

Transitivity alternations and root (non)-augmentation in Onondaga

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This paper investigates transitivity alternations in Onondaga¹ (Northern Iroquoian) and argues for a mixed root insertion system, with some roots inserted early and some roots inserted late (in the sense of Déchaine, 2002) and the presence of both augmenting and non-augmenting morphemes. To this purpose, we discuss both mono- and bi-eventive predicates and propose a strict correlation between event complexity and locus of root insertion. We suggest that the implementation of this approach requires a more fine-grained structure of Chomsky's (1995) *vP* in the spirit of Pykkänen (2002) and Bowers (2002).

1 Introduction

This paper investigates verbal roots in Onondaga with a focus on bare, mono-eventive roots and complex, bi-eventive (causative and inchoative) roots. After introducing Déchaine's (2002) root insertion typology, we set out to explore its relevance for Onondaga. We first show that bare roots encode all valency types and propose late root insertion for all types of mono-eventive predicates. We then turn our attention to morphologically complex predicates, specifically, causative and inchoative structures, and argue that their primary function is to introduce an additional event rather than to increase the adicity of the root. We refine our initial structure for the Onondaga *vP* to accommodate bi-eventive structures and show that roots are inserted low in these constructions. Despite this dichotomy, we tentatively propose that root insertion is stable in Onondaga, being always late (merged high) within the first verbal phasal domain.

2 Déchaine 2002

Déchaine (2002) notes that information about valency and event-type is encoded by “bare” roots in some languages (e.g. English) and morphologically

¹ Data in this paper was gathered from our consultants Nora Carrier and Gloria Williams at the Onondaga Learning Centre and from Woodbury (2003). We employ the following abbreviations: ACC = accusative, AOR = aorist, DU = dual number, DUAL = dualic, EPEN = epenthetic vowel, EXCL = exclusive, F = feminine, FUT = future, HAB = habitual, INCL = inclusive, JOIN = joiner vowel, M = masculine, NOM = nominative, NSF = noun suffix former, NT = neuter, NZLR = nominalizer, PUNC = punctual, SG = singular, SREFL = semi-reflexive, STAT = stative aspect, $\sqrt{\quad}$ = root.

augmented roots in other languages (e.g., Plains Cree). Adopting Chomsky's (1995) ν P shell, Déchaine argues that valency is determined by syntactic structure and proposes a four-way typology of root insertion possibilities based on two parameters, namely, merger versus insertion and late versus early. These four possibilities are shown below.

- (1) $[_{\nu P} \nu^0 [_{\nu P} V^0]]$
 \uparrow
 root
- (2) $[_{\nu P} \nu^0 [_{\nu P} V^0]]$
 \uparrow
 root
- (3) $[_{\nu P} \nu^0 [_{\nu P} [_{\nu^o} _ V^0]]]$
 \uparrow
 root
- (4) $[_{\nu P} _ [_{\nu P} \nu^0 [_{\nu P} V^0]]]$
 \uparrow
 root

(1) shows early insertion of the verbal root, which Déchaine exemplifies with Salish. In such languages, bare roots can only be unaccusatives (see also Davis and Demirdache, 2000), whereas all other valency and event types are augmented roots. (2) shows late insertion of the verbal root, which is exemplified by English. In this case, bare roots range over all transitivity classes and the highest available insertion site determines the valency associated with the root. (3) shows early merge of the verbal root to the V^0 . Here, bare roots are impossible, and the semantic value of the root is contextually determined. Finally, (4) shows late merge of the verbal root to the ν P. Here, bare roots are also impossible, but the semantic value of the root is stable.

Given the existence of bare roots in Onondaga (see section 3) options (3) and (4) are immediately ruled out.² Crucially, Déchaine's analysis tacitly assumes that while level of root insertion is variable cross-linguistically, it is stable for one and the same language. It is this last point that we wish to explore here.

3 Onondaga Bare roots

Bare roots in Onondaga encode all types of transitivity, which makes the language a prime candidate for late lexical insertion. The following examples illustrate bare roots for unaccusatives, unergatives and transitives.

² The distinction between (3) and (4) is essentially the distinction between "merger" and "fusion", respectively within a DM framework (Halle and Marantz, 1993).

3.1 Unaccusative Intransitives

Unaccusative predicates in Onondaga can undergo noun incorporation (NI) of their single argument (Rice, 1991) and they appear with object (ACC) agreement only. Some examples of bare unaccusative roots are shown in (5).

- (5) a. o- ahah- a- nawę- h
 3.SG.NT. ACC - road- JOIN- wet- STAT
 ‘The road is wet.’
- b. o- na?- nawę- h
 3.SG.NT. ACC - DN- wet- STAT
 ‘It is wet.’
- c. ho- tgi- ?
 3.SG.M.ACC- dirty- STAT
 ‘He is dirty.’
- d. ho- ahdų- h
 3.SG.M.ACC- disappear- STAT
 ‘He has disappeared.’

3.2 Unergative Intransitives

Unergatives in Onondaga disallow NI (though see below) and, depending on various factors, they exhibit either subject (NOM) or object (ACC) agreement.³ Examples of unergative bare roots are given in (6).

- (6) a. wa?- ha- sa?g- a? hę:gwe?
 AOR- 3.SG.M.NOM- cough- PUNC man
 ‘The man coughed.’
- b. wa?- ho- yųdy- a?- hę:gwe?
 AOR- 3.SG.M.NOM- laugh- PUNC man
 ‘The man laughed.’
- c. gę- idagR- a? jihah
 3.SG.NT.NOM- be.lying.down- STAT dog
 ‘The dog is lying down.’

³ The choice of subject or object agreement has been argued to depend on agentivity (Dyck, 1992, Mithun, 1991) or aspect (Barrie, 2003), *inter alia*.

- c. waʔhaʔse:hdoháeʔ
 waʔ- ha- ʔsehd- ohae- ʔ
 AOR- 3.SG.M.NOM- car- WASH- PUNC
 ‘He washed a car.’

4 Fine-graining vP: First attempt

Prima facie evidence suggests that an unarticulated vP shell structure is insufficient to account for the data in this language. While in many languages the relationship between accusative Case and an external argument is interdependent (cf. Burzio’s generalization), prompting an analysis which views these two attributes as a property of a single head, specifically ‘v’, this is not true cross-linguistically. Bowers (2002) argues for a split ‘v’, with Pr(education), the highest head, optionally selecting for a Tr(ansitive) head. More specifically, Pr is responsible for assigning the Agent theta-role while Tr assigns accusative Case, a division of labour supported by the availability of intransitive passives in some languages and impersonal passives with accusative in Ukrainian (see Bowers, 2002 for examples and discussion).

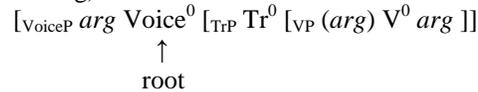
Given the availability of object Case with unergatives and its obligatoriness with unaccusatives, we suggest the structures in (10) for bare roots in Onondaga. Specifically, the Tr head (AgrO of Ritter and Rosen, 2000, van Hout, 2004 *inter alia*). (or ‘v’, the verbalizing head of Marantz, 1997, 2001) responsible for assigning objective/ACC Case is present for all predicate types and is distinct from the head introducing the external argument.⁵

(10) *Splitting of vP: Structures for Bare Roots*

- a. Unaccusative root (Acc arg): $[\text{TrP Tr}^0 [\text{VP V}^0 \text{arg}]]$
 \uparrow
 root
- b. Unergative roots (Nom arg): $[\text{VoiceP arg Voice}^0 [\text{TrP Tr}^0 [\text{VP V}^0]]]$
 \uparrow
 root
- c. Unergative roots (Acc arg): $[\text{TrP Tr}^0 [\text{VP arg V}^0 (\text{cognate arg})]]$
 \uparrow
 root

⁵ We use the more familiar ‘Voice’ label from Kratzer (1996) for the head introducing the Agent argument, rather than Pr from Bowers; nothing crucial hinges on these labels.

d. Transitive roots (Nom+Acc arg):



A few notes are in order. First, we assume that choice between VoiceP and TrP for unergatives is correlated with properties of the aspectual domain immediately above the predicational domain (not represented here) as well as root type. Second, we assume that roots can have structure, so that they can (at least) take complements (see Marantz, 2001, Wiltschko, 2005). Consequently, we view NI as the result of direct merge of a root containing its complement: [root [root argument]]. Third, note that the bracketed argument in (10b) surfaces in di-transitives.

Given that the information about valency type is encoded directly on bare roots, rather than by root and ‘specialized’ affixation, we assume that the highest verbal heads in the predicational domain must select directly for the root, thereby validating the prediction of late root insertion for all transitivity classes.

While bare roots in Onondaga encode mono-eventive structures, bi-eventive structures are realized as morphologically complex roots. We next address causatives and inchoatives which are both bi-eventive (Cuervo, 2003, Parsons, 1990, *inter alia*) and show that, in these cases, the verbal heads within the predicational domain do not systematically select for a bare root, apparently challenging the view of consistent late insertion for one and the same language.

5 Onondaga (Non)-augmented Roots: CAUS and INCH morphemes ⁶

5.1 Morphological Causatives

Regardless of valency, bare roots in Onondaga can combine with a derivational CAUS morpheme (contra Baker, 1996, 1997).⁷ In most instances, the presence of the CAUS morpheme correlates with a novel argument,

⁶ For our purposes, non-augmented roots represent roots for which there has been no valency increase but which can be simplex or complex morphologically. This distinction turns out to be crucial because the Onondaga causatives and inchoatives under discussion are all morphologically complex, yet vary with respect to whether there is an extra argument or not.

⁷ Note that all Iroquoian languages also have a periphrastic causative, referred to as a ‘syntactic’ causative (Baker 1996, 1997); see (i):

(i)	waʔ-khe-yq:nyeʔ	Meri
	AOR-1.SG.NOM.3.ACC- make- PUNC	Mary
	a:y-ɕ-yo-h	gwaʔyɕaʔ
	OPT-3.SG.NT.NOM -kill-PUNC	rabbit
	‘I made Mary kill the rabbit.’	

While Baker argues that only the syntactic causative is available to unergatives and transitives, we show this not to be the case.

suggesting that CAUS has some sort of transitivizing function (as argued by Baker, *ibid.*). Some examples are offered in (11) - (13) below.

(11) *Unaccusative* \sqrt{s} + CAUS morpheme \rightarrow dyadic predicate

- a. wa?guya?dahdu?da? [Woodbury, 2003]
 wa?- guy- ya?d- ahdu- ?d- a?
 AOR- 1.SG.NOM.2.SG.ACC- body- disappear- CAUS- PUNC
 ‘I lost you (e.g. in a crowd).’
- b. (tsha?e:da?) wa?e?sehnanawehda? ne? Meri
 (tsha?e:da?) wa?- e- ?seht- a-
 on purpose AOR- 3.SG.F.NOM- car- JOIN-
 nawe?- hd- a? ne? Meri
 wet- CAUS- PUNC NE Mary
 ‘Mary got the car wet (on purpose).’
- c. wa?ha?sēhda? ne? awēha?
 wa?- ha- a?s- e- hd- a? ne? awēha?
 AOR- 3.SG.M.NOM- DN- fall- CAUS- PUNC NE flower
 ‘He dropped the flowers.’
- d. wa?ge?se:hdatsēhda?
 wa?- g- e- ?sehd- a- tgi- hd- a?
 AOR- 1.SG.NOM- EPEN- car- JOIN- dirty- CAUS- PUNC
 ‘I got the car dirty.’

(12) *Unergative* \sqrt{s} ⁸ + CAUS morpheme \rightarrow dyadic predicate

- a. wa?thaehdāsda? [Woodbury, 2003]
 wa?- t- ha- aehdat- sd⁹- a?
 AOR- DUAL- 3.SG.M.NOM- run₁- CAUS- PUNC
 ‘He ran it. (e.g. a thrashing machine).’

⁸ Recall that lack of subject NI and variable agreement qualifies these as unergative.

⁹ Note that Woodbury does not suggest the morphemic analysis presented here. She presents *aehdasd* as a root distinct from *aehdat*. Given the presence of a causative morpheme with the form /sd/ in Onondaga and the meaning relation between these two roots, we suggest that a causative morpheme is present in this form, though we have no explanation for the disappearance of /t/ in the base root in the presence of the causative.

b. waʔkheyqɔdyaʔdɛʔ
 waʔ- khe- yqdy- a- ʔd- ɛ- ʔ
 AOR- 1.SG.NOM.3.ACC- laugh - EPEN- CAUS- BEN- PUNC
 ‘I (a comedian) made them/her laugh.’

c. naʔ thogɛ́ honihe:yáʔdih
 ...hon- ihey- a- ʔd- ih
 ...3.M.PL.ACC- die- EPEN- CAUS- STAT
 ‘That is what caused them to die.’

(13) *Transitive vs + CAUS morpheme → triadic predicate*

a. ɛkheyahe:ɡáʔdaʔ [Woodbury, 2003]
 ɛ- khe- y- ahɛ:k- a- ʔd- aʔ
 FUT- 1.SG.NOM.3.ACC- EPEN- hear EPEN- CAUS- PUNC
 about-
 ‘I will notify them.’ (Literally: ‘I will make them hear about it.’)

b. kheyatgathwáhdɛnik [Woodbury, 2003]
 khe- y- atgathw- a- hd- ɛni- k
 1.SG.NOM.3.ACC- EPEN- look at - EPEN- CAUS- BEN HAB
 ‘I display/show it to her.’ (Literally: ‘I make her look at it.’)

Interestingly, however, the causative morpheme need not increase the valency of the root, as indicated by the example in (14), where the causative morpheme fails to ‘transitivize’ the unaccusative predicate:

(14) dyugwéhdi [Woodbury, 2003]
 d- yugw- e- hd- ih
 CLOC- 1.PL.ACC- be.somewhere/walk- CAUS- STAT
 ‘We all have come from there.’

In (14), as in (12c), the subject is not understood as agentive, nor does it surface with Nominative agreement (again, contra to predictions made in Baker 1996, 1997). In the spirit of Pykkänen (2002) and Cuervo (2003), we suggest that the primary function of the causative morpheme is to introduce an *event* rather than to introduce an *argument* or transitivize (i.e., augment) the predicate. That the causative morpheme does not function as an Applicative head is also supported by its co-occurrence with the Benefactive, as in (12b) and (13b). An analysis follows after we introduce the inchoative data.

5.2 Inchoatives

The INCH morpheme is available to monadic roots. It can attach to either unergative (15a) or unaccusative predicates (15b-d).

- (15) a. waʔgidagæ:ʔnhaʔ
 waʔ- g- idagR- ʔ- nhaʔ
 AOR- 1.SG.NOM- be.lying- INCH- PUNC
 ‘I fell down.’
- b. ɛgaedyenéʔnhaʔ
 ɛ- ga- Rɛd- yenɛ- ʔ- nhaʔ
 FUT- 3.SG.NT.NOM- log- fall₁- INCH- PUNC
 ‘The will log fall over.’
- c. dahayaʔdéʔnhaʔ
 da- ha- yaʔd- ɛ- ʔ- nhaʔ
 CLOC.AOR- 3.SG.M.NOM- body- fall₂- INCH- PUNC
 ‘He fell off.’
- d. waʔgaʔsehnanawɛʔaʔ
 waʔ- ga- ʔsehd- a- nawɛ- ʔ- aʔ
 AOR- 3.SG.NT.NOM- car- JOIN- wet- INCH- PUNC
 ‘The car got wet.’

Inchoatives are interesting because they combine conflicting properties of Onondaga intransitives. Namely, for predicates derived from unaccusatives roots, (15b-d), we observe both NI (a property of unaccusatives) and subject agreement (a property of unergatives). We suggest this to be due to the complex eventive structure of these predicates (Cuervo, 2003: 17, Ramchand, 2005). Specifically, in inchoatives, the verbal(ized) root (i.e., TrP) is selected by a functor, INCH, which introduces the additional event of change (or process). This event of change needs to be saturated by a participant undergoing the change, in addition to the participant selected by the root (in this case, the ‘resultee’ which incorporates). The argument required by the inchoative event then triggers NOM agreement.¹⁰

Incidentally, if stacking of events is permitted, we should in principle expect to see structures where the root combines with both an INCH and a CAUS.

¹⁰ Note that, in this sense then, the INCH morpheme augments the root. There is disagreement in the literature as to whether eventive heads do (Ramchand, 2005) or do not (Cuervo, 2003) introduce arguments. In the latter case, at least some other argument-selecting head (e.g. applicative head) would be required.

In these cases, there would be an event of causing, an event of change and an event of result; (16) illustrates that this prediction is borne out.

- (16) waʔhaneskwayeŋdaʔ jihah
 waʔ-la-neskw-a-yenɛ-ʔ-hd-aʔ jihah
 AOR-3SG.M.NOM-animal-JOIN-fall-INCH-CAUS-PUNC dog
 'He hit the dog.'
 (Literally: 'He caused the dog to change from standing to falling.')

Furthermore, when an inchoative event combines with a causative event, the INCH morpheme is always closer to the root (i.e., *√-CAUS-INCH). This suggests that the CAUS head is higher than the INCH one, as in (20) forthcoming.

6 Fine-graining vP: Second attempt

For Kratzer (1996), Voice, the syntactic head responsible for licensing the external argument is not distinct from a Causative head. Specifically, the specifier of Voice is interpreted as Agent, if the event described by the verbal phrase is an activity, and as Causer, if the event is causative. However, Pykkänen (2002) has argued for parametric variation with respect to whether Voice bundles with Cause, as in English, or not (see (17), Pykkänen's (146)).

(17) Variation: Voice-Bundling

- | | | | |
|----|--|----|--|
| a. | Non-Voice-Bundling Causative
(e.g. Japanese, Finnish) | b. | Voice-Bundling Causative
(e.g. English) |
| | | | |

Crucially, languages with Voice-bundling causatives lack unaccusative causatives (because unaccusatives lack Voice, **The leaves are falling*, * on causative interpretations), and cannot causativize unergatives or transitives (because *x* cannot function as both Causer and Causee, **John cried the baby*, **John washed Mary the dishes*, *Mary* ≠ BEN). However, languages without Voice-bundling permit unaccusative causatives, and permit unergatives and transitives to causativize. We propose, then, that Onondaga is a non-voice-bundling language.

Our first piece of evidence to support this claim is that Onondaga permits unaccusative roots to combine with the CAUS morpheme and nonetheless maintain their unaccusative status as discussed in section 5.1. Data like (14) shows that CauseP can appear with unaccusatives in the absence of VoiceP, as in (18).

$$(18) \quad \begin{array}{c} [\text{CauseP Cause}^0 [\text{TrP Tr}^0 [\text{VP V}^0 \text{arg}]]] \\ \uparrow \qquad \qquad \uparrow \\ \text{CAUS} \qquad \text{root} \end{array}$$

In (18), CAUS introduces a complex event but there is no Agent involved, so no VoiceP, and the argument is ACC rather than NOM. Compare this with (19), where we give the structure for an augmented unaccusative (i.e., an unaccusative recategorized as a transitive, data in (11a, c-d)). These causative constructions do contain a VoiceP and manifest subject agreement. As expected then, these can take agent-oriented modification, as seen in (11b).¹¹

$$(19) \quad \begin{array}{c} [\text{VoiceP arg Voice}^0 [\text{CauseP Cause}^0 [\text{TrP Tr}^0 [\text{VP V}^0 \text{arg}]]] \\ \uparrow \qquad \qquad \uparrow \\ \text{CAUS} \qquad \text{root} \end{array}$$

Note that while (19) represents an unaccusative augmented root, (18) does not. Interestingly, the root is merged early (i.e., in Tr^0 rather than Voice^0) in both.

Our second piece of evidence is that Onondaga permits unergatives and transitives to causativize. Recall data in (12) and (13) which show that unergatives and transitives can appear with causative morphology.¹² Consequently, the syntactic structure of the predicational domain has to be versatile enough to allow for a position hosting the Causer argument that is distinct from the position of the highest argument of the unergative and transitive roots (i.e., the arguments interpreted as Causee in the causative

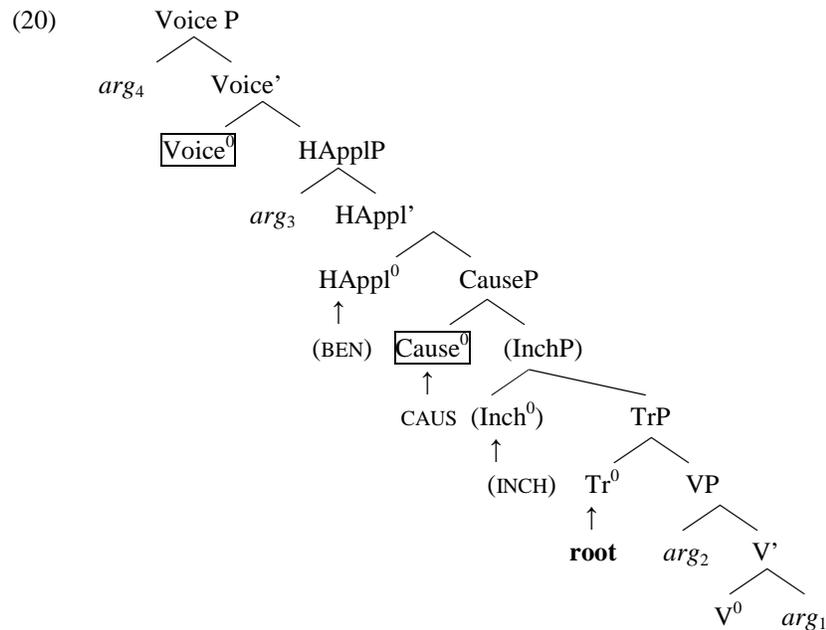
¹¹ Pytkänen (ibid.) suggests that languages vary as to the exact location of the Cause head, with some languages merging this head below Voice (either directly above the root or higher), others merging it above Voice. That the CAUS morpheme is merged lower than the Voice head in Onondaga, as in (19), is obvious from the relationship of this morpheme with respect to the BEN. Following Pytkänen (ibid.), Benefactives are merged below Voice but above TrP (i.e., High Applicatives); both (12b) and (13b) illustrate that the CAUS morpheme is closer to the root (hence lower) than the BEN morpheme.

¹² Note that some unergatives (e.g. *sing*) and transitives (e.g., *buy*) cannot combine with the CAUS morpheme, permitting only the syntactic causative (see (i)).

- (i) a. * waʔ-khe-aḁnoda-ʔd-aʔ
AOR-1.SG.NOM.3.ACC- sing-CAUS-PUNC
'I made her sing.'
- b. * gaʔshé:daʔ waʔ-khe-hní:no-ʔd-aʔ
car AOR-1.SG.NOM.3.ACC- buy-CAUS-PUNC
'I made her buy a car.'

While a more detailed discussion of this causative dichotomy is beyond the scope of this paper, we suggest that this lack of productivity is readily explainable under our proposed analysis. Given that the CAUS morpheme is merged lower than the Voice head in Onondaga, this head will be incapable of selecting a VoiceP so will be ruled out with unergatives and transitives with agentive subjects. However, roots with experiencer-type subjects (i.e., arguments not merged in Spec,VoiceP) should allow for this morpheme.

construction). If Voice is a head distinct from Cause, then two such positions are immediately available. In (20) below, these two heads are highlighted, as is the merge position of the root. However, in order to incorporate the BEN morpheme in our analysis, we will assume (with Cuervo, 2003) that eventive heads do not themselves project arguments, but that the participant required by the causative event is projected as the specifier of a High Applicative head, realized as a zero morpheme or as the BEN morpheme. Specifically, *arg*₄ is the Causer/Agent, *arg*₃ is the Causee, while *arg*₁ is the Theme (optional in unergatives). Nonetheless, we observe that NOM/subject agreement is not compulsory in causative unergative constructions (see (12c)). In these cases, we assume that the Causee is merged as *arg*₂ (also the locus of indirect objects in di-transitives and subjects of unergatives with object agreement).¹³ (20) illustrates the structure of the predicational (Chomskyan *v*P) domain for Onondaga.



As with unaccusatives, the root will have to be merged early (i.e., below *Voice*⁰, specifically in *Tr*⁰). Consequently, prediction of late root insertion is not borne out with bi-eventives. Nonetheless, one possibility is to assume that events correlate to phases, with mono-eventive predicates constituting one phase, while bi-eventive predicates would necessarily correspond to two phasal

¹³ We remain agnostic as to whether the merge position of *arg*₂ is Spec,VP or a Low Applicative head (as in McGinnis, 2003, Pylkkänen, *ibid.*) as this distinction is irrelevant to our discussion.

domains.¹⁴ This entails that the root merges low only apparently. It would, in fact, merge late within the lower phase.

6 Conclusion

In this paper, we have shown that both mono-eventive (bare) and bi-eventive (morphologically complex) predicates encode all valency types in Onondaga. We have argued that the primary function of both the CAUS and INCH morphemes is to introduce an event rather than an argument. In order to account for the combinatorial possibilities of the morphemes under consideration, we refined the Onondaga predicational domain in the spirit of Pytkäinen (2002) and Bowers (2002).

To the extent that VoiceP represents a ‘split’ Chomskyan vP, Onondaga provides evidence for both late and early root insertion in the predicational domain (in the sense of Déchaine, 2002) but at the same time shows that this variation correlates systematically with whether the predicate is mono- or bi-eventive. In mono-eventive predicates, the root merges high (i.e., late). In bi-eventive predicates, the root merges low (i.e., early). However, we have suggested that if events represent phasal domains, then the root consistently merges in the highest head within the first phase.

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¹⁴ McGinnis (2003) also argues for phasal complexity within the predicational domain though in her account phases correlate with vP-external argument introducing heads (i.e., High Applicatives in our structure).

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