

## Argument structure, applicatives, and animacy in Blackfoot\*

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In the Algonquianist tradition, there is a clear distinction between abstract and concrete verb class finals. However, in Blackfoot, the distinction between the two is not always clear. In this paper, I argue that the more salient distinction is between finals that license animate objects (Transitive Animate) and finals that license inanimate objects (Transitive Inanimate). Working under the assumption that the distinction between finals reflects a distinction between arguments, I propose that argument structure in Blackfoot is organized on the basis of animacy, rather than thematic roles.

### 1. Introduction

This paper explores the interaction of argument structure, applicatives, and animacy in Blackfoot, a Plains Algonquian language spoken in Southern Alberta and Northwestern Montana. In this language, transitivity and animacy are marked on the verb via VERB CLASS FINALS, stem-forming suffixes that are traditionally classified as either abstract or concrete (Bloomfield 1946; Frantz 1991). The standard template that is assumed for verb stems in Blackfoot (as well as other Algonquian languages) is shown in (1).

- (1) Algonquian verb stem  
initial + root + (medial) + **abstract final (+ concrete final)**

Although abstract and concrete finals are typically distinguished in the Algonquianist literature, in Blackfoot the distinction between the two is not always clear. In this paper, I argue that the more relevant distinction is between finals that license animate objects (Transitive Animate, TA) and finals that license inanimate objects (Transitive Inanimate, TI). Working under the assumption that the distinction between finals reflects a distinction between arguments, I propose that argument structure in Blackfoot is organized on the basis of animacy, rather than thematic roles.

This paper is organized as follows. §2 introduces various terms for discussing notions related to argumenthood, and §3 draws a comparison

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\* Unless otherwise noted, data are from the author's fieldwork with native speakers of Siksiká and Kainaa Blackfoot. My sincere thanks to my language teachers, Rachel Ermineskin and Beatrice Bullshields. *Nitsikohtahsi'taki*.

between abstract and concrete finals. In §4, I take a detailed look at one particular concrete final, benefactive *-omo*, and in §5, I look at abstract TA finals, and how they compare to abstract TI finals. §6 draws a comparison between *-omo*, abstract TA finals, and abstract TI finals, and concludes that the more salient distinction is between TA and TI finals, rather than concrete and abstract finals. §7 provides an analysis that argues for an animacy-based argument structure and §8 looks at the further predictions of this analysis. §9 concludes.

## 2. A note on terminology

Before spelling out the details of my proposal, some terminological clarification is required. There are various ways of talking about arguments, each of which is relevant to the discussion that follows. First, the Algonquianist tradition relies heavily on the distinction between ACTOR and GOAL (Hockett 1966). These terms refer to grammatical relations, with *actor* referring to the logical subject, and *goal* referring to the logical object. In this paper, grammatical relations are distinguished from thematic roles, and the terms CORE OBJECT and NON-CORE OBJECT are used in discussing thematic roles. A *core object* is a patient or theme (often the “direct object”) and a *non-core object* is one with an oblique thematic role (often the “indirect object”). Finally, the Algonquianist terms PRIMARY OBJECT and SECONDARY OBJECT will be used to discuss agreement patterns. The *primary object* is that which controls object agreement on the verb, and the *secondary object* is that which does not control agreement. In ditransitive clauses, the non-core object is primary and the core object is secondary.

## 3. Two types of verb class finals

In this section, I provide an overview of the traditional distinction between abstract and concrete finals.

As shown in (1), abstract finals typically attach to roots, and do not significantly contribute to the meaning of the stem. Rather, they function to indicate one of four verb classes: Transitive Animate (TA), Transitive Inanimate (TI), Animate Intransitive (AI), and Inanimate Intransitive (II).

Concrete finals, on the other hand, attach to stems, composed of a root plus an abstract final. The addition of a concrete final to a verb stem is often referred to as “secondary derivation” in the Algonquianist tradition (Bloomfield 1946). Unlike abstract finals, concrete finals are thought to contribute palpable meaning to the predicate. For instance, in Blackfoot, the accompaniment final *-m* and the causative final *-attsi* impose a particular argument structure, while the reflexive final *-oohsi* and the reciprocal final *-ootsiyi* specify a binding relation. Certain finals form denominal predicates (e.g. *-wa’si* ‘become,’ *-hkaa* ‘acquire,’ and *-hko* ‘provide for’).

The traditional division between concrete and abstract finals has been challenged for Algonquian languages other than Blackfoot. For instance, Denny

(1978) demonstrates that certain abstract finals in Ojibwe can have concrete meanings related to the aspectual class of the verb, whereas Mathieu (2006) argues that some concrete finals in Ojibwe can be treated on par with abstract finals. Along these same lines, I propose that the line is similarly fuzzy between abstract and concrete TA finals in Blackfoot. In support of this claim, I look first at a reportedly concrete final, benefactive *-omo*, which is shown to possess characteristics typically ascribed to abstract finals. I then turn to the class of abstract TA finals in general, and demonstrate that they are not straightforwardly abstract.

#### 4. A case study of a concrete TA final

In this section, I look in detail at *-omo*, which is described as a concrete TA final that introduces benefactive objects (Frantz 1991). An example is given in (2).

- (2) a. *Nitsskíta*  
 nit-ihkit-a  
 1-bake-AI  
 ‘I baked.’
- b. *Nitsskítomowa ana niksísst*  
 nit-ihkit-**omo**-a an-wa n-iksisst  
 1-bake-**BEN**-1:3 DEM-PROX 1-mother  
 ‘I baked for my mother.’

In (2b), the addition of *-omo* to the verb stem licenses a benefactive object *ana niksísst* ‘my mother.’ My proposal is that *-omo* does not clearly pattern as a concrete final. This is based on three empirical observations, as follows.

The first observation is that *-omo* is not restricted to benefactive predicates. As seen in (3) and (4) below, *-omo* can also form transfer-of-possession predicates, with source or recipient primary objects.

- (3) *Ana Rosie nito'tomoka nitsinika'simiks*  
 an-wa R nit-o't-**omo**-ok-wa nit-inika'simiks  
 DEM-3SG R 1-take-**TA.BEN**-3:1-3SG 1-car  
 ‘Rosie took my car from me.’
- (4) *Ana Leo nitsapóhtomoka*  
 an-wa L nit-sapoht-**omo**-ok-wa  
 DEM-3SG L 1-give.tobacco-**TA.BEN**-3:1-3SG  
 ‘Leo gave me some tobacco.’

The second observation is that *-omo* may attach to either roots or to stems.<sup>1</sup> (3) and (4) show *-omo* attaching at the root level, and (5) shows *-omo* attaching at the stem level, stacked on another (abstract) final, TI *-atoo*.

- (5) *Ana Rosie immskatoomoyi ani oom*  
 an-wa R immsk-**atoo-omo**-yii an-yi w-om  
 DEM-3SG R. save -**TI-BEN-DIR** DEM-OBV 3-husband  
 ‘Rosie saved food for her husband.’

The fact that *-omo* can attach to both roots and stems suggests that the addition of *-omo* is not always a case of secondary derivation.

The third observation is that the position of *-omo* does not correlate with the thematic category of the primary object. In other words, whether *-omo* attaches to roots or to stems, it can be used with either benefactive or transfer-of-possession predicates. Examples of the four possibilities are given below.

- (6) **Root-attaching benefactive**  
*Ana Leo nita'pistotomoka ani Rosie otsinaka'simiks*  
 an-wa L nit-a'pistot-omo-ok-wa an-yi R ot-inaka'simiks  
 DEM-PROX L 1-fix-BEN-INV-PROX DEM-OBV R 3-car  
 ‘Leo fixed Rosie’s car for me.’  
 Context: I was supposed to fix the car, but Leo did it for me

- (7) **Root-attaching transfer-of-possession**  
*Nitomsstomoka nitsáowahsin*  
 nit-omsst-omo-ok-wa nit-aowahsin  
 1-steal-BEN-3:1-PROX 1-food  
 ‘S/he stole my food (from me).’

- (8) **Stem-attaching benefactive**  
*Ana Rosie immskatoomoyi anisk oom*  
 an-wa R immsk-**atoo-omo**-yii an-yi-hk w-om  
 DEM-3SG R. save.food-**TI-BEN-3:4** DEM-OBV-INVIS 3-husband  
 ‘Rosie saved food for her husband.’

- (9) **Stem-attaching transfer-of-possession**  
*Ana Rosie nita'pikkahtoomoka otsinaka'simiks*  
 an-wa R nit-a'pikh-ahto-omo-ok-wa ot-inaka'simiks  
 DEM-PROX R 1-sell-**TI-BEN-INV-PROX** 3-car  
 ‘Rosie sold me her car.’

In summary, the concrete final *-omo*, can attach to either roots or to stems, with either a benefactive or transfer-of-possession interpretation. The fact

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<sup>1</sup> Frantz (1991: 104-5) claims that *-omo* attaches to stems, and that it has an allomorph, *-o*, that attaches to roots. This pattern of allomorphy is not attested in my data.

that it does not have a concrete meaning associated with it, or with its different attachment sites, indicates that it does not meet the criteria for a concrete final under the standard definition. In the following section, I look in more detail at abstract TA finals, which also do not fall neatly into a category of finals.

## 5. Abstract TA finals

One of the criterial differences between abstract and concrete finals is that concrete finals can alter the predicate's argument structure by introducing a non-core object. For example, *-omo* never introduces a core object, with a patient or theme  $\theta$ -role; it introduces a beneficiary, source, or recipient. Abstract TA finals in Blackfoot pattern like concrete finals in this respect, distinguishing them from other abstract finals (TI, AI, II). Specifically, TA finals can alter argument structure by introducing a non-core object. This claim is supported by three empirical observations.

The first observation is that with some roots, alternations between TA versus TI finals yields a difference in  $\theta$ -role of the primary object (not just animacy). An example is given in (10) below.

- (10) a. *Nitsiikamo'satoo'p omi ihtohpomo'pi*  
 nit-ikamo's-**atoo**-p om-yi ihtohpomo'pi  
 1-steal-**TI**-1:INAN DEM-INAN money  
 'I stole that money.'
- b. *Nitsiikamo'si ihtohpomo'pi*  
 nit-ikamo's-i ihtohpomo'pi  
 1-steal-**AI** money  
 'I stole money.'
- c. *Nitsiikamo'satoka ana Rosie ihtohpomo'pi*  
 nit-ikamo's-**at**-ok-wa an-wa R ihtohpomo'pi  
 1-steal-**TA**-3:1-PROX DEM-PROX R money  
 'Rosie stole from me that money.'

In (10a) and (10b), we see that the object introduced by both the TI and AI verbs is a theme. In (10c), the same verb is used, but with a TA final, and the primary object here is a source, rather than theme. Thus, the addition of a TA final can induce changes in  $\theta$ -role of the primary object, rather than just animacy.

The second observation is that the same TA stem need not always assign the same  $\theta$ -role to the primary object. Consider the data in (11).

- (11) a. *Nitaahkóma'tatoo'p amo isttókimaa'tsis*  
 nit-waahkoma't-**atoo**-o'p amo isttókimaa'tsis  
 1-borrow-**TI**-1:INAN DEM drum  
 'I borrowed this drum.'

- b. *Anahk Sam aahkoma't atsii nitsinaká'simiksi*  
 an-wa-hk S waahkoma't-at-yii nit-inaka'simiksi  
 DEM-3SG-INVIS S borrow-TA-3:4 1-car  
 'Sam borrowed my car.'
- c. *Nitaahkoma'takka ana Sam nitsinaká'simiksi*  
 nit-waahkoma't-at-ok-wa an-wa S nit-inaka'simiksi  
 1-borrow-TA-3:1-3SG DEM-3SG S 1-car  
 'Sam borrowed from me my car.'

In (11), we see that the verb *waahkoma't* 'borrow' takes a theme DP as the primary object when the final is TI (a), but takes either a theme or source DP when the final is TA (b, c). In other words,  $\theta$ -role assignment for the TA verb is not fixed, as it is for the TI verb.

The third and final observation is that, unlike TA finals, TI finals do not exhibit alternations in  $\theta$ -role assignment. As observed by Bliss (2007), non-core primary objects in Blackfoot are necessarily animate. The implication of this is that non-core objects are necessarily introduced by a TA final. In the examples below, we see that non-core objects can be primary objects if they are animate (a), but not if they are inanimate (b).

- (12) a. *Nitááhkanomoawa ana issítsimaan amiksi si'káániksi*  
 nit-(w)aahkan-omo-a-wa an-(w)a issítsimaan am-iksi si'kaan-iksi  
 1-sew-TA.BEN-1:3-PROX DEM-PROX baby DEM-PL blanket-PL  
 'I sewed those blankets for the baby.'
- b. *Nihtááhkanayi amiksi si'káániksi ani ákssin*  
 n-iht-aahkan(i)-a-yi am-iksi si'kaan-iksi an-(y)i akssin  
 1-PURP-sew.TA-1:3-PL DEM-PL blanket-PL DEM-OBV bed  
 'I sewed those blankets for the bed.'
- (13) a. *Nitohpómmowawa óma aakíkoan ámostsi asoká'sistsi*  
 nit-ohpommo-a-wa om-(w)a aakíkoan amo-stsi asoka'si(m)-istsi  
 1-buy.TA-DIR-PROX DEM-PROX girl DEM-PL dress-PL  
 'I bought from that girl these dresses.'
- b. *Nitsitohpommao'piyaaw amostsi asoka'sistsi*  
 nit-it-ohpommao-'p-yaaw(a) am-ostsi asoka'si-istsi  
 1-there-buy.TI-1:INAN-PL.PRO DEM-PL dress-PL  
*omi iitaohpommao'pi*  
 om-(y)i iitaohpommao'p-yi  
 DEM-OBV store-OBV  
 'I bought these dresses from the store.'

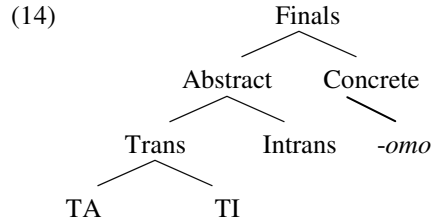
In (12), both the animate DP *ana issítsimaan* 'the baby' in (a) and the inanimate DP *ani ákssin* 'the bed' in (b) are beneficiaries. However, only the animate DP

can act as the primary object, introduced by the TA final. Similarly, in (13), both *óma aakíkoan* ‘that girl’ and *omi iitaohpommao’pi* ‘the store’ are source DPs, but only the animate one is a primary object. Inanimate non-core DPs cannot be primary objects.

In sum, in this section I have argued that TA finals are distinct from TI finals in that they can introduce non-core primary objects and that they show alternations in the  $\theta$ -role of the primary object. These observations suggest that abstract TA finals can be distinguished from TI finals not only by the animacy of their primary object, but also by the fact that they pattern like concrete finals in ways that abstract TI finals do not.

## 6. The relevant comparison

Traditionally, the primary distinction for Algonquian verb class finals is between abstract and concrete finals, as depicted in (14).

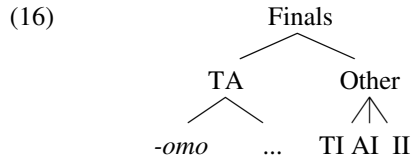


Contra the classification in (14), the preceding two sections revealed that the division between abstract and concrete finals is not entirely clear. In §4, we saw that the ‘concrete’ final *-omo* is not concretely benefactive, and is not always added to a verb via secondary derivation. In §5, we saw that abstract TA finals (but not abstract TI finals) can have concrete meanings. These findings suggest that the relevant primary distinction is not between abstract and concrete finals, but rather between TA and TI finals. A summary of the findings is given in (15).

(15) Comparing verb finals

	Abstract TA	Concrete <i>-omo</i>	Abstract TI
can alter $\theta$ -role assignment	✓	✓	✗
$\theta$ -role alternations	✓	✓	✗
introduces non-core objects	✓	✓	✗

From (15), the more relevant taxonomy of finals is that given in (16).



In (16), the concrete final *-omo* forms a category with other TA finals, typically labelled as abstract. These TA finals are distinguished from the other finals, TI, AI, and II.

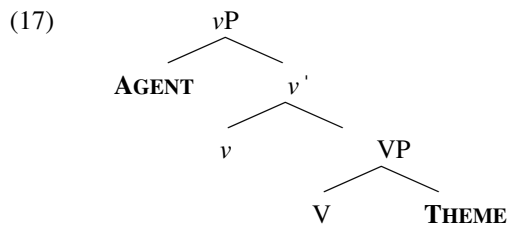
This taxonomy of finals can inform us about Blackfoot argument structure. In particular, if this model is correct, then it suggests that the distinction between animate and inanimate arguments is primary, and that at least for animate arguments, distinctions between  $\theta$ -roles are of less importance. In other words, the proposal is that argument structure in Blackfoot is organized on the basis of animacy, rather than  $\theta$ -roles. How this proposal can be formalized is the topic of §7.

## 7. A model of Blackfoot argument structure

The question addressed in this section is what argument structure would look like if it is organized around animacy, rather than  $\theta$ -roles.

### 7.1. Modelling “core” versus “non-core”

To begin, I lay out my assumptions regarding argument structure in a language that is sensitive to distinctions of  $\theta$ -roles, such as English. Under a syntactic model such as Baker’s (1988) UTAH, a thematically-organized argument structure maps  $\theta$ -roles to structural positions, as in (17).

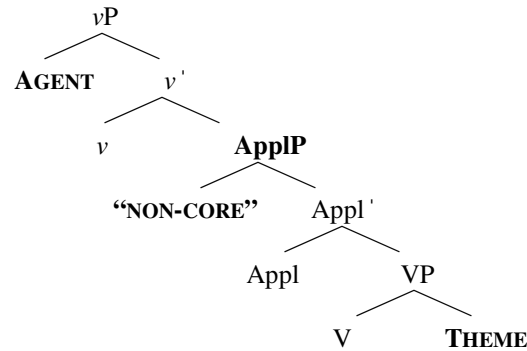


In addition to this, I assume, following Pykkänen (2008) (and others), that non-core objects are introduced in the Specifier of an Appl(icative) Phrase.<sup>2</sup>

<sup>2</sup> In fact, Pykkänen (2008) argues that there are two positions for ApplP, High and Low. High Appl is VP-external, as in (20), whereas Low Appl is VP-internal. For Pykkänen, Low Appl is restricted to arguments used with transfer-of-possession predicates, and High Appl is for all other non-core arguments.



(18)



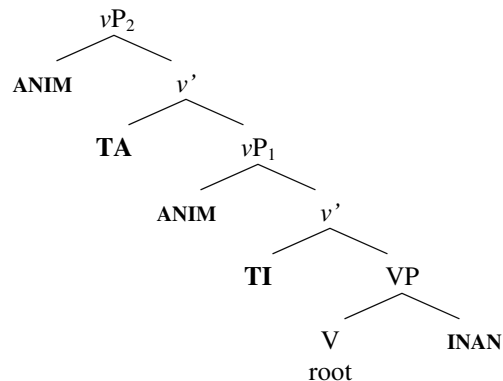
The basic idea of this model is that the primary distinctions between categories of arguments (thematic categories, in this case) are reflected by where they appear in the syntax. In the following section, I consider how this model can be adapted to an animacy-based argument structure.

## 7.2. Modelling animate versus inanimate

What is the animacy-based analog of the UTAH / Applicatives model of argument structure? In a  $\theta$ -role system, applicatives introduce the “higher” argument, the non-core object. By extension, in an animacy system, TA finals introduce the “higher” argument, which in this case is the animate argument.

Following Ritter and Rosen (2008)<sup>3</sup>, I assume that verb class finals are overt instantiations of  $v$ . Together with the idea that TA finals introduce arguments in a higher structural position than TI finals, we can postulate a structure like that in (19).

(19)



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<sup>3</sup> The claim that finals instantiate  $v$  has also been made for other Algonquian languages by Brittain (2003), Hirose (2001), Mathieu (2006), and others.

The intuition behind merging TA finals in a higher position than TI finals is that TA finals are the functional analog to Appls. Both introduce the “higher” object. However, in (19), the TA final does not appear in the same structural position as the Appl head in (18). This discrepancy may be accounted for by noting that, while applicatives distinguish between internal arguments only, Blackfoot verb finals are insensitive to the distinction between the actor and the goal. In other words, whereas the subject in a  $\theta$ -role system is external to the Appl, the actor need not be external to the TA final in an animacy-based system like Blackfoot.

To summarize, I have proposed that, in Blackfoot, TA finals are merged higher than TI finals, and that, therefore, animate DPs are merged higher than inanimate DPs. In the following section, I consider some of the other facts of Blackfoot grammar that can be accounted for under this analysis.

## 8. Further predictions

The analysis outlined in §7 makes predictions regarding co-occurrence patterns and agreement asymmetries. Each of these will be discussed in turn.

### 8.1. Co-occurrence patterns

The first prediction is that if TA and TI finals occupy distinct syntactic heads, then they are predicted to co-occur in the order V-TI-TA. Indeed, this prediction is borne out, as the following example of secondary derivation illustrates.

- (20) *Ana Rosie nita'pihkahtoomoka otsinaka'simiks*  
 an-wa R nit-a'pihk-**ahto-omo**-ok-wa ot-inaka'simiks  
 DEM-PROX R 1-sell-**TI-BEN**-INV-PROX 3-car  
 ‘Rosie sold me her car.’

In (20), the verb root *a'pihk* appears with a TI final *-ahto*, followed by the benefactive TA final *-omo*. Interestingly, the theme DP *otsinaka'simiks* ‘her car’ is grammatically animate. If we assume that the abstract final closest to the verb stem agrees in animacy with the theme DP, the TI final is unexpected. However, under the analysis developed in §7, it follows from constraints on argument structure.

### 8.2. Agreement asymmetries

The second prediction is if animate and inanimate objects occupy distinct structural positions, then we might predict them to exhibit different agreement patterns. This prediction is also borne out.

Consider first TA verbs, which show agreement with both the actor and the goal, with first and second persons being marked with prefixes and third

persons being marked with suffixes. In addition, the direct/inverse theme suffixes indicate directionality, or who is acting on whom. An example is shown in (21).

- (21) a. *Kitsinoowaa*      *óma*      *mamíí*  
 kit-in-oo-**a-wa**      om-wa      mamii  
 2-see-TA-**2:3-3SG**      DEM-3SG      fish  
 ‘You saw that fish.’
- b. *Kitsinooka*      *óma*      *mamíí*  
 kit-in-oo-**ok-wa**      om-wa      mamii  
 2-see-TA-**3:2-3SG**      DEM-3SG      fish  
 ‘That fish saw you.’

In contrast, TI verbs only show agreement with the actor, and not the goal. Inanimate DPs cannot be actors in Blackfoot, and agreement is always with the animate DP. Theme suffixes are always direct. An example is given in (22).

- (22) a. *Kitsini’p*      *ómi*      *i’ksisakoyi*  
 kit-in-i-’**p**      om-yi      i’ksisako-yi  
 2-see-TI-**2:INAN**      DEM-INAN      meat-INAN  
 ‘You saw that meat.’
- b. \**Kitsiniyok*      *ómi*      *i’ksisakoyi*  
 kit-in-i-**ok**      om-yi      i’ksisako-yi  
 2-see-TI-**INAN:2**      DEM-INAN      meat-INAN  
 intended: ‘That meat saw you.’

Assuming that agreement involves a probe-goal relation, the different patterns of agreement observed between TA and TI verbs is predicted under the analysis in §7. Because inanimate DPs are merged lower than animate DPs, the animate DPs will always be the closer goals to the probe.

## 9. Conclusions

In summary, I have shown that the distinction between the concrete final *-omo* and abstract TA finals is not as salient as the distinction between TA and TI finals. Based on this observation, I have proposed that argument structure in Blackfoot is organized on the basis of animacy, rather than thematic roles, and that in an animacy-based argument structure, TA finals are merged higher than TI finals. This analysis accounts for co-occurrence patterns with finals, as well as different agreement patterns observed for TA and TI verbs.

This analysis fits into the larger theoretical framework that is being developed for Blackfoot syntax. Ritter and Wiltschko (2008, to appear) propose that the substantive content of Blackfoot INFL is Person, and not Tense, and Louie (2008) proposes that event structure in Blackfoot encodes participant

roles, rather than aspectual roles. My proposal provides independent support for the claim that Blackfoot syntax is person-based.

## References

- Baker, Mark. 1988. *Incorporation: A Theory of Grammatical Function Changing*. Chicago: University of Chicago Press.
- Bliss, Heather. 2007. Object Agreement in Blackfoot: Sentient and Non-Sentient Controllers. *Papers of the Algonquian Conference* 38 : 11-28.
- Bloomfield, Leonard. 1946. Algonquian. In *Linguistic Structures of Native America*. New York: Viking Fund, 85–129.
- Brittain, Julie. 2003. A Distributed Morphology Account of the Syntax of the Algonquian Verb. In *Proceedings of the Annual Conference of the Canadian Linguistics Association*: 26–41.
- Denny, Peter. 1978. Verb class meanings of the abstract finals in Ojibway Inanimate Intransitive verbs. *IJAL* 44: 294–322.
- Frantz, Donald G. 1991. *Blackfoot Grammar*. University of Toronto Press.
- Frantz, Donald G. and Norma Jean Russell. 1995. *Blackfoot Dictionary of Stems, Roots, and Affixes*, 2nd ed. Toronto: UToronto Press.
- Hirose, Tomio. 2001. *Origins of predicates: Evidence from Plains Cree*. PhD dissertation, University of British Columbia.
- Hockett, Charles. 1966. What Algonquian is Really Like. *IJAL* 32: 59-73.
- Louie, Meagan. 2008. *Atemporal Anchoring of Individuals, Events and Sub-Events in Blackfoot: Consequences for the Syntax-Semantics Interface*. MA thesis, University of Toronto.
- Mathieu, Eric. 2006. The Syntax of Abstract and Concrete Finals in Ojibwe. In Elfner, Emily, and Martin Walkow (eds). *Proceedings of 37<sup>th</sup> Annual Meeting of the Northeast Linguistics Society*. UMass: GLSA.
- Pylkkänen, Liina. 2008. *Introducing Arguments*. Cambridge: MIT Press.
- Ritter, Elizabeth, and Sara Thomas Rosen. 2008. Animacy in Blackfoot: Implications for Event Structure and Clause Structure. E. Doron, I. Sichel and M. Rappaport-Hovav, eds. *Syntax, Lexical Semantics and Event Structure*. Oxford: Oxford University Press.
- Ritter, Elizabeth, and Martina Wiltschko. 2008. *How PERSON Pervades Blackfoot Grammar. And Why*. Paper presented at the 40<sup>th</sup> Algonquian Conference. Minneapolis, Minnesota, October 25-27.
- Ritter, Elizabeth, and Martina Wiltschko. to appear. Varieties of INFL: TENSE, LOCATION, and PERSON. In H. Broekhuis., J. Craenenbroeck, H. van Riemsdijk (eds.) *Alternatives to Cartography*. Berlin: Mouton de Gruyter.

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