

©Megan Schildmier Stone  
Coyote Papers 19 (2012)  
University of Arizona Linguistics Circle  
Tucson, AZ, U.S.A.

# Aspect in Cherokee Nominals\*

Megan Schildmier Stone  
University of Arizona  
stonem@email.arizona.edu

## Abstract

In this paper I present evidence from Cherokee (Iroquoian, Southern Iroquoian) which refutes accounts of the distinction between process and result nominals based on the presence or absence of AspectP in the nominal's functional structure. I argue that Cherokee has result nominals which contain aspect morphology, directly contradicting the proposal of Alexiadou (2001) that such nominals must lack an AspectP, and suggest that some other mechanism must be at play to account for the syntactic and semantic differences between result and process nominals.

---

\* Special thanks to Heidi Harley for many hours spent in her office poring over data, and to Brad Montgomery-Anderson for clarification of particular data points. Thanks also to Andrew Carnie, Amy Fountain, Jeffrey Punske, and Sylvia Reed for discussion that was instrumental in the development of these ideas. I am solely responsible for all remaining errors.

## 1 Introduction

The internal structure of derived nominalizations has long been a topic of discussion in the linguistic literature (e.g. Lees 1960, Abney 1987, Kratzer 1993, 1996, Siegel 1997, Alexiadou 2001, Borer 2003, Ackema and Neeleman 2004, Harley 2009, and many others). Differences in argument structure and meaning between different types of nominals have been used to argue for different internal constituencies.

One of the most well-known distinctions that has been drawn among derived nominals is that of process versus result nominals, first discussed extensively in Grimshaw (1990). Since that time, many attempts have been made to get at the fundamental difference between process and result nominals. One such analysis, by Alexiadou (2001), claims that result nominals are dominated only by the necessary nominal functional structure, while process nominals are dominated by intervening layers of verbal functional structure—namely, vP and AspP.

In this paper, I show that aspect morphology is clearly present in derived result nominals in Cherokee (Iroquoian, Southern Iroquoian). Under Alexiadou's account, this should be impossible, since aspect morphology must be located in an Aspect Phrase (AspP), which, by hypothesis, is absent in such nominals.

The paper begins in section 2 with some background on Cherokee, including a review of the basic verbal structure and the morphemes under consideration. In section 3, I address the question of whether the derived nominals present in Cherokee are result nominals or process nominals. Section 4 details Alexiadou's analysis and shows how it is incompatible with the Cherokee data, offering an alternative first suggested by Harley (2009). I also consider two alternate analyses of result nominals—those of Borer (2003) and Sleeman and Brito (2010)—in light of the Cherokee data. Section 5 concludes.

## 2 Background

Cherokee is richly polysynthetic, with fully inflected verbs that convey the majority of the information in a sentence. There are many prefixes and suffixes that can affect the core meaning of the verbal root. A templatic view of the basic verbal morpheme order in Cherokee is given in (1) below. Optional elements are in parentheses; required elements are

in bold.

(1) Cherokee verbal morpheme ‘template’:

(Prepronominal Prefix(es))	<b>Pronominal Prefix</b>	(Reflexive or Middle Voice)	(Incorporated Noun)	<b>Verb Root</b>	(Derivational Suffix(es))	<b>Aspectual Suffix</b>	(Final Suffix)
----------------------------	--------------------------	-----------------------------	---------------------	------------------	---------------------------	-------------------------	----------------

As indicated by the elements in bold, a Cherokee verb minimally contains a pronominal prefix, which indicates the person and number of the participants; a verb root; and an aspectual suffix. An example is provided in (2).

(2) A minimally inflected Cherokee verb<sup>1</sup> (Montgomery-Anderson 2008:40):

kaliikhohtíha  
 ji-alihkhohtíha  
 1A<sup>2</sup>-shatter:PRC  
 ‘I’m shattering it.’

<sup>1</sup> The orthography adopted here is that used by Montgomery-Anderson (2008). Symbols correspond roughly to the IPA, with three major exceptions: ‘v’ is a nasalized schwa /ə̃/, ‘j’ is a voiced postalveolar affricate /d͡ʒ/, and ‘y’ is a palatal glide /j/. Long vowels are represented with duplicates (e.g. /u:/ is represented orthographically as ‘uu’). Tone is indicated using acute and grave accents, as follows: low tone – unmarked; high tone – ú or úú; rising tone – uú; falling tone – úù; highfall tone – úú; lowfall tone – uù; superhigh tone – ú. Abbreviations used in this paper are as follows: 1 = 1<sup>st</sup> person, 2 = 2<sup>nd</sup> person, 3 = 3<sup>rd</sup> person, AGT = agentive tone, AMB = ambulative, ACC = accusative, CAU = causative, CMP = completive, DL = dual, DST = distributive, DST2 = distributive2, DVB = deverbaler, DVN = deverbaler noun, EXP = experienced past, GEN = genitive, HAB = habitual, IMM = immediate, INC = incomplete, IRR = irrealis, MOD = modal tone change, MOT = motion, NMLZ = nominalizer, NMLZ2 = nominalizer2, O = object focus, RFL = reflexive, PL = plural, PRC = present continuous, TRL = translocative.

<sup>2</sup> For purposes of this paper, the distinction between set A and set B pronominal prefixes will be considered an arbitrary selectional property of the verb stem (root + aspectual suffix); but see Barrie (2003) for a characterization of the distinction in the related Northern Iroquoian languages as being determined by boundedness.

Here we see the verb root meaning ‘shatter’ with the first person singular pronominal prefix and the present continuous aspect suffix.

It should be obvious from the ‘template’ in (1), however, that Cherokee verbs can be much more complex. A single Cherokee verb can contain multiple prepronominal prefixes, which indicate categories like mood; a pronominal prefix; a reflexive or middle voice marker; an incorporated noun; a verb root; one or more ‘derivational’ suffixes (the most mundane of which is the causative morpheme, though there are many others), each inflected for aspect; and a final suffix. One such example is provided in (3) below.

(3) A maximally inflected Cherokee verb (King 1975:37):

yi-w-akw-ataa-sk-kwaloo-st-aʔn-ido-ʔl-i  
 IRR-TRL-1B-RFL-head-bump-CAU-CMP-AMB-CMP-MOT  
 ‘If I go about bumping my head at a distant place’

The verbal complex in (3) contains the irrealis and translocative prepronominal prefixes, the latter of which indicates motion away from the speaker. These are followed by the pronominal prefix and reflexive morpheme. The noun ‘head’ is incorporated into the verb root ‘bump’, which is followed by the causative and ambulative suffixes, both inflected for completive aspect, and the verbal complex ends with the final suffix indicating motion.

While there are clearly many interesting properties of the Cherokee verbal complex, the remainder of this discussion is dedicated to the morphemes present in Cherokee deverbal nominalizations. Section 2.1 focuses on the aspect morphemes.

## 2.1 Aspect Morphemes in Cherokee

Cherokee has five morphemes that are standardly identified as aspect by Cherokee scholars (King 1975, Cook 1979, Scancarrelli 1987, Montgomery-Anderson 2008). These five morphemes are exemplified in the paradigm provided in (4) below.

## (4) Cherokee aspect morpheme paradigm (Montgomery-Anderson 2008:253-254):

## (a) Completive Stem

kinii?luhv́vʔi

kinii-?luhj-vʔi

1B.DL-arrive:CMP-EXP

‘You and I arrived.’

## (b) Incompletive Stem

ìinii?luhkóoʔi

ìinii-?luhk-óʔi

1A.DL-arrive:INC-HAB

‘You and I arrive.’

## (c) Present Continuous Stem

ìinii?luhka

ìinii-?luhka

1A.DL-arrive:PRC

‘You and I are arriving.’

## (d) Immediate Stem

ìniiluhki

ìinii-?luhki

1A.DL-arrive:IMM

‘You and I (just) arrived.’

## (e) Deverbal Noun Stem

kinii?luhisti

kinii-?luhist-i

1B.DL-arrive:DVN-NMLZ2

‘For you and I to arrive’

What Montgomery-Anderson (2008) calls completive aspect in Cherokee (4a) is roughly equivalent to the more commonly used ‘perfective’. It indicates that an action has been completed. Similarly, the incompletive (4b) is roughly equivalent to the imperfective and indicates that an action has not yet been completed. These two aspect morphemes require the presence of a final suffix (identified by Stone 2010 as a tense morpheme). The experienced past and habitual morphemes are used in (4a) and (4b), respectively.

Present continuous aspect (4c) is roughly equivalent to the present progressive, indicating that a state or action is ongoing at the time of the speech act. Moving on to the more quirky of the aspect morphemes, the immediate aspect marker typically indicates that an action took place in the very recent past. This morpheme is also used in immediate future and command forms.

The fifth and final morpheme typically grouped together with the other aspect morphemes in Cherokee is what Montgomery-Anderson calls the deverbal noun marker. It has also been called an infinitive stem (King 1975, Cook 1979, Scancarelli 1987). While this morpheme may not seem like a good semantic fit for the aspect category, there are other compelling reasons to keep it in this group. The most convincing reason is distributional—the deverbal noun marker is in complementary distribution with the other aspect morphemes. Furthermore, like the other aspect morphemes, the deverbal noun marker appears in the linear position immediately following the verb. Finally, this morpheme displays the same phonological idiosyncrasies that led Munro (1996) and others after her to list the verb root and aspect morpheme as one unit rather than separate morphemes. These features can be seen in the examples in (5), which demonstrate two of the primary functions of the deverbal noun stem—indicating obligation and ability.

(5) A closer look at deverbal noun aspect (Montgomery-Anderson 2008:264):

- (a) oósta tiikhinookiìsti  
 oósta ti-aki-hnookiìst-i  
 good DST2-1B-sing:DVN-NMLZ2  
 ‘I sing well.’, ‘My ability to sing is good.’

- (b) oósta tiikhinookíísti  
 oósta ti-aki-hnookiist-i  
 good DST2-1B-sing:DVN\MOD-NMLZ  
 ‘I must sing well.’

Example (5a) uses the nominalizing suffix NMLZ2 to indicate ability. In (5b), the nominalizer NMLZ is used with a special highfall tone (glossed with \MOD next to the morpheme that it is realized on), which appears on the rightmost long vowel in the verb word, to indicate obligation. The deverbial noun stem also appears in other types of nominalizations, discussed in more detail below.

Cherokee’s five aspect morphemes, along with their functions, are summarized in Table 1.

Aspect Morpheme	Function
Completive (CMP)	essentially equivalent to perfective; indicates an action that is completed
Incompletive (INC)	essentially equivalent to imperfective; indicates an action that has not been completed
Present Continuous (PRC)	indicates a state or action that is in progress at the time of the speech act
Immediate (IMM)	typically indicates an action that took place in the recent past; also immediate future and command
Deverbial Noun (DVN)	only appears in ‘nominalizations’; often indicates ability or obligation

Table 1: Summary of Cherokee Aspect Morphemes

In the next section, I provide a general discussion of Cherokee deverbial nominals.

## 2.2 Deverbial Nouns in Cherokee

There are three noun-forming suffixes in Cherokee. Each of these suffixes can attach to a

verbal complex to create a noun, though all three are idiosyncratic in their attachment preferences. The present continuous and immediate stems, discussed above, do not participate in Cherokee nominalizations at all. I discuss each nominalizing suffix in turn.

The nominalizer (NMLZ) can combine with the deverbal noun and incomplete aspect stems. In combination with the deverbal noun stem, the resulting nominals have an instrumental kind of interpretation, as demonstrated by the examples in (6).

(6) Cherokee nominals with DVN + NMLZ (Montgomery-Anderson 2008:411, 412):

- (a) akiísti  
 a-kiíst-i  
 3A-eat:DVN-NMLZ  
 ‘food’
- (a') aàki?a  
 a-ki?a  
 3A-eat:PRC  
 ‘He is eating.’
- (b) atahnthehti  
 a-atahnteht-i  
 3A-know:DVN-NMLZ  
 ‘thought, mind’
- (b') aàtahnthéha  
 a-atahnthéha  
 3A-know:PRC  
 ‘He is thinking.’

The noun *akiísti* ‘food’ in (6a) shares a verb root with *aàki?a* ‘He is eating.’ in (6a'). The pair given in (6b) and (6b') are similarly related.

When the nominalizer combines with the incompletive stem, an agentive noun is formed. These nouns are phonologically marked by a highfall tone on the rightmost long vowel, indicated in the gloss with \AGT following the morpheme on which the tone is realized. Two examples are provided in (7).

(7) Cherokee nominals with INC + NMLZ (Montgomery-Anderson 2008:442, 451):

- (a) athohkiíyááski  
 a-ahthohkiíyáàsk-i  
 3A-run:INC\AGT-NMLZ  
 ‘runner’
- (a') aàthohkiíyáàsko  
 a-ahthohkiíyáàsk-ó?i  
 3A-run:INC-HAB  
 ‘He runs (typically, habitually).’
- (b) tiitaahnvwííski  
 ti-a-ataat-hnvwîisk-i  
 DST2-3A-RFL-cure:INC\AGT-NMLZ  
 ‘medicine man’ (lit. ‘curer’)
- (b') khanvwîiskóo?i  
 ka-hnvwîisk-ó?i  
 3A-cure:INC-HAB  
 ‘He cures him (habitually).’

As in the previous example, the pairs show derived nominals and related verbs. In (7a), *athohkiíyááski* ‘runner’ is built on the verb root meaning ‘run’ with incompletive aspect and the nominalizer. The example in (7a') shows the related verb *aàthohkiíyáàsko* ‘He runs (typically, habitually).’, which shares the same verb stem. The examples in (7b) and (7b')

show the Cherokee noun for ‘medicine man’ and the related verb ‘He cures him (habitually).’.

The second noun-forming suffix in Cherokee is simply called nominalizer2 by Montgomery-Anderson (2008), and I follow his naming convention here.<sup>3</sup> This morpheme combines only with the deverbial noun stem, resulting in locative nominals, as shown in (8) below.

(8) Cherokee nominals with DVN + NMLZ2 (Montgomery-Anderson 2008:446, 268, 464):

- (a) juuntehlohkwaàsti  
 ti-uunii-ateelohkwaàst-i  
 DST2-3B.PL-learn:DVN-NMLZ2  
 ‘school’ (lit. ‘where they learn’)
- (a') aàtehlkwaasko  
 a-atehlokwaask-óʔi  
 3A-learn:INC-HAB  
 ‘He learns.’
- (b) juuniikhwanayostíʔi  
 ti-uunii-khwanayost-íʔi<sup>4</sup>  
 DST2-3B.PL-play.cards:DVN-NMLZ2  
 ‘casino’ (lit. ‘where they play cards’)

---

<sup>3</sup> The nominalizer2 suffix has the same phonological realization as the nominalizer NMLZ, -i (although it also has an emphatic form, - íʔi, which is not used with the nominalizer). This suggests that they might actually be the same morpheme. However, there is some semantic evidence, discussed briefly in Montgomery-Anderson (2008), to suggest that the two are distinct, and the distinction is not crucial to my discussion, so I leave the issue for future research.

<sup>4</sup> This is the emphatic form.

In (8a), we see the Cherokee noun *juuntehlohkwaàsti* ‘school’, which shares a root with the verb *aàtehlkwaasko* ‘He learns.’ in (8a’). From the literal translation, the locative interpretation is obvious: A school is, quite literally, a place where people learn.

The final noun-forming suffix in Cherokee is identified by Montgomery-Anderson (2008) as the deverbalizer, so called because it creates not just nouns but also adjectives and adverbs from verbs. This discussion focuses on its nominalizing function; the deverbalizer can combine with both the incompletive and completive aspect stems to form nouns.

In conjunction with the incompletive aspect stem, the deverbalizer forms nouns with no easily predicted semantic properties. Some examples of these derived nouns are given in (9) below.

(9) Cherokee nominals with INC + DVB (Montgomery-Anderson 2008:457, 458):

- (a) àtléeskʷʷʔi  
 a-atléesk-ʷʷʔi  
 3A-turn.off:INC-DVB  
 ‘turn-off’
- (a') aàtléeskóoʔi  
 a-atléesk-óʔi  
 3A-turn.off:INC-HAB  
 ‘He turns off the road (habitually).’
- (b) aàhwiisvnʷʷʔi  
 a-ahwiisvn-ʷʷʔi  
 3A-plant:INC-DVB  
 ‘garden’

The noun *àtléeskʷʷʔi* ‘turn-off’ (as in, a place to turn off the road) in (9a) shares its verb stem with *aàtléeskóoʔi* ‘He turns off the road (habitually).’ in (9a’).

Finally, the deverbalizer can combine with the completive aspect stem to create nouns that indicate the product of some action or event, demonstrated by the examples in (10).

(10) Cherokee nominals with CMP + DVB (Montgomery-Anderson 2008:412, 460):

- (a) ahnéhlthanv́ʔi  
 a-ahnéhlthan-v́ʔi  
 3A-translate: CMP-DVB  
 ‘translation’
- (a') uùhnéhlthanv́ʔi  
 uu-ahnéhlthan-v́ʔi  
 3B-translate: CMP-EXP  
 ‘She translated it.’
- (b) tiitaahliiloðsthanv́ʔi  
 ti-a-ataat-ahliiloðsthan-v́ʔi  
 DST2-3A-RFL-photograph: CMP-DVB  
 ‘picture’

Here we see *ahnéhlthanv́ʔi* ‘translation’ in (10a) sharing its verb stem with the verb *uùhnéhlthanv́ʔi* ‘She translated it.’ in (10a'), where the former represents the product of the latter.

Table 2 below summarizes the three Cherokee nominalizing morphemes discussed above and outlines the syntactic and semantic properties of their combinatory possibilities.

<b>Nominalizing Morpheme</b>	<b>Function</b>
Nominalizer (NMLZ)	combines with DVN and INC aspect stems to yield instrumental and agentive nominals, respectively
Nominalizer2 (NMLZ2)	combines only with DVN stem to yield locative nominalizations
Deverbalizer (DVB)	combines with INC and CMP aspect stems to yield derived nouns; also present on derived adjectives, and adverbs

Table 2: Summary of Cherokee Nominalizing Morphemes

In the next section, I discuss the specific properties of the Cherokee deverbal nominals just described against the backdrop of Grimshaw (1990)'s distinction between result and process nominals, showing that Cherokee does have result nominals that contain aspect morphology.

### 3 Result Nominals in Cherokee

It is worth noting that all of the deverbal nominals described in section 2.2, and thus all deverbal nominals in Cherokee (at least that I'm aware of), contain aspect morphology<sup>5</sup>. This would not be particularly surprising if they were all process nominals—i.e. if they still carried eventive argument structure and semantics. In section 3.1, I review Grimshaw's distinction between process nominals (what she calls complex event nominals) and result nominals, outlining the diagnostics that she provides which are most relevant to Cherokee. Section 3.2 applies those diagnostics to some of the Cherokee nominals discussed above and presents the results, ultimately concluding that Cherokee does indeed have result nominals.

#### 3.1 Grimshaw (1990)'s Distinction

Grimshaw (1990) provides a thorough discussion of the distinction between complex event nominals (I use the term 'process nominals', following Alexiadou 2001), which denote an

<sup>5</sup> This claim crucially depends on the arguments presented in section 2 above that the deverbal noun morpheme DVN is an aspect marker.

event, and result nominals, which denote the output of an event.<sup>6</sup> Alexiadou (2001) outlines several diagnostics provided by Grimshaw (1990) to differentiate the two types of nominals. I highlight here the ones that are most relevant for Cherokee.

Process nominals are mass nouns, while result nominals are count nouns, which may be pluralized (11).

(11) Pluralization of process and result nominals:

(a) \*two examinations of the papers

(b) one exam, two exams

If a prenominal genitive appears with a process noun, it receives an Agent interpretation, while a prenominal genitive with a result noun is a possessor (12).

(12) Prenominal genitives with process and result nominals:

(a) The instructor's examination of the papers [the instructor is doing the examining]

(b) The instructor's exam [the instructor is in possession of the exam]

Process nominals require internal arguments (like the verbs they're related to); result nominals never take them (13).

(13) Internal arguments in process and result nominals:

(a) the examination \*(of the papers) [on the event reading]

---

<sup>6</sup> Grimshaw also discusses simple event nominals (e.g. *race* and *event*), which clearly denote events but have no associated argument structure. I leave these aside.

- (b) the exam (\*of the papers)

Though Grimshaw (1990) provides many additional diagnostics for distinguishing result and process nominals, these three are most easily applied to Cherokee. I do just that in the following section.

### 3.2 Cherokee Results

Perhaps the most salient—if not the most reliable—diagnostic for distinguishing process and result nominals, on an intuitive level, is to consider whether the noun in question denotes an event or the result of an event. Looking at the five different noun-forming strategies in Cherokee, presented in section 2.2 above, none of them seem to produce nominals with eventive interpretations. A representative sample is repeated in (14) below.

(14) A sampling of Cherokee nominals:

- (a) Instrumental nominal with DVN + NMLZ:

akiísti

a-kiíst-i

3A-eat:DVN-NMLZ

‘food’

- (b) Agentive nominal with INC + NMLZ:

athohkiíyááski

a-ahthohkiíyáàsk-i

3A-run:INC\AGT-NMLZ

‘runner’

- (c) Locative nominal with DVN + NMLZ2:  
 juuntehlohkwaàsti  
 ti-uunii-ateelohkwaàst-i  
 DST2-3B.PL-learn:DVN-NMLZ2  
 ‘school’ (lit. ‘where they learn’)
- (d) Deverbal nominal with INC + DVB:  
 aàhwiisvn-ńń?i  
 a-ahwiisvn-ńń?i  
 3A-plant:INC-DVB  
 ‘garden’
- (e) Product nominal with CMP + DVB:  
 ahnéhlthan-ńń?i  
 a-ahnéhlthan-ńń?i  
 3A-translate:CMP-DVB  
 ‘translation’

A systematic investigation of these cases reveals that (14d) and (14e) have the most clear result interpretations. (Interestingly, they also have the most obvious eventive interpretations, which I will discuss momentarily.) A garden is the thing that results from the event of planting<sup>7</sup>; and, perhaps even more clearly, a translation is the thing that results from the event of translating. The other three examples don’t fall clearly into either class. Nominals of the type represented by *akísti* ‘food’ in (14a), which I have described here as instrumental-type nominals, are clearly not events; however, they are not obviously the result of an event, either. The same holds for the agentive nominals represented by *athohkiíyááski* ‘runner’ in (14b) and the locative nominals represented by *juuntehlohkwaàsti* ‘school’ in (14c).

One of Grimshaw (1990)’s key original observations, however, was the ambiguity of certain nominals in English. ‘Translation’, for instance, is ambiguous between eventive and

<sup>7</sup> Or, at least, it’s a plausible result; a plant would be another semantically plausible possibility.

result readings, as the data in (15) demonstrate.

(15) Ambiguous process/result nominal:

(a) The translation of the document took four hours. *process*

(b) The translations were preserved under glass. *result*

In (15a), ‘translation’ takes an internal argument, which is indicative of process nominals. In (15b), the derived noun is plural, which is indicative of result nominals.

The question for Cherokee, then, is whether the nominals in (14d-e), which have intuitively resultative interpretations, follow the patterns of result or process nominals. I now use Grimshaw’s diagnostics to answer this question, applying them to nouns of the type exemplified in (14d-e).

The first diagnostic presented in section 3.1 above is pluralization: process nominals typically cannot be pluralized, while result nominals typically can. The example in (16) shows a pluralized deverbal nominal in Cherokee.

(16) Cherokee deverbal nominals can be pluralized (Montgomery-Anderson 2008:349):

tuuwuukhthv́

tee-uu-uukhth-ń́ʔi

DST-3B-plan:CMP-DVB

‘(his) plans’

This example patterns with (14e) above in that it combines the completive aspect stem with the deverbalizer. The noun meaning ‘plans’ is related to the verb meaning ‘to plan’. Here, the distributive prefix DST indicates plurality.<sup>8</sup> Two additional examples of the type

<sup>8</sup> Note the inclusion of the distributive prefix on the singular noun *tiitaahliiloðsthanń́ʔi* ‘picture’ in (10b) above. According to Montgomery-Anderson (2008:446), the Cherokee verb ‘to photograph’ idiosyncratically and obligatorily requires the distributive prefix, even with a singular object. Thus the noun *tiitaahliiloðsthanń́ʔi* can

exemplified in (14d) above are provided in (17) below.

(17) Additional plural Cherokee deverbal nominals (Montgomery-Anderson 2008:457, 460):

(a) taàtléesk-úúʔi  
 tee-a-atléesk-úúʔi  
 DST-3A-turn.off:INC-DVB  
 ‘turn-offs’

(b) taàthalees-úúʔi  
 tee-a-thalees-úúʔi  
 DST-3A-make.hole:INC-DVB  
 ‘holes’ (lit. ‘that which has been drilled’)

As above, the inclusion of the distributive prefix indicates plurality.

The second diagnostic described in section 3.1 above concerns pronominal genitives. Pronominal genitives with result nouns are interpreted as possessors, while pronominal genitives with process nouns are Agents. While Cherokee does not have genitives of the same structural type as those in English, it does have pronominal prefixes which are realized in deverbal nominals. These prefixes receive a possessor interpretation, according to Montgomery-Anderson’s translations. While prefixes typically bear the default third person singular inflection in derived nominals, the data in (18) show that the prefix can be changed to reflect the person and number features of the possessor.

---

have either a singular or a plural meaning. This is not particularly surprising given the fact that non-derived Cherokee nouns—excluding body parts, clothing, and kinship terms—are not typically marked for number.

(18) Cherokee deverbal nominals can have possessors (Montgomery-Anderson 2008:409, 448):

- (a) jvkwahliiloðsthan-ńń?i<sup>9</sup>  
 ti-vki-ahliiloðsthan-ńń?i  
 DST2-1O-photograph:CMP-DVB  
 ‘my picture, my pictures’
- (b) jejahliiloðsthan-ńń?i  
 ti-eja-ahliiloðsthan-ńń?i  
 DST2-2O-photograph:CMP-DVB  
 ‘your picture, your pictures’

These examples show that variation in the person and number features of the pronominal prefix (*vki-* ‘first person singular object focus’ or *eja-* ‘second person singular object focus’) affect the identity of the possessor. This is also shown in (16) above, where we see that *tuuwuukhthvń* can be interpreted as either ‘plans’ (if the pronominal prefix is to be interpreted simply as a default) or ‘his plans’ (if we interpret its person and number features).

The third and final diagnostic from Grimshaw (1990) described above deals directly with argument requirements. Process nominals are said to require internal arguments akin to those required by their verbal counterparts, while result nominals do not (and, in fact, cannot) take them.<sup>10</sup> This diagnostic is a bit trickier to apply to Cherokee, given its polysynthetic structure. Certainly the Cherokee nominals under discussion do not require complement *of*-phrases in the way that English process nominals seem to. However, Cherokee deverbal nominals—like their verbal counterparts—obligatorily require

<sup>9</sup> It is unclear why these two nominals have a slightly different morphosyntactic derivation than the word for ‘picture’ provided in (10b) above, which includes the set A person and number prefix plus the reflexive prefix, rather than what Montgomery-Anderson (2008) calls the ‘Object Focus’ prefixes used here in (19a-b). Regardless, the point about possession stands.

<sup>10</sup> Although see the discussion in Alexiadou (2001), Sleeman and Brito (2010), and elsewhere about result nouns with optional argument complements.

pronominal prefixes, as can be seen in all of the preceding examples. In the verbal forms, these required prefixes indicate the person and number of the subject and (animate) object arguments. In the nominal forms under discussion here, however, their function is less clear. As the examples in (18) above show, one function of the pronominal prefix on these forms is to indicate a possessor, while the third person singular form seems to be used as some kind of default when possession is not an issue. It is not at all clear that the pronominal prefixes in these deverbal nominals indicate arguments parallel to *of*-phrases in English.<sup>11</sup>

Taken together, then, the data presented in this section suggest that Cherokee does in fact have result nominals. Deverbal nominals with the deverbalizer and either the completive or incompletive aspect stem clearly satisfy two of the three diagnostics from Grimshaw (1990) presented here: They can be pluralized (16-17), and the closest thing Cherokee has to a preverbal nominal—i.e. a pronominal prefix—serves as a possessor (18). While the final point about required arguments is perhaps a bit inconclusive, it seems safe to say that the pronominal prefixes function differently in nouns than in verbs. On balance, the interpretation and morphosyntactic patterns found in these nominals are most consistent with the conclusion that they are result nominals.

Accepting that Cherokee has result nominals, it remains to investigate the implications of this conclusion. I explore those implications in the next section by first showing how the Cherokee data are incompatible with Alexiadou (2001)'s analysis and presenting an alternate analysis proposed by Harley (2009). I then briefly discuss two other analyses of result nominals in light of the Cherokee data.

---

<sup>11</sup> As noted by Heidi Harley (p.c.), if the pronominal prefixes on deverbal nouns are indeed the same ones that show up in verbal environments, that provides support for the hypothesis that there is a lot of functional structure in the nominal, since the pronominal prefixes are typically thought to be located rather high in the tree. Baker (1996), for instance, argues for the related language Mohawk that the pronominal prefixes are agreement morphemes adjoined to T.

## 4 Possible Analyses

As mentioned above, the varying behavior of different ‘classes’ of deverbal nominals has long been an enigma in the world of linguistics. In section 4.1, I provide an overview of Alexiadou (2001)’s proposal to account for the observed differences, showing that it is incompatible with the Cherokee data presented above. Section 4.2 reviews Borer (2003)’s analysis, and section 4.3 discusses the proposal by Sleeman and Brito (2010).

### 4.1 Alexiadou (2001) on Derived Nominals

Alexiadou (2001)’s central claim is that process and result nominals contain different functional structures, which accounts for the different behaviors observed by Grimshaw (1990) and others. More specifically, process nominals contain AspP and vP, both of which are characteristically verbal projections. Result nominals, on the other hand, lack both of these projections and are limited only to characteristically nominal projections (e.g. DP and Numb/AgrP). The trees in Figures 1 and 2 below represent Alexiadou’s proposal for process and result nominals, respectively.

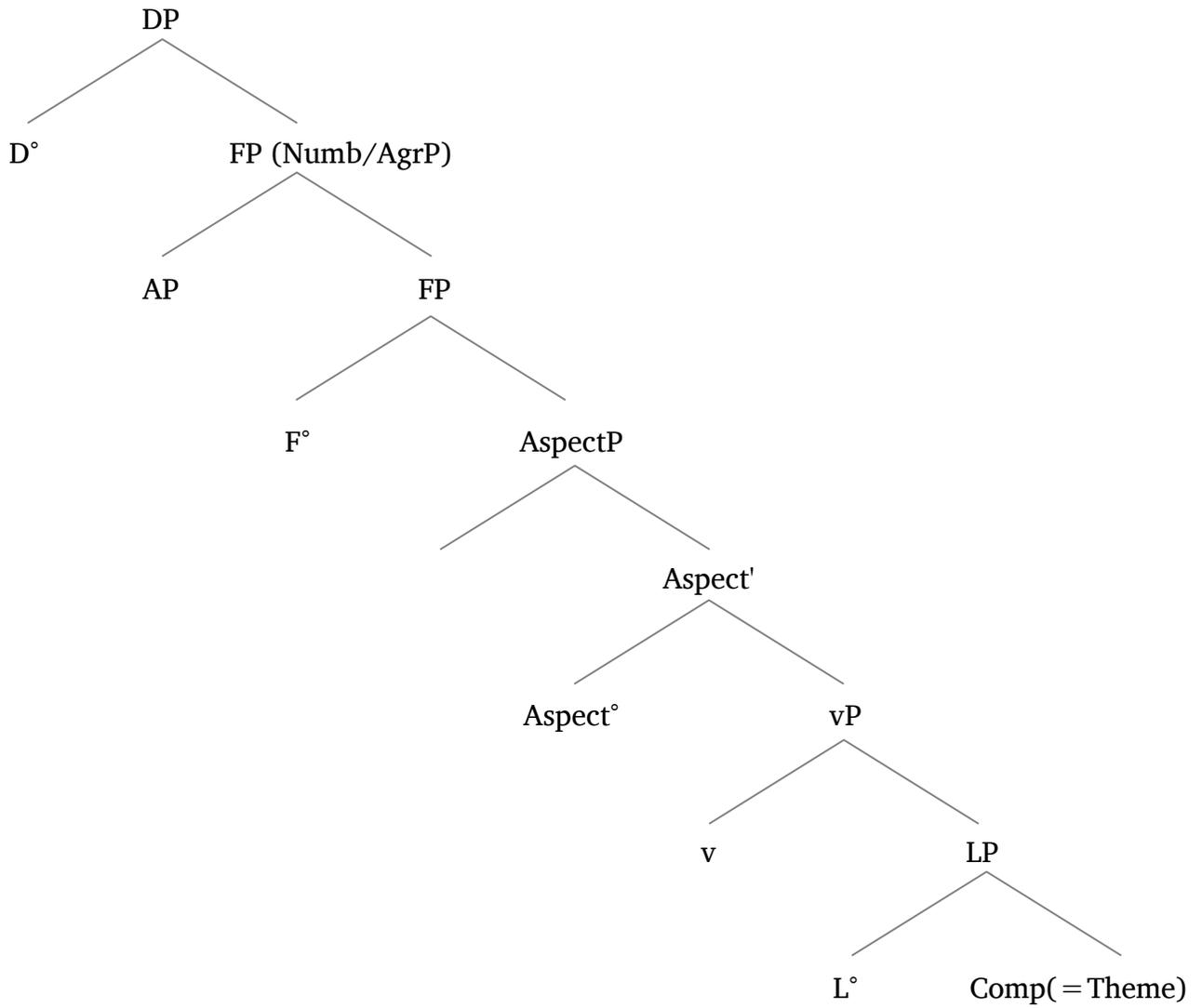


Fig. 1 Process Nominal (Alexiadou 2001).

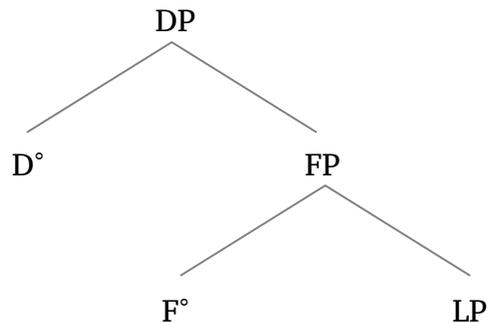


Fig. 2 Result Nominal (Alexiadou 2001).

Both nominals are ultimately dominated by DP and FP, giving them their nominal function. However, the process nominal has intervening AspP and vP projections, which contribute to its more verb-like behaviors. For instance, Alexiadou proposes the structure in Figure 1 to account for the eventive properties of process nominals, as well as the fact that, in languages like Hebrew and Greek, process nominals permit adverbial modification, as in (19) below.

(19) Adverbial modification of process nominals in Hebrew (Alexiadou 2001:15, from Hazout 1995):

- (a) Harisat ha-cava et ha-kfar be-axzariyut  
 Destruction the army ACC the village cruelly  
 ‘The army’s destroying the village cruelly’
- (b) i katastrofi ton egrafon prosektika/me prosohi  
 the destruction the documents.GEN carefully/with care
- (b) \*i katastrofi prosektika  
 the destruction carefully

In (19a) and (19b), the adverbs *be-axzariyut* ‘cruelly’ and *prosektika* ‘carefully’ and the adverbial phrase *me prosohi* ‘with care’ are permissible with process nominals. Figure 2

above shows how the functional projections associated with these properties are not present in result nominals, which explains why (19b') is illicit.

For Alexiadou, a proponent of Distributed Morphology (henceforth, DM; Halle and Marantz 1993, Harley and Noyer 1999, Embick and Noyer 2007, a.o.), surface morphemes are generated in the syntactic structure.<sup>12</sup> Turning back to Cherokee, the aspectual morphemes that appear in all deverbal nominals should be generated in some sort of aspectual head. This is compatible with Alexiadou's analysis only to the extent that Cherokee has process nominals; but, as we have seen, there is compelling evidence that at least some of the deverbal nominals in Cherokee are result nominals. If Alexiadou is correct, the syntactic structures for these nominals should lack aspect heads entirely—and, by extension, their surface forms should lack aspect morphology. The fact that this is not the case—that is, that Cherokee result nominals contain aspect morphology—provides strong evidence against Alexiadou's structural analysis of result nominals.

It remains to explain the absence of properties typically associated with the verbal functional projections in Cherokee's result nominals, since the Aspect head is required to house the relevant morphology. One possibility is that AspP is present without vP, although that runs contrary to standard assumptions within the theory about the selectional relationship between AspP and vP.<sup>13</sup> Another possibility is that vP is present but is 'defective'

---

<sup>12</sup> This is an overly simplified picture. In DM, the term 'morpheme' refers to a feature bundle that is present in and manipulated by the syntax, while the phonological units that appear on the surface are called Vocabulary Items. This level of technical detail is not important for the current discussion. What's at issue is the fact that there is no morphological or word-formation component; rather, word-formation happens in the syntax.

<sup>13</sup> Furthermore, some Cherokee deverbal nominals contain causative morphemes, commonly assumed to be located in v° (Travis 1994, 2000, Harley 1995, 2008, a.o.). An example is provided in (i) below.

- (i) Cherokee deverbal nominal with causative morpheme (Montgomery-Anderson 2008:462):

atahnthehti  
 a-atahnt-h-eht-i  
 3A-know-CAU:DVN-NMLZ  
 'mind, feeling'

However, this evidence is weak, as I have not encountered any nominals of the form INC + DVB or CMP + DVB that contain causative morphemes, and these are the focus of this discussion, being the most clearly 'result-like'.

in some way that affects the perceived eventiveness of the nominal. If all Cherokee deverbal nominals could be analyzed as result nominals, one might consider a structural account based on the presence or absence not of AspP but of TP, based on the work of Stone (2010), who shows that all derived nominals in Cherokee necessarily exclude tense. Though Alexiadou (2001) argues explicitly against TP inside derived nominals, others (e.g. van Hout and Roeper 1998) claim that TP can be present.

Harley (2009) provides another possible account. Drawing on the fact that process nominals are mass nouns and result nominals are count nouns, she proposes that the semantic differences between the two types of nominals are actually the result of coercion. When process nominals are coerced into a result nominal interpretation, with the properties of a count noun, a “semantic side effect” comes into play, which prevents the appearance of the object argument (Harley 2009:338). Harley explains that the semantic role of both the object and the head that coerces a mass noun into a count noun is to provide a boundary: In the case of the object, it provides a boundary on the duration of the event. In the case of the count-noun-coercing head, it forces a mass noun into discrete and countable units. Harley speculates that the two boundaries—the one imposed by the object and the one imposed by the count-noun-coercing head—are incompatible, which accounts for the fact that result nominals cannot appear with object arguments.

If this were the correct way of thinking about result nominals, we could easily account for the presence of aspect morphology inside the Cherokee result nominals discussed above. The difference between process and result nominals is not in the layers of functional structure intervening between the root and the DP layer, as proposed by Alexiadou (2001), but in a semantic incompatibility between object arguments, which accompany process nominals, and the count-noun-coercing head present in result nominals. Because the internal syntactic structure of both kinds of nominals is essentially the same, it would be unsurprising to find AspP—and, thus, aspect morphology—in both process and result nominals.

While the details of such an analysis have yet to be worked out, it seems that this is at least the beginnings of a plausible approach to accounting for the morphosyntactic properties of Cherokee deverbal nominals within a DM framework. In the following subsections, I very briefly discuss two alternate analyses of the result vs. process nominal distinction in light of the Cherokee data.

## 4.2 Borer (2003) on Derived Nominals

The approach taken by Borer (2003), working in a framework quite similar to DM, is to essentially propose two separate word-formation strategies, one for process nominals (her A(rgument) S(tructure) nominals) and one for result nominals. Under her account, process nominals look quite familiar: the functional projection representing nominal structure dominates others representing eventiveness and argument structure. Result nominals, on the other hand, are formed when nominal structure directly dominates what she calls the “Encyclopedic Item”. These contrasting structures are represented schematically in Figures 3 and 4, respectively.

$$[_{NP} \text{-ation/-ing} [_{EP/ASPQ} [_{L-D} \text{form} ]]]$$

Fig. 3 Process nominal (adapted from Borer 2003).

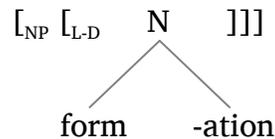


Fig. 4 Result nominal (adapted from Borer 2003).

Borer’s process nominal in Figure 3 has eventive and aspectual heads intervening between the root and the nominalizing structure. Her result nominal in Figure 4, on the other hand, shows the nominal *formation* entering the derivation as an N°, thus precluding it from combination with verb-like functional structural. Borer (2003:52) notes, “There is no argument structure [in result nominals], quite simply because the nominalization was, so to speak, too low, and any attempt to add argument structure to it would involve the projection of structure that is incompatible with the existence of an N-head.” Essentially, then, for Borer, process nominals are formed in the syntactic component, while result nominals are formed by some sort of pre-syntactic component, such that they enter the derivation with their structure already partly determined.

This account could be extrapolated to the Cherokee data presented in this paper. As

far as I know, there is no mechanism preventing multiple affixes from combining in the pre-syntactic component, such that a Cherokee result nominal could be built up with its pronominal prefix, aspectual suffix, and nominalizing suffix all under a single N° before entering the syntactic derivation. However, it is worth noting that such a pre-syntactic word-formation component is inconsistent with the DM architecture, where all word-formation must take place in the syntactic component. As Harley (2009:338) puts it, “to adopt the notion that words can be built either pre- or post-syntactically would make most of the framework’s strongest claims vacuous.”

I turn next to another analysis of derived nominals, this one by Sleeman and Brito (2010), who propose a richer set of distinctions among nominal types.

### 4.3 Sleeman and Brito (2010) on Derived Nominals

Unlike the other accounts discussed here so far, Sleeman and Brito (2010) contend that there is no strict dichotomy between process and result nominals, presenting cross-linguistic evidence in favor of their claim. Instead, they suggest a four-way split in derived nominals, based on certain properties of vP and AspP. Sleeman and Brito claim that vP can be deficient with respect to agentivity, the result of which is a nominal that lacks an agentive *by*-phrase. Similarly, they propose a binary opposition within AspP, which can either have or lack a result feature. These two binary features freely combine to yield four distinct types of nominals, as summarized in Table 3 below.

	Asp [- result]	Asp [+ result]
vP [+ agentive]	Process nouns with a <i>by</i> -phrase	Result nouns that admit of a <i>by</i> -phrase
vP [- agentive]	Process nouns that admit of two <i>of</i> -phrases Unaccusative process nouns	Result nouns with <i>of</i> -phrases Unaccusative result nouns

Table 3: Values of Deverbal Nominalizations (adapted from Sleeman and Brito 2010:128)

Simplifying a bit by way of summary, nouns with the [+ agentive] feature take *by*-phrases,

while nouns with the [- agentive] feature take *of*-phrases. The [+/- result] feature can be detected by the usual semantic means—does the nominal denote an event or the result of an event?—as well as the collection of morphosyntactic diagnostics described in section 3.1 above, and the full range outlined in Grimshaw (1990).

An example of each of the four types is provided in (20) below.

(20) Values of Deverbal Nominals (Sleeman and Brito 2010:119, 120, 119, 115):

(a) [+ agentive, - result] (French)

La destruction de la ville par les soldats eut lieu en 1750.

‘The destruction of the city by the soldiers occurred in 1750.’

(b) [+ agentive, + result] (Portuguese)

A análise do texto pelo aluno enriqueceu o conhecimento dos colegas.

‘The analysis of the text by the students enlarged the knowledge of the colleagues.’

(c) [- agentive, - result] (Dutch)

Ik heb alle uitvoeringen van Youri Egorov van het Schumann-programma bijgewoond.

‘I have attended all of Youri Egorov’s performances of the Schumann program.’

(d) [- agentive, + result] (Catalan)<sup>14</sup>

La discussió de les dades es va publicar a la revista.

‘The discussion of the data was published in the journal.’

The critical feature of Sleeman and Brito’s analysis is that there are, essentially, two types of process nouns and two types of result nouns, each with distinct features. This proposal accounts for the rich cross-linguistic diversity of deverbal nominals that is not seen when considering English alone.

Although for Sleeman and Brito, as for Harley (2009), AspP is present in both result and process nominals, it is unclear exactly how their analysis would apply to a language like Cherokee. First, their diagnostics are based largely on *by*-phrases and *of*-phrases, which are virtually non-existent in richly polysynthetic languages. Beyond that, it is unclear in Sleeman and Brito’s proposal whether the Aspect head in result nominals is restricted to (some manifestation of) the [+ result] feature or is capable of bearing the full range of aspectual morphology. At a minimum it seems necessary that it be able to include both completive and incomplete aspect morphology, as evidenced by the Cherokee data presented in section 3 above. Nonetheless, the analysis proposed by Sleeman and Brito provides fertile ground for future research.

---

<sup>14</sup> It is worth noting that the nominal in this sentence appears to contradict the proposal presented above by Harley (2009): If the count-noun-coercing head were incompatible with an object argument, we would not expect to see result nominals like *la discussió de les dades* ‘the discussion of the data’, where ‘discussion’, which clearly functions as a result noun in this sentence, since only results—not processes—can be published, takes an *of*-phrase complement. We might get around this dilemma by saying that the *of*-phrase with the result nominal is an adjunct rather than an argument, a suggestion that has its merits since it is clearly not required, as arguments typically are. However, we would then be forced to conclude that the *of*-phrases in (i) and (ii) below were structurally different, which is not necessarily a desirable result (though this seems to be the solution suggested by Grimshaw 1990:61).

(i) The discussion of the data was published in the journal. [result]

(ii) The discussion of the data turned into a lively debate. [process]

## 5 Conclusion

In this paper, I have presented evidence that Cherokee deverbal nominals contain aspect morphology. Under the assumptions of Distributed Morphology, that means they must also contain the necessary structure to house such morphological complexity. While most analyses of derived nominals acknowledge the presence of eventive verbal structure within process nominals, several prominent theories—including that of Alexiadou (2001)—deny the presence of such structure within result nominals. The fact that Cherokee has deverbal result nominals with aspect morphology poses serious challenges for such theories. I briefly discussed several alternate options, including the possibility that the difference is not structural but rather semantic (Harley 2009). Further research will be necessary to determine which analysis described above fares best in predicting the patterns of Cherokee data.

## References

- Abney, S. (1987). *The English noun phrase in its sentential aspect*. Ph.D. Dissertation, MIT.
- Ackema, P. & A. Neeleman. (2004). *Beyond morphology: interface conditions on word formation*. Oxford: Oxford University Press.
- Alexiadou, A. (2001). *Functional structure in nominals: Nominalization and ergativity*. Amsterdam: John Benjamins.
- Baker, M. (1996). *The polysynthesis parameter*. Oxford studies in comparative syntax. New York: Oxford University Press.
- Barrie, M. (2003). Pronominal agreement on Iroquoian nouns and verbs. *Toronto Working Papers in Linguistics*, 21:1-13.
- Borer, H. (2003). Exo-skeletal vs. endo-skeletal explanations. In Moore, J. and M. Polinsky (eds). *The Nature of Explanation in Linguistic Theory*. Chicago: CSLI and University of Chicago Press, 31-67.
- Chomsky, N. (1970). Remarks on nominalization. In Jacobs, R. and P. Rosenbaum (eds). *Readings in English Transformational Grammar*. Waltham, MA: Blaisdell, 184-221.
- Cook, W. (1979). *A grammar of North Carolina Cherokee*. Ph.D. Dissertation, Yale.
- Grimshaw, J. (1990). *Argument structure*. Cambridge, MA: MIT Press.
- Halle, M. and A. Marantz. (1993). Distributed morphology and the pieces of inflection. In Hale, K. and S. J. Keyser (eds). *The View from Building 20*. Cambridge, MA: MIT Press, 111-176.
- Harley, H. (1995). *Subjects, events, and licensing*. Ph.D. Dissertation, MIT.
- Harley, H. (2008). On the causative construction. In Miyagawa, S. & M. Saito (eds). *The Oxford Handbook of Japanese Linguistics*. New York: Oxford University Press, 20-53.
- Harley, H. (2009). The morphology of nominalizations and the syntax of vP. In Giannakidou, A. and M. Rathert (eds). *Quantification, Definiteness, and Nominalization*. Oxford: Oxford University Press, 321-343.
- Harley, H. & R. Noyer. (1999). State-of-the-Article: Distributed Morphology. *Glott International* 4(4):3-9.
- Hazout, I. (1995). Action nominalizations and the lexicalist hypothesis. *Natural Language and Linguistic Theory* 13(3): 355-404.

- King, D. (1975). *A grammar and dictionary of the Cherokee language*. Ph.D. Dissertation, University of Georgia.
- Kratzer, A. (1993). On external arguments. In Benedicto, E. and J. Runner (eds). *University of Massachusetts Occasional Papers in Linguistics 17: Functional Projections*. Amherst: University of Massachusetts, GLSA, 103-130.
- Kratzer, A. (1996). Severing the external argument from its verb. In Rooryck, J. and L. Zaring (eds). *Phrase Structure and the Lexicon*. Dordrecht: Kluwer, 109-137.
- Lees, R. H. (1960). *The grammar of English nominalizations*. Bloomington: Indiana University Press.
- Montgomery-Anderson, B. (2008). *A reference grammar of Oklahoma Cherokee*. Ph.D. Dissertation, University of Kansas.
- Munro, P. (ed). (1996). Cherokee papers from UCLA. *UCLA Occasional Papers in Linguistics* 16. Los Angeles: University of California, Los Angeles.
- Scancarelli, J. (1987). *Grammatical relations and verb agreement in Cherokee*. Ph.D. Dissertation, UCLA.
- Siegel, J. (1997). Gerundive nominals and the role of aspect. In Austin, J. and A. Lawson (eds). *Proceedings of the Fourteenth Eastern States Conference on Linguistics*. Ithaca: CLC Publications, 170-179.
- Sleeman, P. & A. M. Brito. (2010). Nominalization, event, aspect and argument structure: a syntactic approach. In Duguine, M., S. Huidobro & N. Madariaga (eds). *Argument Structure and Syntactic Relations: A cross-linguistic perspective*. Amsterdam: John Benjamins, 113-130.
- Stone, M. S. (2010). *Nominalizations without tense: Evidence from Cherokee*. Ms., University of Arizona.
- Travis, L. (1994). Event Phrase and a theory of functional categories. In Koskinen, P. (ed). *Proceedings of the 1994 annual conference of the Canadian Linguistics Association*. Toronto: University of Toronto, 559-570.
- Travis, L. (2000). Event structure in syntax. In Tenny, C. & J. Pustejovsky (eds). *Events as Grammatical Objects: The Converging Perspectives of Lexical Semantics, Logical Semantics, and Syntax*. Stanford: CSLI Publications, 145-185.
- van Hout, A. & T. Roeper. (1998). Events and aspectual structure in derivational morphology. *MIT Working Papers in Linguistics*, 32:175-220.