is [AFTER], T <sup>0</sup> and Asp <sub>2</sub> <sup>0</sup> are not fused, and there is no temporal deixis
HAB.PST	Asp <sub>2</sub> <sup>0</sup>	inserted when Asp <sub>2</sub> <sup>0</sup> is [WITHIN], T <sup>0</sup> and Asp <sub>2</sub> <sup>0</sup> are not fused, and there is no temporal deixis
MOD	T <sup>0</sup>	inserted when T <sup>0</sup> is not fused with anything and there is temporal deixis (i.e., no irrealis mood)
FUT	Mood <sup>0</sup>	T <sup>0</sup> is [BEFORE], T <sup>0</sup> cannot be fused, can be either irrealis (with modal flavour) or realis
FACT	Mood <sup>0</sup>	T <sup>0</sup> is [AFTER], T <sup>0</sup> cannot be fused, can only be realis → temporally deictic, therefore unavailable with expanded aspects
OPT	Mood <sup>0</sup>	needs further research → may be a kind of subjunctive???

## 5. Conclusions

- HAB & STAT are temporally non-deictic, so no C domain instantiated
- PUNC has temporal deixis, so presence of C is required
- Both simple and expanded aspect in Onondaga can be systematically accounted for under a syntax-semantics interface approach where Tense and Aspect are dyadic temporal-ordering predicates which take time-denoting elements as their arguments

⇒ This analysis is also compatible with approaches which assume anchoring/licensing of temporal deixis by a Tense Operator / the C phase edge in CP (Chomsky, 2008, Enc, 1987, Guéron, 2004).

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