

# The Blackfoot 'means' Linker *iiht*-<sup>1</sup>

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## 1. Introduction

In this paper I look the Blackfoot (Algonquian) 'mean's linker *iiht*-. This morpheme attaches to the verbal complex and functions to license an additional nominal to the clause structure, where this nominal can be variably interpreted as a means, or content. The *iiht*- linked nominal being interpreted as a means is illustrated in (1). In (1a) *iiht*- licenses the nominal *omistsi áipakkihkaistsi* 'those balloons.' (1b) and c) show that the additional nominal in a corresponding utterance without *iiht*- is ungrammatical:

- (1) a. *iihtsipi'kstsii*      *omi*    *ótsinaká'sim*    *omistsi*      *áipakkihkaistsi*  
*iiht*-ipi'kst-yii      *omi*    ot-inaka'siim    **om-istsi**      **á-ipakk-ihka-istsi**  
**means-decorate-3>3'**    dem    3-car                    **dem-0pl**      **dur-burst.vrt-vii-0pl**  
 "He decorated his car **with those balloons.**"
- b.    *\*ipi'kstsii*      *omi*    *ótsinaká'sim*    *omistsi*      *áipakkihkaistsi*  
 ipi'kst-yii      *omi*    ot-inaka'siim    om-istsi      **á-ipakk-ihka-istsi**  
 decorate-3>3'    dem    3-car                    dem-0pl      **dur-burst.vrt-vii-0pl**  
 "He decorated his car **those balloons.**"
- c.    *ipi'kstsii*      *omi*    *ótsinaká'sim*  
 ipi'kst-yii      *omi*    ot-inaka'siim  
 decorate-3>3'    dem    3-car  
 "He decorated his car."

The data in (2) show the *iiht*- linked nominal being interpreted as content. In (2a), *iiht*-<sup>2</sup> licenses the nominal *omi sitokihkiitaan* 'that pie', (2b) and c) show that this nominal is likewise ungrammatical without the addition of *iiht*-.

- (2) a.    *nitoóhtsooyi*                    *ómi sitokihkiitaan*  
 nit-**ooht**-ooyi                    **omi sitokihkiitaan**  
 1-**means**-eat.vai                **dem pie**  
 "I ate **some of that pie.**"
- b.    *\*nitsooyi*                    *ómi sitokihkiitaan*  
 nitooyi                    **omi sitokihkiitaan**  
 1-eat.vai                    **dem pie**                    Target: "I ate some of that pie."

1 Thanks to my QP Committee, Rose-Marie Déchaine, Henry Davis and Lisa Matthewson; the UBC Blackfoot group: Solveiga Armoskaite, Heather Bliss, Joel Dunham, Abigail Scott, Amelia Reis Silva, and Martina Wiltschko. And to Beatrice Bullshields, who really has the hardest job, *nitsikoohtááhsi'taki!*

2 A note on allomorphy: the relevant morpheme surfaces as *iiht*- in word-initial position, and *ooht*- elsewhere.

- c.     *nitsooyi*  
           *nitooyi*  
           1-eat.vai  
           ‘‘I ate.’’

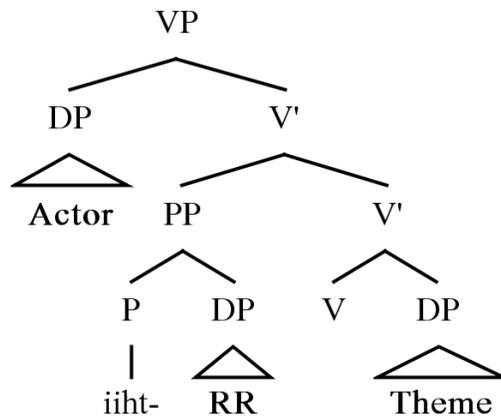
I propose that *iiht-* is a preposition that first merges low in the clause structure, and then raises high. In Part I (§2) of this paper I will look at evidence for its low first merge position, and in Part II (§3) I will look at evidence for its higher raised position. I then address consequences for the proposal in §4, and conclude in §5.

As a terminological note, what I am analysing as a preposition is what Algonquianists traditionally term a ‘‘relative root’’ (cf. Bloomfield 1958, Rhodes 1990, Bruening 2001). For ease of exposition, in what follows I will take advantage of this term and refer to the *iiht*-linked nominal as the Relative-Root-, or RR-argument.

## 2. Part I: Evidence for a Low Merge Position

In this section I present Part I of my proposal. The details can be illustrated by the tree in (3): I propose that *iiht-* is a preposition which takes the RR-argument as its complement, and that the resulting [<sub>PP</sub> *iiht-* RR] then merges with the verb, prior to the Actor/Agent.

(3)



Part I of this paper is organised as follows: In §2.1 I look at evidence for this structure from variable-binding, in §2.2 I look at evidence from pseudointransitives (Bloomfield's AI+O verbs), and in §2.3 I look at evidence from causatives.

### 2.1 Evidence from Variable Binding

Variable Binding is a diagnostic for determining c-command – the generalization is that if an operator X c-commands a variable Y, X can variable bind into Y. The c-command restrictions on variable binding can thus be illustrated by the examples in (4).

- (4) a. *Every candidate<sub>i</sub> loves his<sub>i/j</sub> mother*  
 b. *His<sub>\*i/j</sub> mother loves every candidate<sub>i</sub>*

In (4a), the subject [*every candidate*] c-commands the object [*his mother*], and a variable binding interpretation is possible – i.e., an interpretation where the denotation of [*his mother*] varies with each member in the set of candidates: for each candidate, it is the case that he loves his own mother. In (4b), on the other hand, the object [*every candidate*] does not c-command the subject [*his mother*], and the variable-binding reading, where the denotation of [*his mother*] varies with each member in the set of candidates, is impossible. (4b) cannot be understood to mean that for every candidate, it is the case that his own mother loves him.

Bruening (2001) raises an issue for applying the variable-binding diagnostic in Passamoquoddy (and other languages). The relevant observation, made by Baker (1995, 1996), is that group-denoting NPs appear to be able to “bind” plural possessive pronouns when they do not actually stand in a c-command relation to them. Thus only some “bound” readings associated with plural possessive pronouns actually indicate c-command. Singular possessive pronouns do not display this spurious behaviour, therefore I follow Bruening in only considering bound readings for singular possessive pronouns.

### 2.1.1 Variable Binding Indicates Structural Relations in Blackfoot

In order to establish that variable-binding works as a test for c-command in Blackfoot, I make the assumption that NPs in a matrix clause c-command the NPs of embedded clauses. If the availability of variable-binding corresponds to c-command, we expect that the NPs of matrix clauses can variable bind into the NPs of embedded clauses. This is in fact the case, as shown by the data in (5) where we see that a universally-quantified subject from the matrix clause can bind into a singularly-possessed subjects of an embedded clause. In (5) the denotation of the embedded subject *oko's* 'her child' varies with each member in the set of women who are the subject of the matrix clause *omiksi áákiiks* '(all) the women'<sup>3</sup>.

- (5) *ómiksi áákiiks*            *iihkanáánistáiksimsstaayaa*  
om-iksi aakii-iksi        ii-ohkan-aanist-á-iksimsstaa-yaa  
dem-pl woman-pl        ic-all-manner-impf-think.vta-3pl  
 “Every woman<sub>i</sub> thinks ...  
  
*oku's*                    *istóhkanókakiiínai*  
**o-oku's-yi**            **istohkana-okaki-yini-ayi**  
**3-child-3'**            **superlative-smart-3'-dtp**  
 ...that **her<sub>i/j</sub> child** is the smartest”

3 Notice that the universal quantifier *ohkan(a)-* attaches to the verbal complex, as opposed to attaching to the nominal it quantifies over. I take this into account in my analysis in §3 (Part II).

Contrast this with the data in (6), where the c-command relations are reversed: assuming the universally quantified subject of an embedded clause does not c-command the singularly-possessed subject of a matrix clause, we don't expect that the variable-binding from the embedded NP. This is the case - (6) is incompatible with a reading where the denotation of the matrix subject *ohko* 'her son' varies with each member in the set of women who are the subject of the embedded clause *omiksi áákiiksi* '(all) the women.'

(6) *ohko*            *niitáiksimsstaa*  
**o-ohko-yi**        *niit-á-iksimsstaa*  
**3-son-3'**         *manner-impf-think.vai*  
 "Her<sub>i</sub> son thinks..."

*omiksi*            *áákiiksi*            *iihkanaokakiyaa*  
om-iksi            aakii-iksi            ii-ohkana-okaki-yaa  
dem-pl            woman-pl            ic-all-smart-epl  
 ...that all those women\*<sub>i/j</sub> are smart."

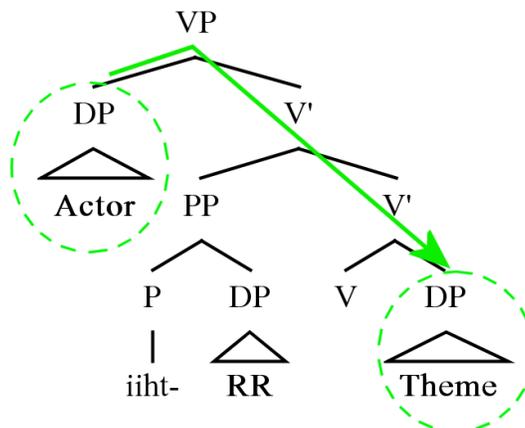
**Consultant:** You will be asked "Whose son?", "Who is his father?"

From this I conclude that variable-binding is a valid test for structural relations in Blackfoot.

### 2.1.2 Variable-Binding between Actors and Themes

Recall the proposed structure, repeated in (7). According to this structure, the Actor asymmetrically c-commands the Theme. We therefore predict that Actors can variable-bind into Themes, but not vice-versa.

(7) Actor Asymmetrically C-commands Theme



Bliss (2009a) shows that this is the case. She shows that Actors can variable-bind into Themes, as evidenced by the data in (8), where the denotation of the Theme *oksists* 'her mother' can vary according to each member in the set of people who are the Actor 'everybody.'

- (8) *Ikohkanawaakomiimiyaa*                      *oksists*  
 ik-ohkana-waakomiim-yii-yaa              **w-iksist-yi**  
 ints-all-love.vta-3>3'-3PL              **3POSS-mother-OBV**  
 'Everybody<sub>i</sub> loves her<sub>i/j</sub> mother.'  
(Bliss 2009a)

Bliss (2009a) shows in contrast, as we expect, that Themes cannot variable-bind into Actors. This is indicated by the data in (9), where the denotation of the Actor *oksists* 'her mother' cannot vary according to each member in the set of people who are the Theme 'everybody.'

- (9) *Ikohkanawaakomiimiyaa*                      *oksists*  
 ik-ohkana-waakomiim-yii-yaa              **w-iksist-yi**  
 ints-all-love.vta-3>3'-3PL              **3POSS-mother-OBV**  
 'Her<sub>\*i/j</sub> mother loves everybody<sub>i</sub>.'  
(Bliss 2009a)

The sharp-eyed reader may have noticed that the forms in (8) and (9) are formally identical; this is due to a peculiarity of Blackfoot morphology. In Blackfoot, like all Algonquian languages, Actor-Theme relations are marked through a direct-inverse system. Descriptively, direct-inverse systems make reference to a person-animacy scale as in (10). If an Actor outranks the Theme on the person-animacy scale, the verb is marked as direct, if the Theme outranks the Actor on the scale, then the verb is marked as inverse.

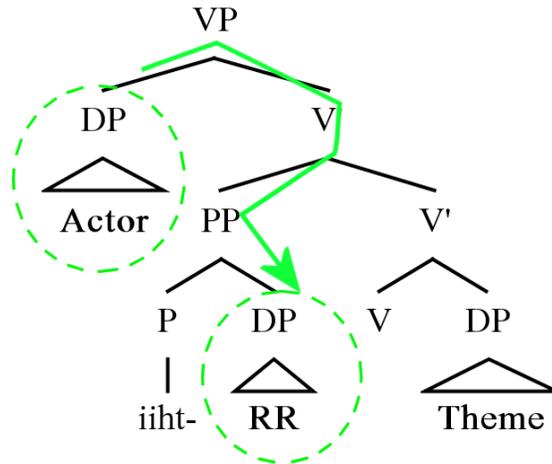
- (10) 1<sup>st</sup>, 2<sup>nd</sup> > 3<sup>rd</sup> proximate > 3<sup>rd</sup> obviative > 3<sup>rd</sup> further obviative > 0 (inanimate)

In order to test variable-binding in Blackfoot, a universally quantified 3<sup>rd</sup> person, and a singularly possessed 3<sup>rd</sup> person are required. A complicating factor, however, arises because in Blackfoot, plural arguments (including the associate of the universal quantifier *ohkan-*) are not morphologically marked for obviation. Nor are possessive pronouns morphologically marked for obviation. Thus, the direct *-yii* marked form in (8)/(9) is morphologically ambiguous. It may either be the case that 'Everybody' is proximate (i.e., Actor, in a direct-marked utterance), making '[[His]<sub>obv</sub> mother]<sub>furtherobv</sub>', Theme by the process of elimination. Or it may be the case that that 'everybody' is further obviative (i.e., Theme, in a direct-marked utterance), making '[[His]<sub>prox</sub> mother]<sub>obv</sub>' the Actor, by process of elimination. Bliss shows, nonetheless, that when (8)/(9) is interpreted such that the 'Everybody' is interpreted as the Actor, it can bind into '[His]<sub>obv</sub> mother', and that when (8)/(9) is interpreted where 'Everybody' is Theme, this binding is impossible.

### 2.1.3 Variable-Binding between Actors and RR-Arguments

According to the proposed structure the Actor also asymmetrically c-commands the RR-argument. We therefore predict that the Actor can variable-bind into the RR-argument, but not vice-versa.

(11) Actor Asymmetrically c-commands the RR-Argument



This too is the case; the data in (12) shows that Actors can variable bind into RR-arguments – the RR-argument *óttöan* 'his knife' can co-vary with each member of the set denoted by the Actor NP *ómiksi nínaiksi* '(every) man'.

- (12) *ómiksi nínaiks*      *iihtóhkanáyisstsiniimya*      *óttöan*      *omi pisatsskiitaan*  
om-iksi nínaa-iksi      **iiht-ohkana**-yisstsini-m-ya      **ot-istowaan**      om-yi pisatsskiitaan  
 dem-pl man-pl      means-all-use.vti-3>0-3pl      3-knife      dem-0 cake  
 “Every man<sub>i</sub> used his<sub>i/j</sub> knife to cut the cake.”

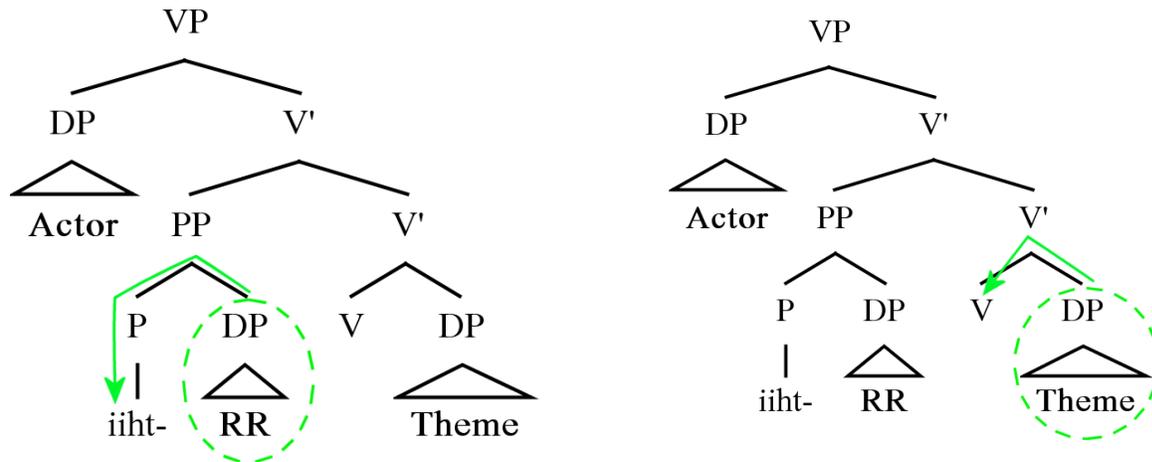
In contrast, as we expect, RR-arguments cannot variable bind into Actors. This is shown in (13), where *iiht-* links the RR-argument *omiksi saahkomaapiksi* '(all) those boys/every boy,' and we cannot get a variable-bound reading. In (13), the Actor *oksists* 'his mother' can only be interpreted with an unbound reading such that a specific boy's mother talked to Martina about every boy. It cannot be interpreted such that for each *x*, *x*'s mother talked to Martina about *x*.

- (13) *oksists*      *ani Martina*      *iihtohkanajissitsipssatsii*      *omiksi*      *saahkomapiksi*  
 o-iksist-yi      anni Martina      **iiht-ohkana**-ssitsipssat-yii      **om-iksi**      **saahkomapi-iksi**  
 3-mother-3'      dem Martina      means-all-talk.to.vta-3>3'      dem-pl      boy-pl  
 “His\*<sub>i/j</sub> mother talked to Martina about every boy<sub>i</sub> .”

### 2.1.3 Variable-Binding between Themes and RR-Arguments

Next consider the c-command relations for the RR-argument and Theme, in the structure proposed. As shown in (14), neither the RR-argument, nor the Theme, c-command any nominals in the clause. The RR-argument only c-commands the preposition *iiht-*, and the Theme only c-commands the verb. We therefore predict that the RR-argument and Theme will be unable to variable-bind into each other.

(14) a. RR-argument c-commands no nominal    b. Theme c-commands no nominal



This is the case. (15) shows that a Theme cannot variable-bind into an RR-argument; the denotation of the RR-argument *ohsis* 'his sister' cannot vary for each member in the set of men who are the Theme *omiksi ninaiksi* '(all) those men.' The RR-argument *ohsis* 'his sister' can only have an unbound reading as a specific man's sister.

(15) *ohsis*                      *nitooh~~to~~hkanai~~kk~~yaaya*                      *omiksi*                      *ninaiks*  
 o'-sis                      nit-ooht-ohkan-ikki-a:-yaa                      om-iksi                      ninaa-iksi  
 3-y.sister                      1-means-all-trap.vta-1>3-3pl dem-pl                      man-pl  
 "I used his<sub>\*i/j</sub> sister to trap all those men<sub>i</sub>."

The data in (16) show that an RR-argument cannot variable-bind into a Theme; the denotation of the Theme *ohsis* 'his sister' cannot vary for each member in the set of men who are the RR-argument *omiksi ninaiksi* '(all) those men.' The Theme *ohsis* 'his sister' can only have an unbound reading as a specific man's sister.

(16) *ohsis*                      *nitooh~~to~~hkanai~~kk~~yaaya*                      *omiksi*                      *ninaiks*  
 o'-sis                      nit-ooht-ohkan-ikki-a:-yaa                      om-iksi                      ninaa-iksi  
 3-y.sister                      1-means-all-trap.vta-1>3-3pl                      dem-pl                      man-pl  
 "I trap all those men<sub>i</sub> to trap his<sub>\*i/j</sub> sister."

The sharp-eyed reader may have again noticed that the forms in (15) and (16) are formally identical. This is again due to a morphological property of Blackfoot, in that the verbal morphology indicating a 1<sup>st</sup> person acting on an obviative third person is identical to the verbal morphology that indicates a 1<sup>st</sup> person acting on a further obviative third person. Thus the direct -a: marked (15)/(16) indicates that a 1<sup>st</sup> person is acting on a third person, but this third person may either be i) *omiksi ninaiksi* '(all) the men', where 'his sister' would then be interpreted as the RR-argument, or ii) *ohsis* 'his sister', where '(all) the men' would then be interpreted as the RR-argument. In either case, however, *ohsis* 'his sister' can only have an unbound interpretation, indicating that neither the Theme nor RR-argument c-command each other.

All of the variable-binding generalisations addressed in this section are summarised in (17) - I have argued that they follow from the proposed structure, where *iiht-* is a preposition that takes the RR-argument as its complement, the resulting [pp *iiht-* RR] then merging with the verbal complex prior to the Actor/Agent argument.

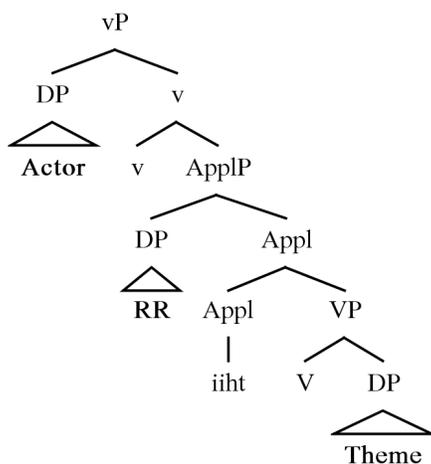
(17) Independent, Direct: Variable Binding Generalisations

Binds into →	Actor	Theme	<b>RR</b>
Actor	n/a	Y	<b>Y</b>
Theme	N	n/a	<b>N</b>
<b>RR</b>	<b>N</b>	<b>N</b>	n/a

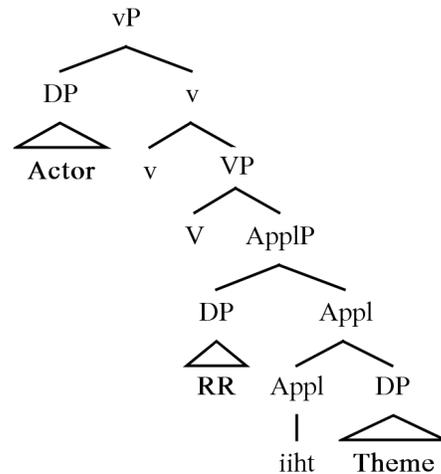
Before proceeding further, a relevant objection one might raise is that prepositions aren't the only functional elements that license additional arguments. Applicatives also license additional arguments. A question then is whether a prepositional analysis is preferable to an applicative analysis. I contend that there are two main problems with an applicative analysis - one empirical, the other conceptual. The empirical issue is more problematic - I address this first.

I take the approach of Pylkannen (2002) as representative of an applicative approach to introducing arguments. Pylkannen argues that there are two types of applicatives. High applicatives take VP as their complement. Low applicatives take the theme nominal as their complement, and the resulting ApplP is in turn taken by V as its complement. Both applicatives introduce the applied argument in their specifiers – analyses of *iiht-* as a high and low applicative are represented in (18) a) and b) respectively.

(18) a. *-iiht* as a High Appl



b. *-iiht* as a Low Appl



Note that under both analyses, the RR-argument c-commands the Theme. A standard applicative analysis which introduces the additionally licensed argument in its specifier thus predicts the wrong empirical variable-binding facts – we expect from the c-command relations that the RR-argument could variable-bind into the Theme argument, which is not the case.

The second issue is conceptual. Blackfoot has several other morphemes which introduce additional nominals. Among these are the causative *-áttsi*, the benefactive *-omo* and the comitative/ associative *ohpok-* *-:m*. These elements all belong to a morphosyntactic class of elements which traditional Algonquianist terminology refers to as Finals. Finals in Blackfoot are derivational suffixes to the lexical verb, and are often sensitive to the morphosyntactic valency of the verb they attach to. For instance, the causative *áttsi-* can only attach to morphosyntactically intransitive verbs. These elements also change the argument structure of the predicate in a way that is reflected by verbal agreement. That is, the nominals introduced by these elements are treated as arguments by the verbal agreement. Now, elements which have been analyzed as applicatives cross-linguistically show these properties. Pylkannen show that what she analyses as low applicatives are sensitive to morphosyntactic valency, and that the arguments introduced by what she analyses as high applicatives tend to interact with verbal agreement. For this reason I suggest that these finals are better candidates for an applicative analysis (cf. Bliss 2009b, who analyses *omo-* as an Applicative). The 'means' linker *iiht-*, on the other hand, falls into a class of elements which traditional Algonquianist terminology refers to as “preverbs.” Preverbs are defined as such on purely descriptive grounds: any morphemes which follow the person prefixes and precede the verbal stem in are called “preverbs.”

(19) person prefixes – (**Preverbs**) – [<sub>verbal stem</sub> Initials – (Medials) – **Finals**] -Agreement

The 'means' linker *iiht-* thus differs from Finals in its surface morphological position – unlike Finals which appear to the left of the lexical verb ( the “Initial” in the template in (19)), *iiht-* appears to the right. It also fails to interact with morphosyntactic valency in the way that Finals do – the argument introduced by *iiht-* is never treated as an argument by the verbal agreement. Analyzing *iiht-* as an applicative would thus wrongly lump *iiht-* together with Finals, missing the fact that *iiht-* and Finals have very different morphosyntactic properties.

Note that the prepositional analysis provided here is in line with Rhodes' (1990) account of relative roots in Ojibwe. Whereas the original term “relative root” was introduced by Bloomfield (1958) as introducing a nominal “antecedent”, Rhodes argues that the relationship between the licensed nominal and relative root is better characterized as a relationship between an adposition and its complement. Bruening (2001) takes a somewhat similar approach for Passamaquoddy – he analyses relative roots as functional heads which combine with PPs<sup>4</sup>, projecting to a RRP (relative root phrase), where this RRP merges with the verb before the direct object<sup>5</sup>. Bruening then proposes that the PP-complement of the relative root then raises to a

4 The relative roots Bruening looks at in Passamaquoddy link nominals with locative morphology on them; it is thus plausible that the relative roots take PP complements. The Blackfoot *iiht-*, however, does not take nominals with locative morphology; a parallel analysis where they *iiht-* takes a PP complement would be unmotivated.

5 I differ from Bruening here. Where he posits that Passamaquoddy RRP merge prior to the Theme, I posit that Blackfoot's [<sub>PP</sub> *iiht-* RR] merges after the Theme (if a Theme merges at all). Adopting Bruening's analysis

higher specifier (or adjoins to VP), and that the remnant RRP moving to a preverbal position, phonologically attaching to the verb stem.

## 2.2 Evidence from Pseudointransitives

In this section I address evidence for the proposed analysis with respect to a specific type of verb in Blackfoot - pseudointransitives. Blackfoot, like other Algonquian languages, contains transitive-pseudointransitive<sup>6</sup> pairs in its lexicon. Pseudointransitives contain the same lexical meaning as their transitive counterparts, but are formally intransitive, where I use the diagnostics summarized in table (20) as Blackfoot-internal tests for formal transitivity.

(20) Diagnostics for Formal Transitivity

↓ Diagnostic	Transitive (TA)	Pseudointransitive (AI)
a) Require theme-agreement?	Y	N
b) Can take bare nominal theme?	N	Y
c) Can take DP-theme?	Y	N

These differences are illustrated by the pseudointransitive *Iooyi* “eat” and transitive *Ioowattoo* “eat” in (21) - (23). (21a) shows that the pseudointransitive *Iooyi* does not take theme-agreement; (21b) and c) show, in contrast, that the transitive *Ioowattoo* is ungrammatical without theme agreement.

(21)	Pseudointransitive	Transitive	
a.	<i>nitsooyi</i> nit-Iooyi 1-eat.vai “I ate.”	b. <i>nitsoowattoo'p</i> nit-Ioowattoo-'p 1-eat.vti- <b>loc&gt;0</b> “I ate it.”	c. * <i>nitsoowattoo</i> nit-Ioowattoo 1-eat.vti Target: I ate

(22) shows that while the pseudointransitive *Iooyi* may appear with what looks like a bare nominal theme *sitokihkiitaan* 'pie' (a), the transitive *Ioowattoo* cannot (b).

(22)	Pseudointransitive	Transitive
a.	<i>nitsooyi</i> <i>sitokihkiitaan</i> nit-Iooyi    sitokihkiitaan 1-eat.vai    pie “I ate pie”	b. * <i>nitsoowattoo('p)</i> <i>sitokihkiitaan</i> nit-Ioowattoo-(p)    sitokihkiitaan 1-eat.vti-(loc>0)    pie Target: I ate pie

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wholesale would not account for the variable-binding generalizations seen here – if the [PP *iht*- RR] merged prior to the Theme, we would expect the Theme to be able to variable-bind into the RR-argument, which we saw was contrary to fact.

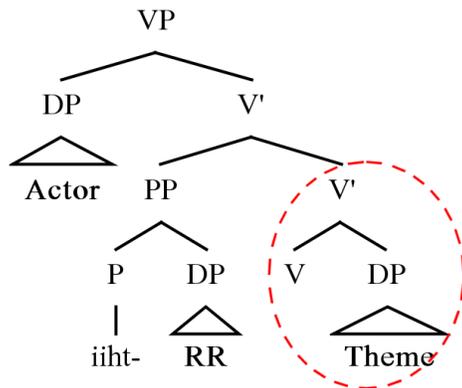
6 “Pseudointransitive” is Frantz's (1991) term for what Bloomfield (1958) termed AI + O verbs.

In contrast, (23) shows that where the pseudointransitive *Iooyi* is ungrammatical with an overt DP theme (a), the transitive *Ioowatoo* is grammatical with an overt DP theme (b).

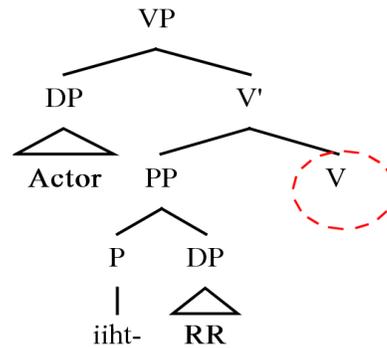
(23)	Pseudointransitive		Transitive		
a.	* <i>nitsooyi</i>	<i>ómi sitokihkiitaan</i>	b.	<i>nitsoowatoo'p</i>	<i>ómi sitokihkiitaan</i>
	nit-Iooyi	omi sitokihkiitaan		nit-Ioowatoo-'p	omi sitokihkiitaan
	1-eat.vai	dem pie		1-eat.vti-loc>0	dem pie
	Target: I ate that pie			“I ate that pie.”	

Now, recall that according to the proposed analysis,  $[_{PP} \textit{iiht- RR}]$  merges before the Actor. For formal intransitives (like the pseudointransitives), this would mean that the  $[_{PP} \textit{iiht- RR}]$  merges as sister to V, where sister to V is the canonical  $\theta$ -position of themes. We might predict, then, that the  $[_{PP} \textit{iiht- RR}]$  could be assigned the theme  $\theta$ -role, when it merges with intransitives.

(24) a. Transitive



b. Intransitive



With pseudointransitives, we see that this is the case – recall the data in (2), where the RR-argument is interpreted as a theme, repeated here as (25a)<sup>7</sup>:

(25)	a.	<i>nitoóhtsooyi</i>	<i>ómi sitokihkiitaan</i>
		nit-ooht-ooyi	omi sitokihkiitaan
		1-means-eat.vai	dem pie
		"I ate some of that pie."	

<sup>7</sup> There are restrictions to this – for example, the pseudointransitive *yaapi-* “see” cannot take a singular *iiht-* linked theme, - the *iiht*-linked argument is interpreted as a means/instrument (oddly):

- (i) *#nitoóhtsaapi* *oma kiaayo*  
 nit-ooht-yaapi *oma kiaayo*  
 1-means-see.vai dem bear  
 Target: I saw some of that bear, I saws a bit of that bear  
 Consultant: In Blackfoot it sounds crazy. Sounds like you used the bear to see

Further fieldwork is required to obtain the proper generalizations on this restriction.

- b. *nitoóhtohpomma*    *omiksi*    *apistaaminaamiks*  
 nit-ooht-ohpommaa    om-iksi    apistaaminaam-iksi  
 1-means-buy.vai    dem-pl    apple-pl  
 “I bought some of those apples.”
- c. *nitoóhtokstaki*    *omistsi*    *sinakyaatsiists*  
 nit-ooht-okstaki    om-istsi    sinakyaatsis-istsi  
 1-means-read.vai    dem-0pl    book-0pl  
 “I read some of those books.”

The variable interpretation of the RR-argument as either a means, or content, thus falls out from the proposed structure.

Notice that the data in (25) differ from their transitives counterparts in (26). Whereas the transitives with DP themes in (26) are interpreted as “X V-ed that Y” or “X V-ed those Y”, such that the theme delimits the event, the pseudointransitives with *iiht*-linked DP themes in (25) are interpreted as “X V-ed some of that Y” or “X V-ed some of those Y”, where that the *iiht*-linked theme does not delimit the event.

- (26) a. *nitsoowatoo'p*    *ómi sitokihkiitaan*  
 nit-Ioowatoo-'p    omi sitokihkiitaan  
 1-eat.vti-loc>0    dem pie  
 “I ate (all of) that pie.” (infelicitous in context where I only ate  $\frac{3}{4}$  of the pie)
- b. *nitóhpmatayii*    *omiksi*    *apistaaminaamiks*  
 nit-ohpmat-a-yii    om-iksi    apistaaminaam-iksi  
 1-buy.vta-loc>3-dtp    dem-pl    apple-pl  
 “I bought (all) those apples.” (infelicitous if I only bought some of those apples)
- c. *nitsiikstoo'p*    *omistsi*    *sinakyaatsiistsi*  
 nit-ii-okstoo-'p    om-istsi    sinakyaatsi-istsi  
 1-ic-read.vti-loc>0    dem-0pl    book-0pl  
 “I read (all) those books.” (infelicitous if I only read some of those books)

The difference appears reminiscent of the of the conative alternation in English (as in (27)). I leave this difference of interpretation, however, for further research.

- (27) a. I ate **at** the apple                      b. I read **from** that book  
 a'. I ate the apple                                b'. I read that book

A relevant question to ask at this point is what happens to the theme-role of pseudointransitives when no [<sub>PP</sub> *iiht*- RR] comes along? i.e., where does the theme theta-role in (21a) and (22a) go? In Louie (2008) I suggest that pseudointransitives, while

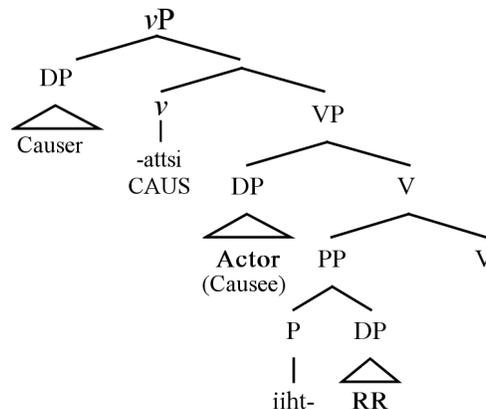
morphosyntactically intransitive, are nonetheless semantically transitive, where the formal difference between morphosyntactic transitivity and semantic transitivity is that whereas morphosyntactic transitivity requires functional application of an argument of type *e* (i.e., a DP) in order to be satisfied, semantic transitivity can be satisfied via existential closure. I thus suggest that the theme theta-role associated with pseudointransitives like (21a) is existentially closed over. The theme theta-role in utterances like (22a), I suggest, is likewise satisfied via existential closure, although an NP of type  $\langle e, t \rangle$ <sup>8</sup> first combines with the predicate via Restrict (cf. Chung & Ladusaw 2004).

To summarize, in this section (2.2) I argued that the variable interpretation of the RR-argument as either a means or content is accounted for by the analysis proposed, where the [<sub>PP</sub> *iiht*- RR] merges prior to the Actor/Agent. Specifically, I suggest that the means interpretation of the RR-argument arises when the [<sub>PP</sub> *iiht*- RR] merges with transitives, and the content interpretation of the RR-argument arises when the [<sub>PP</sub> *iiht*- RR] merges with pseudointransitives.

### 2.3 Evidence from Causatives

Johanssen (2009, To Appear) analyses the Blackfoot causative *áttsi-* as an instance of the functional head *v*, which combines with the phrase-structure after the Actor has already been introduced. With the analysis proposed here, where [<sub>PP</sub> *iiht*- RR] merges before the Actor, this means that the [<sub>PP</sub> *iiht*- RR] merges with the predicate before the causative *áttsi-*.

(28)



Compositionally, then, we predict an interpretation like i) as opposed to ii), where the [<sub>PP</sub> *iiht*- RR] modifies the embedded predicate, as opposed to modifying the causing predicate (McCawley 1971, Shibatani 1973).

- (29) i)     **[cause [[with RR] [VP]]]**                    (eg. **[cause [[with a knife] [dance]]]**)  
       ii)    [with RR] [cause [VP]]                   (eg. [with a knife] [cause [dance]])

<sup>8</sup> Note that bare NPs are characterised as being “non-referring” or “non-particular” in reference, where “it does not matter if the speaker is talking about one or more item” (Frantz 1991:10, 41). They thus seem like good candidates for expressions of type  $\langle e, t \rangle$

This prediction is borne out by the data – when *iiht-* modifies a causative construction, the RR-argument is always associated with the caused predicate, as opposed to the causing predicate. Thus (30) only has the interpretation where the RR-argument, 'a dull knife' is used by the agent of the caused event (i.e., the causee). It cannot have an interpretation where the RR-argument, 'a dull knife', is used by the agent of the causing event (i.e., the causer). The same is true for (31).

- (30) *nitoohhtsskohtoyisstsiniáttisok*      *anniskayi*      *ikistáíaikimminiai*      *isttoán*  
 nit-ooht-sskohto-yiistsini-áttisi-ok      **anniskayi**      **ik-istáíaikimm-yini-ayi**      **isttoán**  
 1-means-force-cut.vrt?-CAUS-3>1      dem      ints-have.dull.edge.vai-3'-dtp      knife  
 i) = 'She forced me to cut with a dull knife.' ('with a dull knife' modifies CAUSEE/caused event)  
 ii) ≠ 'She used a dull knife to force me to cut' ('with a dull knife' modifies CAUSER/causing event)
- (31) *nitoóhtpihpiyáttisa*      *isttoán*  
 nit-ooht-p-ihpiyi-áttisi-a      **isttoán**  
 1-means-assoc-dance.vai-caus-1.3      knife  
 i) = 'I made her dance using a knife.' ('a knife' modifies CAUSEE/caused event)  
 ii) ≠ 'I used a knife make her dance' ('with a dull knife' modifies CAUSER/causing event)

As for how this compositional process can be formalized, I suggest that *iiht-* is essentially an event modifier which takes the RR-argument, and asserts that the RR-argument stands in some relation R, to the asserted event. R, I suggest, is a free-variable, determined by contextual/conceptual factors (eg. what the lexical content of the asserted predicate is, what the RR-argument is, etc.) (cf. Maienborn 2003). R could be BRINGS-ABOUT(x,e), for example, in the case where it is interpreted as an instrumental, or THEME(x,e), as in the pseudointransitive cases we saw above (or perhaps CONSUMED-BY(x,e), CREATED-BY(x,e)...etc.) A (very) preliminary semantics for *iiht-* could thus be posited as follows: (note: s is the type of events)<sup>9</sup>.

- (32) Type:                      < e <<e<s, t>>, <e<s, t>>>>  
 Lexical Entry:                || *iiht* -|| =  $\lambda x.\lambda P \in D_{\langle e \langle s, t \rangle \rangle}.\lambda y.\lambda e.P(y, e) \ \& \ R(x, e)$

Where R is a free variable, determined by contextual/conceptual factors  
 (eg. lexical content of P, what x is...)

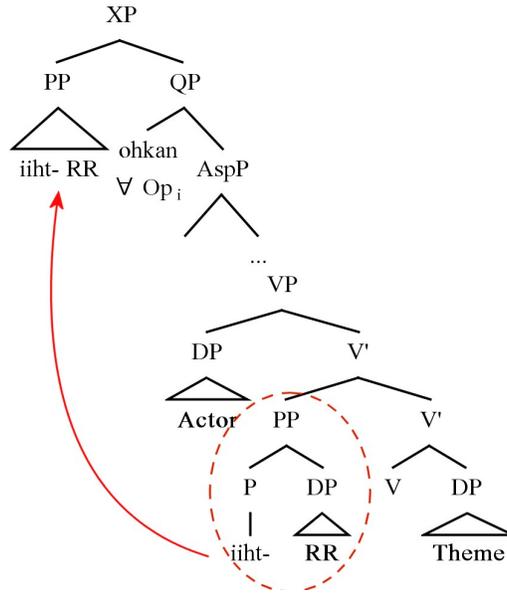
To summarize, in this section (2.3) I argued that the restricted interpretation of the [<sub>PP</sub> *iiht*- RR] with the *áttisi*- causatives is accounted for under the analysis proposed, whereby the [<sub>PP</sub> *iiht*- RR] merges with the clause structure prior to the Actor/Agent, and therefore prior the the causative component *áttisi*-. This marks the end of Part I. I now move onto Part II, where I propose that the [<sub>PP</sub> *iiht*- RR], having originally merged low, raises to a higher position in the clause structure.

<sup>9</sup> This is only a rough estimate, the semantics for *iiht-* cannot be as simple as the lexical entry in (32), if only for the fact that *iiht-* may link not only DPs as RR-arguments, but may also link bare NPs, and what appear to be CPs (i.e., reason/ rationale clauses) as RR-arguments. I consider resolution of these issues to be outside the scope of this paper, however suggest that the reason/rationale-linking use of *iiht-* may arise when the [<sub>PP</sub> *iiht*- RR] merges after v. The structural implications for this have yet to be tested, however.

### 3. Part II: Evidence for a High Re-Merged Position

In this section I present Part II of my proposal, where I argue that the [<sub>PP</sub> *iiht*- RR] raises to a higher position in the clause structure. The details of my proposal are illustrated by the tree in (33).

(33)



First I follow Glougie (2000) in analysing the universal quantifier *ohkan*- as merging directly with the clausal spine, above AspectP, and quantifying over a DP in its c-command domain<sup>10</sup>; second I propose that when the [<sub>PP</sub> *iiht*- RR] raises, it raises to a position above *ohkan*.

Part II is organised as follows: In §3.1 I look at evidence for the proposed structure from morphological position, and in §3.2 I look at evidence from quantifier scope.

#### 3.1 Evidence from Morphology

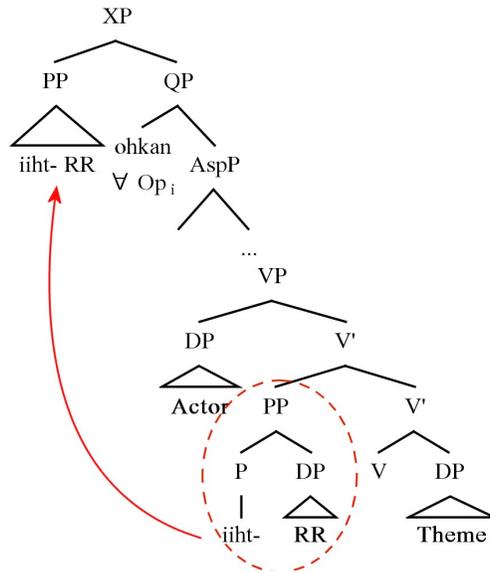
In this section I look at morphological evidence for the proposed structure in two parts – in 3.1.1 I look at basic morpheme order, and in 3.1.2 I look at a distributional restriction between *iiht*- and Blackfoot's future morphemes *áák*- and *áyaak*-.

##### 3.1.1 Evidence for a Higher Position from Morphological Order

Recall the proposed structure for the [<sub>PP</sub> *iiht*- RR] and the universal quantifier *ohkan*:

<sup>10</sup> This stands in contrast to an alternative (English-like) analysis, for example, where the universal quantifier *ohkan* merges with the DP that it quantifies over prior to the resulting [<sub>QP</sub> *ohkan* [DP]] merging with the clausal spine.

(34)



If we assume a strict mapping from syntax to morphology (cf. Baker 1985's mirror principle), we predict from such a structure that the universal quantifier *ohkan* would attach directly to the verbal complex (as opposed to attaching to the nominal it quantifies over), and that *iiht-* would precede *ohkan* in the verbal complex. This is exactly the case – as shown in previous data, *ohkan* attaches directly to the verbal complex. (35) shows that within the verbal complex, *iiht-* precedes *ohkan-*:

(35)

- a. *ana Amelia iihtóhkanáyíistsinim*  
 an-wa A **iiht-ohkana**-yistsini-m  
 dem-3 A **means-all**-cut.vti-3>0  
 “Amelia cut...”

*omistsi sitokihkiitaanists*      *niyookskaami isttowaiks*  
*om-istsi sitokihkiitaan-istsi*      *niyookska-waami isttowan-iks*  
 dem-0pl pie-0pl                      three-be.one.id.vai knife-pl  
 ...all the pies with three knives.”

- b. \**ana Amelia iihkanootsístsinim*  
 an-wa A ii-ohkan-ooht-yistsini-m  
 dem-3 A ic-all-means-cut.vti-3>0  
 Target: “Amelia cut...”

*omistsi sitokihkiitaanists*      *niyookskaami isttowaiks*  
*om-istsi sitokihkiitaan-istsi*      *niyookska-waami isttowan-iks*  
 dem-0pl pie-0pl                      three-be.one.id.vai knife-pl

Consultant Comment: No, it's *iihtóhkanáyíistsinim*.

These generalisations motivate an analysis where *ohkan-* merges directly with the clausal spine, and where the [<sub>PP</sub> *iiht-* RR] raises above *ohkan-* from its initial low merge position.

### 3.1.2 Evidence for Movement from Distributional Restrictions with *áák/áyaak-*

One question to ask when using morphology as evidence for syntactic structure is this: How do we know that the surface morphological position of *iiht-* should be represented syntactically? Is there any reason to posit syntactic movement over a purely morphological or phonological restriction associated with *iiht-*? In this section I argue that positing a high (moved) syntactic position for the [<sub>PP</sub> *iiht-* RR] also allow us to account for a distributional restriction between the 'means' linker *iiht-* and Blackfoot's future morphemes *áák-* and *áyaak-*.

Reis Silva (2007) argues that Blackfoot's two future morphemes *áák-* and *áyaak-* differ in their semantics. She identifies offer-contexts as an environment where these two morphemes differ in felicity: while *áák-* is felicitous in offer contexts, *áyaak-* is not.

- |      |    |   |                                |   |
|------|----|---|--------------------------------|---|
| (36) | a. | <i>kammistainikii</i><br>ikkam-sstaa-iniki<br>if-want.vai-subj.loc<br>'If you wish I will cook'         | <i>niistó</i><br>niistó<br>1sg | <i>nitáaksooyo'si</i><br>nit-áak-ooyo'si<br>1-FUT-cook.vai  |
|      | b. | <i>#kammistainikii</i><br>ikkam-sstaa-iniki<br>if-wish.vai-subj.loc<br>'If you wish I am going to cook' | <i>niistó</i><br>niistó<br>1sg | <i>nitáyaaksooyo'si</i><br>nit-áyaak-ooyo'si<br>1-FUT-cook.vai<br>(adapted from Reis-Silva To Appear) |

Felicity aside, however, *áák-* and *áyaak-* minimal pairs do not usually differ in their grammaticality. One can usually be interchanged with the other with no difference in grammaticality:

- |      |    |  |     |  |
|------|----|--|-----|--|
| (37) | a. | <i>ááksootaa</i><br>áák-sootaa<br>fut-rain.vii<br>"It will rain."              | a'. | <i>áyaaksootaa</i><br>áyaak-sootaa<br>afut-rain.vii<br>"It is going to rain."              |
|      | b. | <i>áákomo'tsaaki</i><br>áák-omo'tsaaki<br>fut-win.vai<br>"He will win."        | b'. | <i>áyaakomo'tsaaki</i><br>áyaak-omo'tsaaki<br>afut-win.vai<br>"He is gonna win."           |
|      | c. | <i>nitááksinowa</i><br>nit-áák-ino-a<br>1-fut-see.vta-1>3<br>"I will see her." | c'. | <i>nitáyaáksinowa</i><br>nit-áyaak-ino-a<br>1-afut-see.vta-1>3<br>"I am going to see her." |

This interchangeability, however, breaks down when the future morphemes follow the 'means' linker *iiht-*. In this context, *áyaak-* is grammatical, but *áák-* ungrammatical<sup>11</sup>. This contrast can be seen by the data in (36). Where the future morphemes follow *iiht-*, only *áyaak-* is grammatical (36a); *áák-* is ungrammatical (36b). Where the future morphemes precede *iiht-*, on the other hand, both *áák-* and *áyaak-* are grammatical (as per usual) (36c) & d).

- (38) a. *?óma isttoán iihtáyaaksikahksini'p omistsi miistsiists*  
 oma isttoan **iiht-áyaak**-ikahksini-'p om-istsi miists-istsi  
 DEM knife **means-afut**-cut.vti-loc>0 that-0pl wood-0pl  
 "That (certain) knife is gonna *be used* to cut the wood."
- b. *\*óma isttoan iihtáák-sikahksini'p omistsi miistsiists*  
 oma isttoan **iiht-áák**-ikahksini-'p om-istsi miist-istsi  
 DEM knife *means-FUT*-cut.vti-loc>0 DEM-0pl wood-0pl
- c. *óma isttoan áyaakohtsíkahksinii'p omistsi miistsiists*  
 oma isttoan **áyaak-oh**t-ikahksini-'p om-istsi miists-istsi  
 DEM knife **AFUT-means**-cut.vti-loc>0 DEM-0pl wood-0pl  
 "That knife *is* gonna be used to cut the wood"
- d. *óma isttoan áákohtsíkahksini'p omistsi miistsiists*  
 oma isttoan **áák-oh**t-ikahksini-'p om-istsi miists-istsi  
 DEM knife **FUT-means**-cut.vti-loc>0 DEM-0pl wood-0pl  
 "That knife *is* gonna be used to cut that wood."

The distributional restriction is summarized in (37). I propose that it can be accounted for if we assume i) that *iiht-*'s surface morphological position is indicative of a raised syntactic position in the clause structure, ii) a morphological breakdown of *áyaak-* following Reis-Silva (2007) and Frantz (1991), and iii) the Copy-Merge theory of movement (cf. Chomsky 1995).

(39) **The Distributional Restriction**

iiht	áák	✘
iiht	áyaak	?
áák	ooht	✓
áyaak	ooht	✓

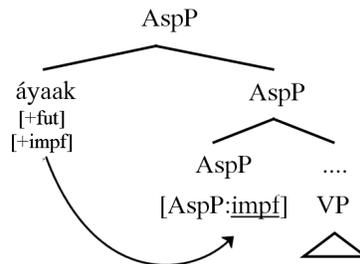
Reis Silva (2007) analyses the difference between *áyaak-* and *áák-* as a difference of aspect. Following Copley (2002)'s analysis of English will and going to, she argues that where *áák-* is an aspectually bare future modal, *áyaak-* is a future modal that encodes imperfective aspect. Noting that Frantz (1991) suggests *áyaak-* to be morphologically complex, Reis Silva

11 The *iiht-áyaak-* order is slightly degraded and are often given English translations with marked intonational patterns eg. "I *used* that knife to cut the wood." However the contrast in grammaticality between *iiht-áyaak-* utterances and *iiht-áák-* utterances is quite sharp.

analyses *áyaak-* as compositionally derived from the future morpheme *áák-* and the imperfective morpheme *á-* (cf. Dunham 2007). I follow her and Frantz in this morphological decomposition, and propose that *áyaak* is a fused lexical item that has both the aspectual feature [+imperfective] associated with the imperfective *á-*, as well as the modal/future feature [+future] associated with *áák-*. A derivation can then proceed as follows:

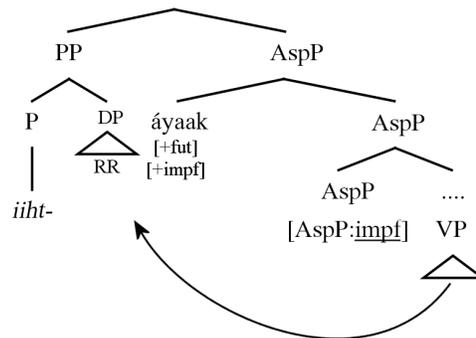
First the head of Aspect merges into the phrase-structure marker, as an unvalued functional head. Then *áyaak-* merges, to value the head of AspectP as [+impf], in the spirit of Borer (2005).

(40)



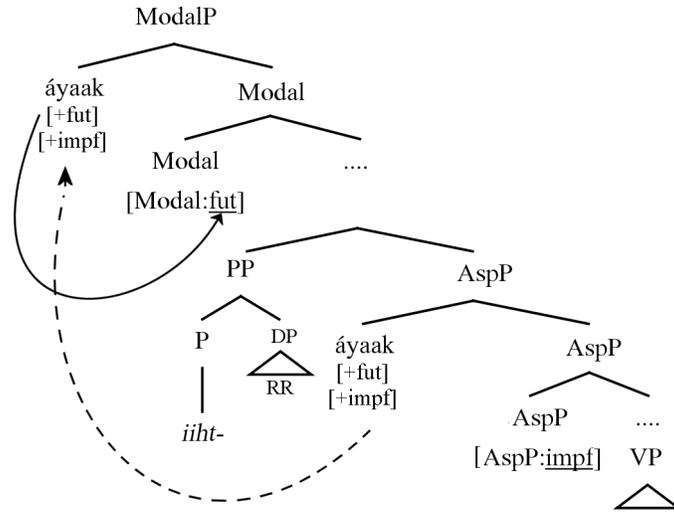
At some point following this, the [PP *iiht-* RR] raises to a position above AspectP (as proposed).

(41)



The unvalued functional head of ModalP then merges, and *áyaak-* raises to value it as [+future].

(42)



If movement proceeds via Copy-and-merge, this gives us two copies of *áyaak-*; one in the specifier of ModalP, and one in specifier of AspectP. This is schematically represented in (39)i).

(43)

- i) [Modal P *áyaak-* [  $\emptyset$  [+fut] ... [PP *iiht* [RR] ] ... [Aspect P *áyaak-* [  $\emptyset$  [+impf] ... [VP ] ] ] ] ]
- ii) [Modal P *áyaak-* [  $\emptyset$  [+fut] ... [PP *iiht* [RR] ] ... [Aspect P ~~*áyaak-*~~ [  $\emptyset$  [+impf] ... [VP ] ] ] ] ]
- iii) [Modal P ~~*áyaak-*~~ [  $\emptyset$  [+fut] ... [PP *iiht* [RR] ] ... [Aspect P *áyaak-* [  $\emptyset$  [+impf] ... [VP ] ] ] ] ]

Pronouncing the higher copy yields the *áyaak-ooht-* order, represented in ii). Pronouncing the lower copy yields the *iiht-áyaak-* order, represented in iii). Because *áák-* only has modal/future features, however, unlike *áyaak-* it does not merge in AspP. Its first and only merge position is the specifier of ModalP. There is therefore only one copy of *áák-* in the derivation to pronounce – this necessarily yields the *áák-ooht-* order. The *iiht-áák-* order is ungrammatical because it cannot be derived.

- (44) [Modal P *áák-* [  $\emptyset$  [+future] ... [PP *iiht* [DP] ] ... [Aspect P [  $\emptyset$  ... [VP ] ] ] ] ] ]

Note that one unspoken assumption in this analysis is that the morphological ordering of the future and imperfective preverbs *áák-* and *á-* is a transparent reflection of their syntactic status as the specifier of functional phrases in structural hierarchy. This assumption is similar, though not identical, to the approaches to preverbal modality, mood and aspectual morphemes in Menominee proposed by Cook (2003), and Shields (2005, 2006). Cook argues that Menominee preverbs can be accounted for as functional heads in a Cinque-style hierarchy of functional heads; she contrasts this with the standard morphological-template approach to Algonquian verbal complexes. Cook shows that the linear order of preverbs which semantically encode notions of modality, mood and aspect conform to Cinque's proposed universal hierarchy: Menominee's preverb encoding epistemic modality precedes that which encodes irrealis, which

precedes habitual aspect, which precedes perfect aspect, etc. Following Déchaine's (1999) framework for Algonquian morphology, Cook proposes that the Menominee preverbs are phonological proclitics - this accounts for why their linear order directly follows Cinque's proposed hierarchy as opposed to mirroring it, which a head-movement analysis would predict. Cook also shows that irregular preverb orders are associated with scope effects; where preverb X precedes preverb Y, X will take scope over Y. This is unexplained with a morphological template analysis, but is predicted by an analysis where morphological order reflects structural c-command relations. Cook thus argues that analyzing Menominee preverbs as functional heads can account for the standard linear order of preverbs, and well as the specific scope interpretations associated with non-standard linear orders, in a more principled manner than a morphological template analysis. My formal implementation differs slightly in that I have adopted a Borer-style framework whereby functional heads are actually null “open-values” that are “assigned range” (read: valued, or checked) from what standard analyses assumed to be “functional heads” - i.e., the overt morphemes. For the purposes of this paper, however, I do not believe this distinction translates into anything other than notational variation. The overt morphemes can similarly be analysed as phonological proclitics that merge in specifier positions, where no movement of these morphemes occurs (unless, as in the analysis proposed, a functional head higher up in the phrase structure requires valuation/range-assignment/feature-checking.)

In summary, in this section I provided a derivational account for a distributional restriction between the 'means' linker *iiht-* and Blackfoot's two future morphemes *áák-* and *áyaak-*. The account relies on *iiht-* having a high syntactic position (as proposed by my syntactic raising analysis). If *iiht-*'s surface position was purely morphological or phonological, there is no reason why it would interact with the derivational processes proposed. I next move onto evidence for a higher syntactic position from Quantifier Scope.

## 3.2 Evidence from Quantifier Scope

### 3.2.1 Quantifier Scope as an Indication of Structural Relations

In this section I look at Quantifier Scope (QS) as a diagnostic for structural relations among Actors, Themes and RR-arguments. Quantifier Scope is another diagnostic for determining c-command relations. The basic generalization is that if a quantifier Q1 c-commands a quantifier Q2, Q1 takes scope over Q2. The effects of c-command on QS interpretations, however, is complicated by the availability of Quantifier Raising (QR). This can be illustrated in (45): although the subject in (45a) 'Every candidate' c-commands the object 'three women,' either scope reading is possible – i.e., i) that for every candidate, there are three women that he loves ( $\forall > 3$ ), or ii) there are three women such that every candidate loves them ( $3 > \forall$ ). The standard analysis (May 1985) is that the quantifier in object position 'three women' can covertly raise at LF, to a position where it c-commands 'Every candidate'. The same story can be told for (45b).

- (45) a. Every candidate loves three women.  $\forall > 3; 3 > \forall$   
 b. *Three women love every candidate.*  $\forall > 3; 3 > \forall$

The effect of structural relations on Quantifier Scope can still be seen, however, in contexts

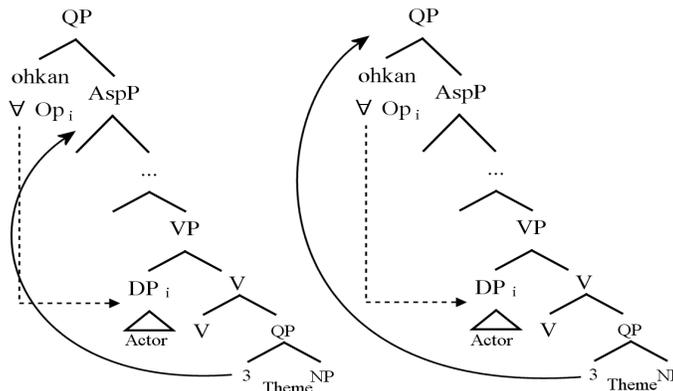
where QR is blocked – i.e., when the quantified expression is contained within an island for movement. The examples in (46), where the quantified expression is contained within a complex NP, thus show the effect of c-command. In (46a), the subject 'Every candidate' c-commands the island-embedded 'three men.' Because 'three women' cannot QR out of the complex NP, the QS interpretation is fixed; (46a) cannot mean that there are three women such that for each of these women, every candidate heard that she died ( $*3 > \forall$ ). (46b) shows the same generalization. 'Three women' c-commands the embedded 'every candidate,' and because 'every candidate' cannot QR out of the complex NP, the QS interpretation is fixed. (46b) cannot mean that for every candidate, there are three women who heard a rumour that he (the candidate) is corrupt ( $*\forall > 3$ ).

- (46) a. Every candidate heard [NP a rumour that three women died]  $\forall > 3; *3 > \forall$   
 b. Three women heard [NP a rumour that every candidate is corrupt]  $*\forall > 3; 3 > \forall$

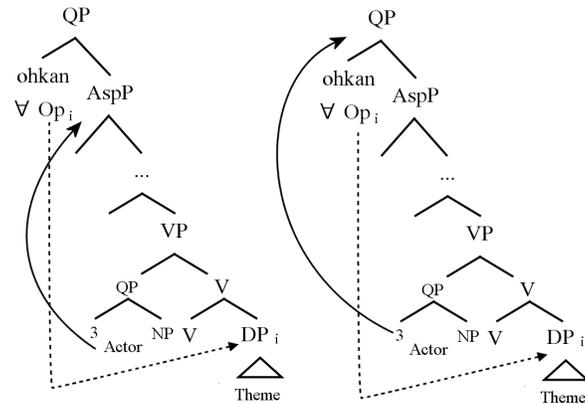
### 3.2.2 Quantifier Scope Interpretations among Actors and Themes

Consider now the proposed structure, where the universal quantifier *ohkan-* merges directly with the clausal spine. Assuming the availability of QR in Blackfoot, we expect a quantifier scope ambiguity between Actors and Themes, assuming that numerally-quantified arguments can QR either above or below *ohkan-*.

- (47) Universally Quantified Actor and Numerally Quantified Theme: Ambiguity



- (48) Numerally Quantified Actor and Universally Quantified Theme: Ambiguity



Data from Bliss (2009a) shows that this prediction is borne out - when both Actor and Theme are quantified expressions, ambiguity arises. Thus (49), with a universally-quantified Actor and numerally-quantified Theme can be interpreted such that i) all of the dogs chase three (potentially different) cats ( $\forall > 3$ ), for a possible total of nine cats (a distributive reading), or ii) a total of three cats are chased by all of the dogs ( $3 > \forall$ ). (49) is a direct-marked clause; the inverse-marked clause in (50) shows the same ambiguity.

(49) *Omiksi imitaaiksi ihkanaoksisaiskoyiyaa niookskam(iks<sup>12</sup>) poosiks.*  
**om-iksi imitaa-iksi ii-ohkana-oksisaisko-yii-yaa niookskam(-iksi) poos-iksi**  
**dem-pl dog-pl ic-all-chase.vta-3>3'-3pl three(-pl) cat-pl**  
 'All the dogs chased three cats'<sup>13</sup>  $\forall > 3$  or  $3 > \forall$

(50) *Nióókskamiksi poosiksi otohkanaoksisaiskookiyaa omiksi imitaaiks*  
**niokskam-iksi poos-iksi ot-ohkana-oksisaisko-ok-yaa om-iksi imitaa-iksi**  
**three-pl cat-pl 3'-all-chase.vta-3'>3-3pl dem-pl dog-pl**  
 'Three cats were chased by all the dogs'  $\forall > 3$  or  $3 > \forall$  (Bliss 2009a:11)

Bliss (2009a) also shows that this ambiguity arises when the Actor is numerally-quantified, and the Theme is universally quantified. Direct-marked (51) has both readings where i) all of the cats are chased by three (potentially different) dogs ( $\forall > 3$ ), yielding a possible total of nine dogs (a distributive reading) and ii) there are exactly three dogs which chase all of the cats ( $3 > \forall$ ). Inverse-marked (52) is likewise compatible with both readings.

(51) *Nióókskam(iks) imitaaiksi ihkanaoksisaiskoyiyaa omiksi poosiksi.*  
**niokskam(-iks) imitaa-iksi ii-ohkana-oksisaisko-yii-yaa om-iksi poos-iksi**  
**three(-pl) dog-pl ic-all-chase.vta-3>3'-3PL dem-pl cat-pl**  
 'Three dogs chased all the cats'  $\forall > 3$  or  $3 > \forall$

(52) *Omiksi poosiksi otohkanaoksisaiskookiyaa nióókskamiks imitaaiksi.*  
**om-iksi poos-iksi ot-ohkana-oksisaisko-ok-yaa niokskam-iksi imitaa-iksi**  
**dem-pl cat-pl 3'-all-chase.vta-3'>3-3pl three-pl dog-pl**  
 'All the cats were chased by three dogs'  $\forall > 3$  or  $3 > \forall$

### 3.2.3 Quantifier Scope Interpretations among RR-Arguments and Actor/Themes

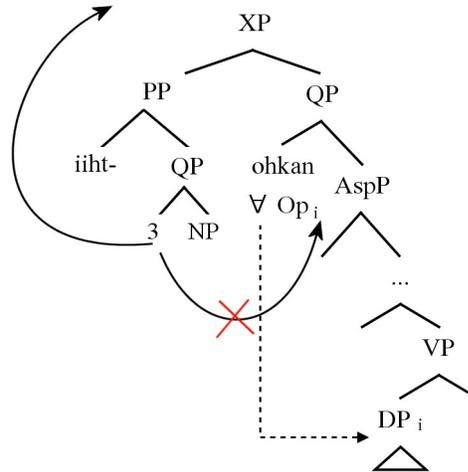
Consider next the proposed structure where the [<sub>PP</sub> *iiht*- RR] has raised to a structural position above the universal quantifier *ohkan*-. Even assuming the availability of QR, we predict unambiguity. Because a numerally-quantified RR-argument is already structurally superior to *ohkan*-, when it QRs, it can only QR to a position that is even higher than *ohkan* (this is illustrated in (53)). In cases with a numerally-quantifier RR-argument, and universally-quantifier

12 Plural marking on the numeral is not well understood – observations from Heather Bliss (p.c.), and my fieldwork suggests it is optional. What syntactic/semantic contribution the plural marking may add is an open question, but as it does not affect the relevant quantifier scope interpretations, I leave this for further research.

13 In re-eliciting this example, in a context where there are three dogs, my consultant gave the comment: “Those three dogs just terrorized nine cats,” showing that a distributive reading is indeed available.

Actor or Theme, then, we predict only a numeral > universal scope interpretation. In what follows, I show that this prediction is borne out by the data.

(53)



### 3.2.3.1 QS Interpretations among RR-Arguments and Themes

(54) shows that a numerally-quantified RR-argument always takes scope over a universally-quantified theme; (54a) can only be interpreted with a reading where there are exactly three knives, which are used to cut all of the pies ( $3 > \forall$ ). It is infelicitous in a distributive  $\forall > 3$  context where each pie is cut using three different knives. While this does not rule out a cumulative  $\forall > 3$  reading, the data here contrast with the Actor/Theme data in the previous section, which were compatible with distributive  $\forall > 3$  readings. The data in (54) b) and c) are permutations in word-order – the scope interpretation for these are the same as (54a).

(54) **Context A:** There are so many pies that knives get dull, eventually she ended up using three different knives to cut through all of the pies (felicitous) ( $3 > \forall$ )

**Context B:** Each pie is extremely delicate, and they are also all different, so they each needs their own three special knives to be cut. (infelicitous) ( $\forall > 3$ ; dist)

a. *ana Amelia iihťohkanáyíistsinim omistsi sitokihkiitaanists*  
 an-wa Amelia **iihť-ohkana**-yistsini-m om-istsi sitokihkiitaan-istsi  
 dem-3 Amelia **means-all-cut.vti-3>0** dem-0pl pie-0pl  
 “Amelia cut all of those pies with...”

<i>niyookskaami(iksi)</i>	<i>isttowaiks</i>
<b>niyookska-waami-(iksi)</b>	<b>isttowan-iks</b>
<b>three-be.one.id.vai-(pl)</b>	<b>knife-pl</b>
... three knives.”	$3 > \forall, * \forall > 3$

- b. *ana Amelia niyookskaami(iks) isttowaiks*  
*an-wa Amelia niyookska-waami-(iksi) isttowan-iks*  
*dem-3 Ameliat three-be.one.id.vai-pl knife-pl*  
 “Amelia cut all of those pies

*iihtóhkanáyíistsinim omistsi\_ sitokihkiitaanists*  
*iiht-ohkana-yistsini-m om-istsi\_ sitokihkiitaan-istsi*  
*means-all-cut.vti-3>0 dem-0pl pie-0pl*  
 ...with three knives.”  $3 > \forall, * \forall > 3$

- c) *ana Amelia iihtóhkanáyíistsinim*  
*an-wa A iiht-ohkana-yistsini-m*  
*dem-3 A means-all-cut.vti-3>0*  
 “Amelia cut all of those pies...”

*niyookskaami isttowaiks omistsi\_ sitokihkiitaanists*  
*niyookska-waami isttowan-iks om-istsi\_ sitokihkiitaan-istsi*  
*three-be.one.id.vai knife-pl dem-0pl pie-0pl*  
 ...with three knives.”  $3 > \forall, * \forall > 3$

(54) is a direct-marked clause; inverse-marked (55) is likewise scopally unambiguous. (55) is only compatible with the reading where the numerally quantified RR-argument *niyookskaami sisoya'tsiks* 'three pairs of scissors' refers to exactly three pairs of scissors which were used to cut the hair of all of my relatives. (55) is incompatible with a reading where for each x, where x is a relative of mine, x got their hair cut with three different pairs of scissors.

- (55) *omiksi\_ nikso'kowaiks ana Amelia ohsis*  
*om-iksi\_ n-ikso'kowa-iksi an-wa Amelia o'-sis*  
*dem-pl 1-relative-pl dem-3 Amelia 3-y.sister*  
 “All my relatives got their hair cut “...”

*otoohtohkanaipohksistskinyokya* *niyookskaami sisoya'tsiks*  
*ot-ooht-ohkana-ipohksistskini-ok-yaa niyooks-waami sisoya'tsis-iksi*  
*3'-means-all-cut.hair.of.vta-inv-3pl three-be.one.id.vai scissors-pl*  
 ...by Amelia's sister, with three pairs of scissors.”  $3 > \forall, * \forall > 3$

### 3.2.3.2 QS Interpretations among RR-Arguments and Actors

(56) shows that a numerally-quantified RR-argument always takes scope over a universally-quantified Actor. Direct-marked (56) is only compatible with a reading where there are exactly three snakes, and all of the boys used them to scare Amelia. It is incompatible with a distributive  $\forall > 3$  reading where each boy has three separate snakes, which they use to scare Amelia. Inverse-marked (57) has same restricted reading - it is incompatible with a distributive  $\forall > 3$  reading where each boy has three separate snakes, which they use to scare Amelia.

- (56) omiksi            saahkomapiksi            iihtohkanaisski'tsiyaa  
 om-iksi            saahkomaapi-iksi            iiht-ohkana-sski'tsii-yii-yaa  
 dem-pl            boy-pl            means-all-scare.vta-3>3'-3pl  
 “The boys all scared...”

*ani*    *Amelia*            *niyookskami*            *piksiiksiinaiksi*  
 an-yi    Amelia            niyookska-waami            piksiiksiinaa-iksi  
 dem-3' Amelia            three-be.id.vai            snake-pl  
 ...Amelia with three snakes”            3 > ∇; \*∇ > 3

- (57) *ana*    *Amelia*            *otoóhtohkanaisski'tsok*            omiksi            saahkomaapiksi  
 an-wa    Amelia            ot-ooht-ohkana-sski'tsii-ok            om-iksi            saahkomaapi-iksi  
 dem-3    Amelia            3'-means-all-scare.vta-3'>3            dem-pl            boy-pl  
 “Those boys all scared...”

*niyookskami*            *piksiiksiinaiksi*  
 niyookska-waami            piksiiksiinaa-iksi  
 three-be.id.vai            snake-pl  
 ... Amelia with three snakes.”            3 > ∇; \*∇ > 3

Again, while a collective  $\nabla > 3$  reading cannot be ruled out, these data differ from the Actor-Theme data where distributive readings are allowed.

### 3.2.3.3 Universally-Quantifying over an RR-Argument

An interesting observation to note is that the universal operator *ohkan-* can't quantify over an RR argument, if there is another DP in its scope which it can bind. Thus (58), with a numerally quantified Theme and a plural RR-argument, cannot be interpreted such that the universal operator *ohkan-* binds the plural RR-argument *omiksi isttowaiksi* “those knives.” Instead it binds the (already) numerally-quantified argument *niyookskaami sitokihkiitaanistsi* “three pies”:

- (58) *nitoóhtohkanáyistsini'pi*            *niyookskaami*            *sitokihkiitaanistsi*  
 nit-ooht-ohkana-yistsini-'p-yi            niyooks-waami            sitokihkiitaan-istsi  
 1-means-all-cut.vti-loc>0-0            three-be.vii            pie-pl  
 “I cut each of those three pies,

*omiksi*            *isttowaiksi*  
 om-iksi            isttowan-iksi  
 dem-pl            knife-pl  
 with those knives.”            ≠ “I cut three of those pies with all of the knives.”

This is expected under the analysis proposed – the raised RR-argument is not within *ohkana*'s c-command domain, and as *ohkan-* already has a DP within its c-command domain to bind, *ohkan*

has no reason to QR any higher to bind the RR-argument<sup>14</sup>.

The QS generalisations are in (59). In this section (§3.2) I argued that these followed from my proposed analysis where i) the universal operator *ohkan-* merges directly with the verb stem (cf. Glougie 2000), ii) the [<sub>PP</sub> *iiht-* RR] raises from its base-generated position to a position above *ohkan-*, as well as an assumption that quantifiers can raise, but not lower.

(59) Independent, Direct: Quantifier Scope Generalizations

Scopes over →	Actor	Theme	<b>RR</b>
Actor	n/a	Y	N
Theme	Y	n/a	N
<b>RR</b>	<b>Y</b>	<b>Y</b>	n/a

#### 4.0 Two Levels of Representation

My proposal, broadly, is that *iiht-* is a preposition that takes the RR-argument as its complement, where the resulting [<sub>PP</sub> *iiht-* RR] first merges low in the clause structure, and then raises high. I provided data from variable-binding which reflect the c-command properties of the [<sub>PP</sub> *iiht-* RR]'s first merge position, and data from quantifier scope which reflect the c-command properties of [<sub>PP</sub> *iiht-* RR] 's higher, re-merged position (give or take some QR). One interesting thing to note is that the results from the c-command diagnostics do not converge – for instance, whereas variable-binding indicates that an Actor c-commands the RR-argument, quantifier scope indicates the opposite. Similarly, whereas variable-binding indicates that the RR-argument does not c-command the theme, the data from quantifier scope indicates the opposite. The generalisations are summarised in (60) - we can see from the table that variable-binding and quantifier scope diverge on three out of four of the relevant c-command relations considered.

(60) Results from C-Command Diagnostics

<b>C-Command</b>	<b>Variable Binding</b>	<b>Quantifier Scope</b>
Actor > RR	<b>Y</b>	<b>N</b>
Theme > RR	N	N
RR > Actor	N	<b>Y</b>
RR > Theme	N	<b>Y</b>

14 In cases where there is no other DP available, *ohkan-* can quantify over an RR-argument(ii). I suggest this follows from a ban on vacuous quantification – i.e., that *ohkan-* QRs above the [<sub>PP</sub> *iiht-* RR] in order to have a variable within its c-command domain to bind.

- (ii)
- |   |                              |                                |
|---|------------------------------|--------------------------------|
| <i>iihtohkanayissitapii</i>                   | <i>omistsi isttowaiks</i>    | <i>otáyáihkitaahsi</i>         |
| <i>iiht-ohkana-yissitapii</i>                 | <i>om-istsi isttowa-iksi</i> | <i>ot-a'-á-ihkiitaa-hsi</i>    |
| <i>means-all-use.vai</i>                      | <i>dem-0pl knife-pl</i>      | <i>3-inch-impf-cook.vai-cj</i> |
| "He used all the knives when he was cooking." |                              |                                |

This suggests that in Blackfoot, the c-command restrictions on variable-binding and quantifier-scope do not hold at the same level of representation, contra the minimalist assumption that both variable-binding and quantifier scope are LF-phenomena (LF being the only level of representation for Minimalism). I suggest that in Blackfoot, c-command restrictions on variable-binding hold of First Merge positions, or A-positions, whereas c-command restrictions on quantifier scope hold at LF.

In the following section, I show how this can be formalised this in terms of Saito (2003)'s derivational approach. Under this framework, the c-command restrictions on variable-binding and quantifier scope can be viewed as relativised to features, where different copies in a nominal chain have different featural properties.

#### 4.1 Saito 2003: A Derivational Approach to the interpretation of Scrambling Chains

Saito (2003) proposes that nominals consist of P-features, D-features, and, if they are wh-nominals, O-features. P-features are phonetic-features and determine where the nominal will be “interpreted phonetically”- i.e., where the nominal will be pronounced in the linear string. D-features are argument/referential features and determine where the nominal will be interpreted with respect to binding and co-reference relations. O-features are operator-features. These determine where the nominal will be interpreted with respect to quantifier-variable relations. When a nominal undergoes movement, any features present are copied from the originating site, and re-merged at the landing site. This is schematized in (61).

$$(61) \quad [ \text{XP} \quad \text{NP} \quad [ \text{ZP} \quad \text{NP} \quad ] ] \\ \quad \quad \quad \{ \text{P, D, O} \} \quad \quad \quad \{ \text{P, D, O} \}$$

Deletion then applies to features so that each feature is retained at only one position in the chain – i.e., within a chain there is only one position where P-features are interpreted (i.e., pronounced), only one position where D-features are interpreted, and only one position where O-features are interpreted.

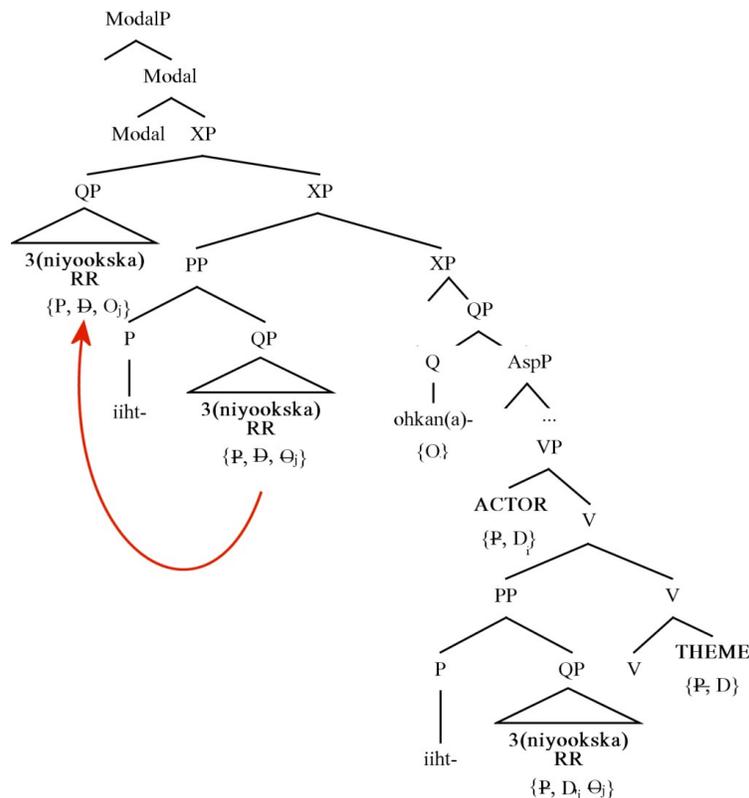
In other words, deletion applies so that a nominal is only interpreted once with respect to Variable-Binding/Co-reference relations, once with respect to Quantifier-Variable relations, and only pronounced once. A derivation that converges will thus look like (62), where deletion ensures that two copies of an NP are nonetheless only associated with one P-feature, one D-feature and one O-feature.

$$(62) \quad [ \text{XP} \quad \text{NP} \quad [ \text{ZP} \quad \text{NP} \quad ] ] \\ \quad \quad \quad \{ \text{P, D, O} \} \quad \quad \quad \{ \text{P, D, O} \}$$

Saito proposes that this process of feature-deletion is constrained by selection – deletion of an X-feature does not occur in position Y if the nominal moved to position Y because the nominal's X-feature was selected for. This ensures that a nominal chain retains at least one P-feature and one D-feature (and one O-feature if it is a wh-nominal).

With this framework, we can account for the contrast between the variable-binding and quantifier scope data. Saito (2003) suggests that D-features are selected for (and thus retained) in A-positions. Because the c-command restrictions on variable-binding and co-reference only interpret D-features, the variable-binding data reflects the First Merge positions of the Actor, Theme and RR-argument<sup>15</sup>. I propose to extend Saito's framework such that that quantifiers, like *wh*-words, have O-features. Under the framework here, these O-features will only be retained where they are selected for. Now if we assume that QR is driven by selection for an O-feature, there are two consequences. First, because QR is driven by O-selection, the O-features will only be retained in the QR-ed position. Secondly, because the First Merge positions are not driven by O-selection, the O-features in this position will have been deleted. This means that when QR applies, it will not target the lowest copy, as doing so would not satisfy O-selection. QR can thus only target the higher copy. The relevant QR-ed positions which are relevant for the c-command restrictions on operator-variable relations are thus restricted by where the highest copies of the quantified nominals are. This accounts for why the quantifier scope facts reflect (indirectly) the higher, moved, position of the [PP *iiht*- RR]. A phrase structure using Saito (2003)'s framework is illustrated in (63): while the O-feature of the RR-argument c-commands the O-feature associated with the Actor argument, the D-feature of the Actor argument c-commands the D-feature of the RR-argument.

(63)



15 Saito (2003) characterizes both First Merge and Case-driven Movement as movement triggered by D-selection. I address possible consequences of this in §5.

The c-command relations relativized to D- and O-features is summarized in (64) - we see that the c-command relations among D-features corresponds to the results from the variable-binding diagnostics, and that the c-command relations among O-features corresponds to the results from the quantifier-scope diagnostics.

(64) C-Command Relations According to Nominal Features

C-Command	According to D-features?	According to O-features?
Actor > RR	Y	N
Theme > RR	N	N
RR > Actor	N	Y
RR > Theme	N	Y
	Variable Binding✓	Quantifier Scope✓

#### 4.2 What about those P-features?

The observant reader will have noticed that the table in (64) is suspiciously missing a column devoted to what the c-command relations among P-features are. Saito (2003) assumes that P-features are retained at the highest position in the chain, however such an analysis cannot be straightforwardly adapted for Blackfoot. While I have analyzed the argument DPs as merging directly with the phrase-structure, it is clear if this is the case, the linearization of the verbal complex and DPs cannot be directly read off the phrase-structure. If it were, we would expect to be able to pronounce the DPs within the verbal complex, as in the wildly ungrammatical (65).

(65) \**iihtsiyookskaami isttowaiksóhkanáanaAmeliayíistsinim omistsi sitokihkiitaanists*  
*iiht-niyookska-waami isttowan-iksi-ohkana-an-wa Amelia-yistsini-m om-istsi sitokihkiitaan-istsi*  
 means-three-be.one.id.vai knife-pl-all-dem-3-Amelia-cut.vti-3>0 dem-0pl pie-0pl  
 Target: “Amelia cut all the pies with three knives.”

(66) C-Command Relations According to Nominal Features

C-Command	According to D-features?	According to O-features?	According to P-features?
Actor > RR	Y	N	?
Theme > RR	N	N	?
RR > Actor	N	Y	?
RR > Theme	N	Y	?
	Variable Binding✓	Quantifier Scope✓	Linearization?

I suggest that analyzing the argument DPs as merging directly with the phrase structure can be maintained, if the ungrammaticality of utterances like (65) is analyzed as an issue of the

phonology-syntax mapping interface, as opposed to being an issue of the syntax proper. Consider, for example, a framework as in Kratzer & Selkirk (2007), whereby the phonology-syntax interface maps phases onto major intonational phrases (MaPs). Because DPs and CPs are both phases, the phonology-syntax interface would map both the verbal complex (i.e., the CP), and DP arguments, onto their own MaPs. Embedding the DP MaPs within the CP MaPs (as per the c-command relations in the tree, and as in the ungrammatical (65)), however, would violate the Strict Layering Hypothesis (Selkirk 1984). Scrambling argument DPs out of the CP could be Blackfoot's strategy of avoiding this violation. As for the issue of how DPs and the verbal complex, as separate MaPs, are linearized, the observation is that Blackfoot word order (as with most Algonquian languages) appears quite free. Differences in word order do not affect either the variable-binding or quantifier-scope generalisations. What exactly does determine word order, however, I set aside as being outside the scope of this paper.

## 5.0 Conclusion and Questions for Further Research

### 5.1 Why does the [<sub>PP</sub> *iiht*- RR] move?

The most obvious question that remains is this: Why does the [<sub>PP</sub> *iiht*- RR] move? What motivates it? Is it feature-driven movement? And if so, what kind of feature? A syntactic feature, morphological feature, semantic feature or phonological feature? I follow Bruening (2001) who posits movement for relative roots in Passamoquoddy, and Dahlstrom (2000), who proposes that preverbal elements<sup>16</sup> in Fox (Mesquakie) originally merge low, forming a compound with the verbal stem, then raise to a higher position. Neither of these researchers, however, propose formal motivation for these movements. One possibility is that the PP moves for Case/Agreement reasons. Grohmann (2000) and Zwart (1994) both propose that prepositionally-licensed DPs, like their Case-licensed counterparts, nonetheless undergo A-Movement from their initial theta-positions. A complication, which I address in the next sub-section, however, suggests that this cannot be the case for the [<sub>PP</sub> *iiht*- RR]. The motivation for its movement thus remains an open question for further research.

### 5.2 D-features in A-positions...but are these $\theta$ -positions or Case-positions?

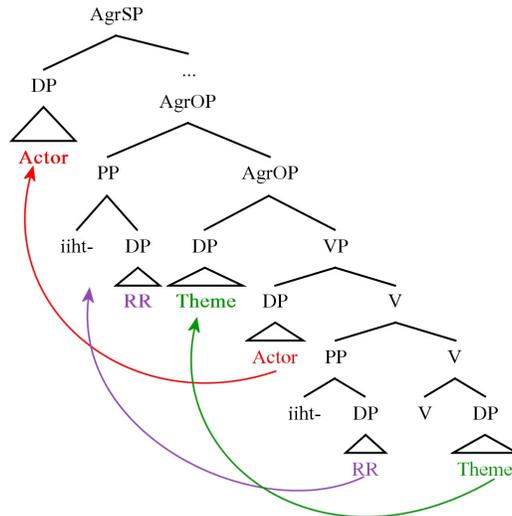
Recall that I characterized the positions at which D-features were selected for, (and thus retained), as First-Merge, or  $\theta$ -positions. Saito (2003) actually characterizes both First Merge and Case-driven movement as being motivated by D-selection. Thus variable-binding can plausibly take into account either the First Merge (or  $\theta$ ) positions of the relevant arguments, or the Case-positions of the arguments. Data from Bliss (2009a) suggests that Case-positions (or at least the Blackfoot equivalent of Case-positions) are really what matters for the c-command restrictions on variable-binding. Arguing that the direct/inverse split involves movement, such that Actors c-command Themes in the direct, but that Themes c-command Actors in the inverse, Bliss shows that the variable-binding facts between Actors and Themes differ according to whether the clause is marked as direct, or as inverse. I abstracted away from issues of direct/inverse A-movement here, as I only looked at direct-marked clauses for variable-binding. The analysis could be re-

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<sup>16</sup> Although she does not refer to relative roots specifically.

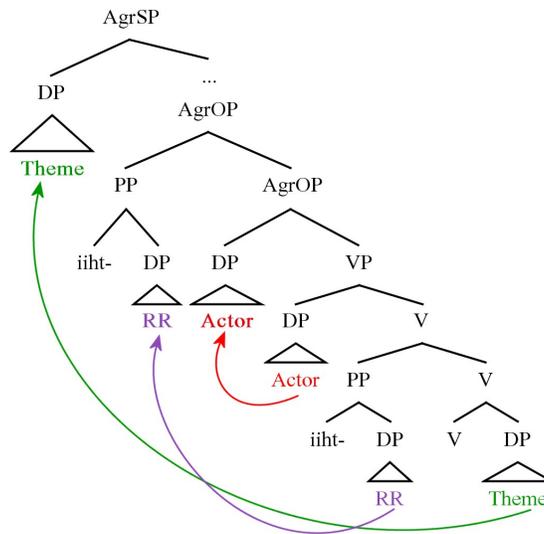
framed in terms of Case-Positions as opposed to First Merge ( $\theta$ ) positions, however, if we assume that the Case-positions of arguments in direct-marked clauses are isomorphic to their First merge positions. This type of structure-preservation, schematized in (67), is not uncommon (cf. Williams 2003). The Actor, Theme and RR all retain the same c-command relations with respect to each other in both their moved positions, as in their First Merge positions.

(67)



The prediction for the analysis re-framed in terms of Case-positions as opposed to First Merge ( $\theta$ ) Positions is, of course, that the variable-binding generalizations found here will differ for inverse-marked clauses – i.e., assuming Case-positions as in (68) for the inverse, we predict that in the inverse, the theme argument will be able to variable-bind into the RR-argument, but that neither the RR-argument nor Actor will be able to variable-bind into each other. Whether this prediction obtains is a question for further research.

(68)



Notice, however, that if the analysis is re-framed in terms of Case-positions as opposed to First-merge positions, then the movement of the [<sub>PP</sub> *iiht*- RR] should not be characterised in terms of Case-driven A-movement, as this would predict the wrong variable binding facts: if the [<sub>PP</sub> *iiht*- RR] movement and direct-inverse movement were both A-movement, and triggered by the same type of feature, we would expect the [<sub>PP</sub> *iiht*- RR] movement to affect the RR-argument's variable-binding properties just as inverse movement affects the Actor/Theme's variable-binding properties, contrary to observation. A final observation is that Bliss (2009a)'s data, like the data presented in this paper, show an empirical split between the results of variable-binding and quantifier scope as c-command diagnostics. Whereas direct/inverse affects variable-binding, Bliss (2009a) notes that direct/inverse it does not affect quantifier scope.

### 5.3 A Note on Quantifiers in Blackfoot

I have treated the universal quantifier *ohkan*- as a standard generalised quantifier<sup>17</sup>, and following Glougie (2000), I analysed *ohkan*-as merging directly with the clausal spine, above AspectP, providing evidence for such an analysis from morphological restrictions and quantifier scope. While I have adopted this approach for *ohkan*-, whether this treatment can be extended to other quantificational elements in Blackfoot is a question for further research. Can they all be analysed as generalised quantifiers? Do they all merge in a position above AspectP? To my knowledge, the only other quantificational element in Blackfoot that attaches directly to the verbal complex is *wayak*- “both.” Glougie (2000) notes that other quantifier-like elements (like the numerals, but also *onats*- “few,” and *aka*- “many”) instead attach to light verbs meaning “be” - eg., *a'pii* “be in a specified way”, *itstsii* “be/exist”, *waami* “be (the one that is identified)” (Frantz & Russell 1989). Blackfoot also appears to lack lexicalised existential quantifier; in order to convey a meaning approximating English “someone” or “something”, the existential verb *itstsii* is used instead. The question of how all of these interact within Blackfoot's quantificational system, however, is a question which requires much further research.

### 5.4 Conclusion: A bid for QR, non-Minimalist though it may be

Hornstein (1995) attempts to do away with QR, citing it as a non-Minimalist operation. He thus proposes an account of quantifier scope whereby scope ambiguities like those seen in the repeated (69) do not rely on QR, but are a by-product of (covert) Case-driven A-movement to SpecAgr positions.

(69) *Three women love every candidate*  $\forall > 3; 3 > \forall$

An utterance like (69) is associated with four possible structures (represented in (70)), each differing according to which copy of each quantified phrase is interpreted at LF. Hornstein rules out representations as in (70) c) and d), on the assumption that definite NPs like [Every candidate] must be interpreted outside of the VP (cf. Diesing 1992). This leaves (70) a) and b), which correspond to  $3 > \forall$  and  $\forall > 3$  scope interpretations respectively.

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<sup>17</sup> I have, however, abstracted away from the issue of how the restriction combines with *ohkan*- in order to get a GQ of the right type. I leave this for further speculation.

(70)

- a. [ AgrS [three women] [AgrO [Every candidate] [VP [~~three women~~] love [Every candidate]]]]
- b. [ AgrS [~~three women~~] [AgrO [Every candidate] [VP [three women] love [Every candidate]]]]
- c. [ AgrS [three women] [AgrO [~~Every candidate-e~~] [VP [~~three women~~] love [Every candidate]]]]
- d. [ AgrS [~~three women~~] [AgrO [Every candidate] [VP [three women] love [Every candidate]]]]

Note, however, that in Hornstein's account, quantifier scope and variable binding are both evaluated with respect to the A-positions that nominals hold at LF. This is a welcome restriction on Hornstein's analysis, as he shows that in English, quantifier scope and variable-binding converge with respect to the structural relations they indicate. For example, consider the contrast between (71) a) and b). In (71), there is scopal ambiguity – it can either be the case that there was some x such that x played every piece of music you knew, or it could be the case that for each x, where x is a piece of music you knew, x was played by someone. This scopal ambiguity is not available, however, with the variable-bound case in b). Variable-binding requires that 'Someone' c-command 'every piece of music he knew' at LF, and correlatingly, 'someone' appears as if it must take scope over 'every piece of music he knew.'

- (71) a. Someone played every piece of music you knew  
b. Someone<sub>i</sub> played every piece of music he<sub>i</sub> knew (Hornstein 1995: 158)

Notice, however, that while Hornstein's analysis for quantifier scope may hold for English, the non-convergent data between quantifier scope and variable-binding addressed in this paper indicate that Hornstein's QR-less analysis cannot be trivially adopted for Blackfoot. While much further research is required, at this point I suggest that the data from Blackfoot may stand as an argument against the elimination of QR, non-minimalist though it may be.

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