

Body part noun incorporation in Blackfoot: Allomorphy analysis*

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This paper investigates body part Noun Incorporation (NI) in Blackfoot to examine the motivation for using Blackfoot medials instead of the corresponding nouns in NI. I will claim that medials are used with intransitive verb stems while independent nouns with transitive verb stems in Blackfoot body part NI. This claim explicates theta roles of an intransitive verb (e.g., an intransitive verb *ssiikaawaatsi* means ‘wash one’s own feet’ which needs ‘washer’ and ‘washee’). The discrepancy in intransitive verbs will be explained with using a medial *ika* ‘foot’, a reduced form of the corresponding noun *mohkát* ‘foot’ under an allomorphy analysis. To support this claim, I will compare three previous accounts for NI in general based on the Rosen’s (1989) NI classification; my claim is grounded on the hypothesis that transitivity is the defining factor of Blackfoot verbs (Armoskaite 2011; Frantz 2009).

1 Introduction

Here are two similar sentences that have two distinct forms meaning ‘foot’ in Blackfoot¹.

* I owe many thanks for the patience and teaching of language consultant Chief Sandra Crazy Bull of the Kainaa (Blood) Tribe. All errors are, of course, my own.

¹Unless otherwise specified, all examples are from my own fieldwork. If I use other sources of data from existing papers, I follow their original glosses unless otherwise noted. Abbreviations are as follows: 1, 2, 3, 4 = 1st, 2nd, 3rd, 4th person; 3N = third person neuter; 3O: third person object; 3sS = third person subject agreement; ADJ = adjectival suffixes; AI = Animate Intransitive; AN(imate); COLL(ective); DEM(onstrative); DET(eterminer); DIR = direct theme suffix; DIST(ributive); DUR(ative); FIN(al); II = Inanimate Intransitive; IMP(erative); IMPF = imperfective; IN(animate); IND = indicative mood; INT(ransitive); INTS = intensifier; INV(erse); M= masculine; NEG(ative); NOMZ = nominalizer; OBV(iative); PL(ural); POSS(essive); PRO(noun); PROG(ressive); PROX(imate); S = subject; SG = singular; TA = Transitive Animate; TI = Transitive Inanimate; TRANS(itive).

- (1) a. *anná* *Conrad* *ássiikawatsii*
ann-wa Conrad á-ssi-ika-atsi
DEM-PROX.SG Conrad DUR-wipe-foot-FIN
‘Conrad is washing his feet.’
- b. *anná* *Conrad* *ássiiststóm* *ómi*
ann-wa Conrad a-ssi-iststo-m om-yi
DEM-PROX.SG Conrad DUR-wipe-FIN-DIR DEM-IN.SG
mohkátsi
mohkát-yi
foot-IN.SG
‘Conrad is washing that foot.’ (Dunham 2009: 5)

In (1a), *ika* (‘foot’) is an incorporated noun which combines with a verb root² *ssi* (‘wipe’) to form a complex verb; (1b) is semantically similar to (1a); however, an independent noun *mohkát* (‘foot’) is used (Dunham 2009). The sentence in (1a) shows a linguistic phenomenon called Noun Incorporation (NI), which creates complex predicates by incorporating ‘noun like’ elements into verbs. Now, is the sentence in (1b) derived from the sentence in (1a) in syntax or is the complex verb composed in a compounding process? This is the question that linguists have explored for over a century (Rosen 1989; Sapir 1911). There have been two approaches to answering this question: a syntactic approach involving movement, and a lexical approach. By examining previous accounts for Aboriginal languages including Blackfoot, I can shed light on the characteristics of the Blackfoot NI process. In this paper, I will claim that body part medials (e.g., *ika* in (1a)) are allomorphs of the corresponding independent nouns (e.g., *mohkát* in (1b)); this means that their meanings are the same, while their phonological forms are different from each other depending on linguistic environment.

Interestingly, this phenomenon reveals a fundamental question about the morpho-syntax interface; why the medial (e.g., *ika* in (1a)) is used instead of the corresponding independent noun has not been well discussed (e.g., *mohkát* in (1b)) in existing literature. I endeavor to answer this question (i.e., what conditions the use of medials versus independent nouns in NI constructions?) by comparing previous accounts for NI: Baker (1988, 2009) claims that Mohwak NI involves head-to-head movement; while Dunham (2009) argues that there is no movement in Blackfoot and both medials and corresponding nouns are the same underlyingly; following Rosen’s classification (1989), Wiltschko (2009) analyzes Halkomelem Salish NI as (syntactic) category-less root-root

² Here, I follow the traditional definition of root; “a root is a morpheme which forms the core of a word. It is the unit to which other morphemes may be added... All roots belong to one of the LEXICAL CATEGORIES, i.e. they belong to the word classes of noun, adjective, verb or adverb” (Katamba 2005: 50).

compounding³. Since Blackfoot NI was not used productively during my fieldwork, I concentrate on body part NI that clearly shows the combination of medials and corresponding independent nouns. For body part NI in Blackfoot, I will partly follow Dunham's (2009) analysis; additionally, I will fill the gap, namely, the conditions of using medials or the corresponding nouns in NI.

1.1 Identifying the problem in body part NI

- (2) a. *nitssiyaki'p* *nohtóóki*
 nit-ssiyaki-hp n-mohtóóki
 1SG-cleanse-THEME 1POSS-ear
 'I wash my ear.' [SCB-JEL 008f]
- b. *nitaissiikawatsima*
 nit-a-ssi-ika-attsi-imma
 1SG-DUR-wash-foot-cause-FIN(AI)
 'I'm washing his feet.' [SCB-JEL 010j]

Here, the sentences (2a) and (2b)⁴ raise three interesting points; first of all, the verb *ssiyaki* ('cleanse') in (2a) is a transitive verb while (2b) *ssiikaawaatsi*⁵ ('wash one's own feet') is an intransitive verb. However, the meaning of *ssiikaawaatsi* in (2b) shows that it needs the direct object 'one's own feet'. Secondly, the final *imma* in (2b) is an intransitive concrete final (Frantz 2009; Armoskaite 2011). Such finals change the transitivity of the verb stems. Thirdly, in (2b), there is a seemingly reduced body part form, which is called 'medial', *ika* ('foot') instead of a corresponding independent noun *mohkat* ('foot'); in (2a), the independent body part noun *nohtóóki* ('ear') is used while there is a corresponding medial (*sstooki* 'ear') in Blackfoot.

³ Here, the term 'root' means that it has only sound-meaning information and lacks categorial information such as noun (N) and verb (V), which is added later in syntax (Dunham 2009; Wiltschko 2009).

⁴ My consultant's older brother provided this sentence during the elicitation session with my consultant. My consultant used an independent noun '*ohkatsistsi* ('his feet')' instead of the corresponding medial *ika* to describe the activity.

⁵ I try to split *ssiikaawaatsi* into morphemes. Originally, it is listed as one word in the Blackfoot dictionary (Frantz and Russell 1995).

- | | | |
|-----|---|---|
| (3) | <i>nitaissii'p</i>
nit-a-ssi-i-hp
1SG-DUR-wash-FIN(TI)-THEME
'I'm washing his hand.' | <i>o'tsís</i>
ot-mo'tsís
3POSS ⁶ -hand
[SCB-JEL 006I] |
|-----|---|---|

Along with these three interesting points, here is another puzzle found. The difference between (2b) and (3) is related to the object that 'I am currently washing'; both *ika* and *mo'tsís* are inanimate nouns. Even though the objects of the sentences are different from each other, the meanings of the two sentences in (2b) and (3) are very similar. How can this be accounted for? Moreover, an independent body part noun can be incorporated as in (4)

- | | | | | |
|-----|---|---------------------------------|---------------------------------------|---------------------------------|
| (4) | <i>nitssiko'kakinaw</i>
nit-siik-o-mo'kakin-aa-wa
1SG-break-3POSS-back-FIN-3SG
'I broke the man's back.' | <i>oma</i>
om-a
DEM-SG.AN | <i>ninaawa</i>
ninaa-wa
man-3SG | (Frantz 1971:72, gloss is mine) |
|-----|---|---------------------------------|---------------------------------------|---------------------------------|

The sentence in (4) shows that the independent noun can be incorporated into a verb *siik* ('break'), which is a transitive verb. It should be noted that my consultant rarely uses medials and prefers independent nouns when she describes activities including a body part; if there is a lexicalized verb such as *ssiikaawaatsi* 'wash one's own feet' (which is independently documented in the Blackfoot dictionary), then she uses it. Otherwise, I ask her about other translated NI forms, which include independent nouns by consulting with existing papers.

I raise two puzzles in this section. First, what motivates the use of incorporated medials as opposed to their corresponding independent nouns? Second, is the transitivity of the verb or the animacy of the noun a factor? As I proceed, I will give a preview of the results so that I can reveal part of the Blackfoot NI process and the morphology-syntax interface in Blackfoot. The structure of the paper is as follows. In section 2, I illustrate a verb template, the patterns of body part nouns in Blackfoot and the fieldwork methodology. In section 3, I introduce Rosen's (1989) two types of NI to understand previous accounts: Classifier NI and Compound NI. Following this analysis, I investigate three different accounts of NI namely those of Baker (2009), Dunham (2009) and Wiltschko (2009). In section 4, I provide my own analysis to explain why body part medials are selected instead of the corresponding full nouns; I claim that it is based on the transitivity of verbs and concrete finals. By adopting Armoskaite's (2011) analysis of finals in Blackfoot, I argue that Blackfoot verbs inherently have their own syntactic categories. Consequently, this reveals that

⁶ Frantz (2009) noted that initial *m* of body part nouns "will be present only if no prefix precedes these stems" (Frantz 2009: 73). Following patterns in *itán* 'daughter' as in (i), I posit that there is a 3rd person prefix in this word.

(i) a. <i>nitána</i> 'my daughter'	b. <i>kitána</i> 'your daughter'	c. <i>otáni</i> 'his ₃ daughter'
d. <i>otánayi</i> 'his ₄ daughter'	(Frantz 2009: 75)	

body part medials are allomorphs of corresponding nouns. In section 5, I discuss two residual issues, which need further research: word order and inverse forms. Finally, section 6 concludes.

2 Background

In this section, I introduce a Blackfoot verb stem template, four types of verb stems, body part nouns and medials, and fieldwork methodologies. Specifically, I will discuss intrinsic properties of verb roots as background for my analysis of Blackfoot body part NI.

2.1 Blackfoot verb stem template

The order of morpheme in Blackfoot is as follows (Mühlbauer 2005):

- (5) [Prefixes person pre-verb] [Stem root (medial) final] [Suffixes theme mode person num]

Traditionally, a Blackfoot verb stem template is [verb root + (medial) + final]; medials are optional while verb roots and finals are obligatory (Armoskaite 2011). Here are the definitions of root, medial and final from the Blackfoot dictionary (Frantz & Russell 1995):

- Verb root (*vrt*): roots which require a final to make up a verb stem.
- Medial (*med*): noun roots, such as *-sksi* ‘face’, which must be incorporated into a verb or noun as a suffix.
- Final (*fin*): suffixes, such as *-attsi* ‘cause’, which must attach to other verb roots or stems, and which determine the category of the resultant stems.

The definition of final (Frantz & Russell 1995) indicates that final is a determining factor for the category of verb stems which is transitivity. Armoskaite (2011) provides two types of finals: agreeing finals and derivational finals (abstract and concrete finals⁷ in Frantz (2009), respectively); derivational finals change verb roots’ transitivity while agreeing finals simply agree with verb roots’ transitivity. Armoskaite (2011) lays out patterns of transitivity in terms of roots and final relations, and I adopt her analysis. Since this analysis is closely related to the notion of ‘root’ in terms of category, I will detail relevant analyses in sections 3.3 and 4.2.1.

⁷ Abstract finals minimally affect the meaning of verb stem while concrete finals significantly affect it; abstract finals are not productive, which means that it is hard to predict when they attach to verb stems (Frantz 2009). However, I follow Armoskaite’s (2011) analysis for finals in this paper.

2.2 Transitivity of verbs

Blackfoot verb roots cannot occur on their own as in (6b).

- (6) a. *nitssínaaki*
 nit-sina-aki
 1SG-write / draw-INT
 ‘I drew/wrote.’
- b. **sina*
 write/draw
 ‘I drew/wrote.’
 (Frantz & Russell 1995: 164)

The final *aki* (a pseudo intransitivizer, Frantz 1971) indicates that the verb is morphologically intransitive while syntactically pseudo-intransitive (Armoskaite 2011). The term pseudo-intransitive refers to a verb that can take a direct object optionally (Frantz 1971). The differences between transitive and pseudo-intransitive are that 1) a pseudo-intransitive may not take a DP, as in (7b), while a transitive requires a DP when an object is overt, and 2) finals are different from each other (a pseudo-intransitive verb takes an intransitive final while a transitive verb takes a transitive final).

- (7) Pseudo-intransitive
- a. *nitss íaaki* (*sináákia ’tsis*)⁸
 nit-sina-aki (sina-aki-a’tsis)
 1SG-write/draw-INT (write/draw-INT-NOMZ)
 ‘I drew/wrote (a book).’
- b. **nitss íaaki* *omi sináákia ’tsis*
 nit-sina-aki omi sina-aki-a’tsis
 1SG-write/draw- INT DET write/draw-INT -NOMZ
 Intended: ‘I drew/wrote the book.’ (Armoskaite 2011: 20)
- (8) True intransitive
- a. *nitaopasoo* b. **nitaopasooatawa*
 ‘I’m yawning.’ ‘I’m yawning at him.’
 (Frantz 1971: 46)

As (8b) shows, a true intransitive verb cannot take an object, unlike pseudo-intransitive verbs.

Traditionally, it is claimed that Blackfoot has four types of verb stems, as follows (Frantz & Russell 1995; Frantz 2009).

- (9) Four types of verb stems in Blackfoot
- Transitive Animate (TA): Transitive verb which takes animate gender objects

⁸ Parentheses mean that the direct object is optional.

- Transitive Inanimate (TI): Transitive verb which takes inanimate gender objects
- Animate Intransitive (AI): Intransitive verb which takes animate gender subject
- Inanimate Intransitive (II): Intransitive verb which takes inanimate gender subject

However, I adopt Armoskaite's (2011) classification system (with minor changes), which reveals that verb roots have their own syntactic categories, and finals can agree with verb roots (i.e. agreeing finals) or change the verb root's transitivity (i.e. derivational finals). Therefore, an inherently transitive verb root cannot take a deriving transitive final since the verb root is already 'transitive'.

- (10) The classification of verbal roots in Blackfoot (Armoskaite 2011: 27)
- (Preverb) [verb root_{TRANS} (Medial) Final]
- (Preverb) [verb root_{INTRANS} (Medial) Final]
- (Preverb) [verb root_{PSEUDO-INTRANS} (Medial) Final]

I follow Frantz's (1971) original classification so that I change the final classification of Armoskaite (2011) from PSEUDO-TRANS to PSEUDO-INTRANS. According to her, a verb root *ihkiit* 'bake' is an intrinsically pseudo transitive verb since it takes the agreeing intransitive suffix 'aa'. However, since it takes deriving transitive suffixes as in (12) but not agreeing transitive suffixes, I assume that the verb root *ihkiit* 'bake' is an intransitive root and it can take objects since it is a *semantically* transitive verb. Therefore, I will call it a pseudo-intransitive verb.

- (11) Agreeing final with *ihkiit* 'bake'
- ihkiitaa*
- ihkiit_{INT-aa}
- bake_{INT-INT}
- 'bake' (Armoskaite 2011: 43)

- (12) Deriving finals with *ihkiit* 'bake'
- a. *ihkiitattoo* b. *ihkiitat*
- ihkiit_{INT-attoo} ihkiit_{INT-at}
- bake_{INT-TI} bake_{INT-TA}
- 'bake' (Armoskaite 2011: 43)

I will adopt the definition of 'root' of Armoskaite (2011), which claims that the property what makes verb roots 'verbs' (as a syntactic category) is the transitivity of verbs. This definition of verb root, having the inherent category, will be useful in section 4.

2.3 Body part

Since I will investigate why a certain morpheme is used as an incorporated element, I here present words that I have used in my fieldwork.

(13) Blackfoot body part medials and corresponding independent nouns

Body part	Animacy	Medial	Independent nouns
Eye	Animate	aapini	moápssp
Finger/toe	Animate	N/A	mookítsis
Nose	Inanimate	hksis	mohksís
Ear	Inanimate	sstooki	mohtóókis
Head/hair	Inanimate	ihkin	mo'tokáán
Face	Inanimate	sski	mosstoksís
Foot/leg ⁹	Inanimate	ika	mohkát
Hand	Inanimate	ikinsst	mo'tsís
Back	Inanimate	N/A	mo'kakín
Eyelids	Inanimate	N/A	ootokiáápinihpis
Elbow	Inanimate	N/A	mohkínsstsis

By investigating those words, I explore why medials cannot stand alone, while independent nouns can. In my fieldwork, I tried to examine that whether animacy of nouns plays a role in NI or not; it seems that there is no effect of animacy. Then, what would be a reason to use medials? Another possibility is phonological weight; medials could be used instead of corresponding nouns since they are shorter and easy to incorporate into a verb to form a complex verb due to their lightness. Except for the word *mo'tsís* ('hand') and *moápssp* ('eye'), it seems that medials tend to be shorter forms of the corresponding nouns. However, the initial question of when medials or independent nouns are used remains unanswered. The question of when medials can be used in Blackfoot

⁹ Body part which is related to lower body, my language consultant uses *mohkát* for thigh, lap and foot even though there are specific words indicating the particular body parts. It is applicable to *moápssp* 'eye'. She uses *moápssp* for eyelash and eyebrow as well.

instead of independent nouns or vice versa will be discussed in section 3 and section 4 as well.

2.4 Fieldwork methodology

Before I introduce previous accounts of NI, here I briefly illustrate methodologies that I have used in my fieldwork.

2.4.1 Textual data

I use existing papers and published books on Blackfoot to understand Blackfoot NI. Frantz & Russell's (1995) dictionary and Frantz's (2009) Blackfoot grammar book are primary resources in this paper.

2.4.2 Elicitation

I usually use two methodologies in my fieldwork: translation tasks, and judgement tasks including a bit of utterance-in-context tasks in the sense of Mühlbauer's (2008) classification. Lack of Blackfoot knowledge causes me to use mainly two methodologies. 'How would you translate this sentence?' and 'What does it mean?' are questions generally used in translation tasks. This method might bias my language consultant since I use English sentences, which are different from Blackfoot's word order and syntactic structures. For judgement tasks, I generally ask her grammaticality judgements on sentences I create or borrow from other sources. Finally, I provide some specific contexts to investigate whether there is any discourse effect in the use of body part NI.

2.4.3 Technology

The sessions were recorded as part of lab sessions with the language consultant, Chief Sandra Crazy Bull. They resulted in twelve recordings. The sessions were recorded on a Zoom H4n digital stereo recorder in a small classroom. The windsock was on the microphones.

3 Previous analyses

As Rosen's (1989) classification shows, NI in languages is not a uniform phenomenon. I will present three other accounts of NI and assess the extent to which these analyses can explain the Blackfoot body part NI data: Baker's (1988; 2009) head-to-head movement in Mohawk and Mapudungun, Wiltschko's (2009) root-root compounding in Halkomelem Salish, and Dunham's (2009) verb-noun incorporation, which does not posit syntactic movement or category-less roots in Blackfoot. Since all of them mention Rosen's (1989) classification of NI, I illustrate two types of NI in that classification first.

3.1 Rosen's classification

According to Rosen (1989), there are two types of NI in the world's languages: Classifier NI and Compound NI. Rosen puts forward three criteria to help in the classification of NI: modifier stranding, doubling and transitivity of verbs. Here are instances of the three criteria. If modifier stranding and doubling are permissible, and NI does not affect verbs' transitivity, then a language is classified as a Classifier NI language. Classifier languages "all freely allow pro-drop in all positions" (Rosen 1989: 298).

- (14) Modifier stranding (Mohawk)
kanekwarúnyu wa'-k-akya'tawi'tsher-ú:ni
 it.dotted.DIST PAST-I-dress-make
 'I made a polka-dotted dress.' (Mithun 1984: 870)

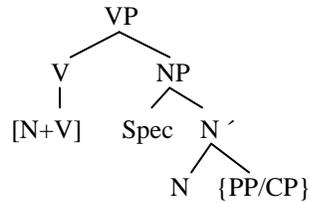
- (15) Modifier stranding (Halkomelem Salish)
- a. *th'exw-xál-t-es te Strang te hikw*
 wash-foot-TRANS-3s DET Strang DET big
 'Strang washed his big foot/feet.'
- b. *th'éxw-wi'l-t-es te isale*
 wash-dish-TRANS-3s DET two
 'He washed two dishes.' (Wiltschko 2009: 213)

In Classifier NI, incorporated elements can be associated with determiners, modifiers, and possessors, but no head noun. This is called 'stranding' (Rosen 1989). In the sentence in (14), the adjective *kanekwarúnyu* 'dotted' is stranded. This stranding is also found in Halkomelem Salish as well. This stranded modifier modifies the null head of the direct object; stranding of determiners and modifiers are not allowed in Compound NI as in (16).

- (16) Compound NI: Kusaiean
- a. *el twem-lah mitmit sahfiht sac*
 He sharpen-PAST knife dull the
 'He has sharpened the dull knife.'
- b. **nga twetwe mitmit sahfiht sac*
 I sharpen knife dull the
 'I knife-sharpen the dull ø.' (Lee 1975: 271)

Here is the schematized concept of doubling (Rosen 1989: 298):

(17) Doubling



Simply put, doubling means that a full DP can co-occur with an incorporated noun. This concept is closely related to transitivity of verbs. “In other words, incorporated elements can be doubled by a full DP” (Wiltschko 2009: 210). In (18), “*rabahbot* ‘bullhead’ is a type of *tsy* ‘fish’ in Mohawk and the independent NP is more specific than the incorporated noun” (Rosen 1989: 303); Mohawk allows doubling as well.

(18) Doubling: Mohawk

Tohka niyohserá:ke tsi nahe' sha'te.:ku níku:ti
 several so.it.year.numbers so it.goes eight of.them
rabahbót wahu-tsy-ahní:nu ki rake'níha
 bullhead 3M.3N-fish-bought this my.father
 ‘Several years ago, my father bought eight bullheads.’

(Mithun 1984: 870)

The final criterion of the type of NI is related to verbs’ argument structures. Lexical suffixes, which are similar to Blackfoot medials, do not affect the transitivity of verbs in Halkomelem Salish (e.g. they are compatible with both INT (19a) and TRANS (19b) suffixes).

(19) Transitivity: Halkomelem Salish

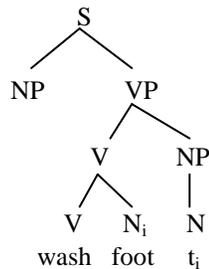
- a. *th'exw-xál-em te Strang*
 wash-foot-INT DET Strang
 ‘Strang washed his feet.’
- b. *th'exw-xál-t-es te Strang te Konrad*
 wash-foot-TRANS-3s DET Strang DET Konrad
 ‘Strang washed Konrad’s feet.’ (Wiltschko 2009: 213)

Mohawk is a Classifier NI language and it is clear that Halkomelem Salish is also a Classifier NI language. According to Dunham (2009), Blackfoot is a language that has characteristics of both Classifier NI and Compound NI. Regardless of this classification, Blackfoot shows different phenomena from both Mohawk and Halkomelem Salish; this implies that analyses of Mohawk and Halkomelem Salish might not fit into Blackfoot NI. Let’s see how the analyses work.

3.2 Baker's analysis: head-to-head movement

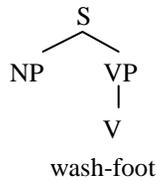
Contrary to Mithun (1984) and Rosen (1989), Baker (1988; 2009) proposes a syntactic approach, head-to-head movement in Mohawk and Mapudungun NI, in the Minimalist Program (Chomsky 1995) which tries to eliminate head movement in syntax. I schematize Baker's approach in (20). (I simply apply this analysis to the Blackfoot sentence in (2b).)

(20) Syntactic head-to-head movement (Baker 2009)



According to Baker (2009), the lexical approach, which posits that a noun root and verb root combine to form a complex predicate in the lexicon, is schematized for the sentence in (2b) as follows:

(21) Lexical approach (Baker 2009)



His favoring of the head movement analysis is based on three phenomena in Mohawk and Mapudungun. His first argument is that modifiers cannot appear with incorporated noun roots in both languages while PP-like phrases and infinitival relatives can modify incorporated nouns in Niuean contrary to Mohawk and Mapudungun. For example, in Mohawk, 'I bed-like new' (Baker 1996: 308, cited in Baker 2009) is acceptable while '*I new-bed-like' is not. The same phenomenon can be observed in Mapudungun, as shown in (22). Therefore, he argues that NI in both languages does not support a phrase movement analysis.

(22) a. *Pedro ngilla-fi-y kúme pulku*
 Pedro buy-3O-IND.3sS good wine
 'Pedro bought good wine.'

- b. *Pedro ngilla-(*küime)-pulku-pe-y*
 Pedro buy-good-wine-PAST-IND.3sS
 ‘Pedro bought (*good) wine.’ (Baker 2009: 153)

In Blackfoot, it seems that incorporated nouns can be modified by adjuncts (*sáp*).

- (23) *Na Jack nit'sáapino 'ok*
 anna Jack nit-sáp-aapin-o't-o-ok
 DEM.SG Jack 1SG-in-eye-grasp(vrt)-TA-INV
 ‘Jack poked me in the eye.’ [SCB-JEL 006e]

Secondly, Baker (2009) argues that the UTAH and Head Movement Constraint explain why only theme and direct objects are incorporated in the two languages since only the theme position (theme/direct object) is allowed to adjoin to the immediately higher X^0 . However, if the sentence in (23) is an instance of NI, then, lexical items other than the heads of themes and direct objects can be incorporated in Blackfoot, similar to Halkomelem Salish (Wiltschko 2009).

Finally, possessor raising (or “elevation”, in Frantz 1971) can be easily captured in a head movement analysis according to Baker (2009). A form like ‘I car-bought John’ (meaning ‘I bought John’s car’) is analyzed as ‘[I car-bought [John <car>]]’. Since it strands other NP-internal elements, head movement successfully captures this fact. In fact, Blackfoot possesses a similar possessor raising construction, as exemplified in (4). However, this analysis is related to the ‘Left Branch Condition’¹⁰ violation (Ross 1986); therefore, further research is needed in Blackfoot to see whether Blackfoot allows the Left Branch Condition violation as Latin and Russian do (Hornstein et al. 2005). Regardless of the question of whether Blackfoot allows possessee extraction out of DP islands (or simply DPs), in a head movement analysis, it is hard to capture why only sometimes direct objects are incorporated as in (2b), repeated here as (24). Sentence (25) has the same meaning as (24), while the sentence structure is different.

- (24) *nitaissiikawatsima*
 nit-a-ssi-ika-attsi-imma
 1SG-DUR-wash(vrt)-foot-cause-FIN(AI)
 ‘I’m washing his feet.’ [SCB-JEL 010j]

¹⁰ The Left Branch Condition, LBC (Ross 1986):

No NP which is the leftmost constituent of a larger NP can be reordered out of this NP by a transformational rule.

- (25) *ohkatsists nitaissii'p*
 ot-mohkat-sistsi nit-a-sii-i-hp
 3POSS-foot-PL 1SG-DUR-wash(vrt)-FIN(TI)-THEME
 'I'm washing his feet.' [SCB-JEL 010k]

In Baker's analysis, suffixes (or endings) of verb stems are the same in incorporated sentences and their counterpart non-incorporated sentences as in the Mapudungun sentences in (26), contrary to Blackfoot. Since all forms and morphemes are the same except for the presence of an incorporated element, which is the same word *waka* 'cow', as in (26b), it is plausible to posit that (26b) is derived from (26a) in Mapudungun.

- (26) a. *Ñi chao kintu-le-y ta-chi pu waka*
 my father seek-PROG-IND.3sS the-ADJ COLL cow
 'My father is looking for the cows.'
- b. *Ñi chao kintu-waka-le-y*
 my father seek-cow-PROG-IND.3sS
 'My father is looking for the cows.' (Salas 1992: 195)

On the other hand, Blackfoot medials, like *ika*, cannot stand alone, as shown in (27). In other words, ungrammaticality of (27a) comes from *ika* extraction from the main verb *ssikaawaatsi*. Therefore, Baker's analysis cannot capture the full range of Blackfoot body part NI phenomena.

- (27) a. *?*nitaissiwatsimaika*¹¹
 nit-a-ssi-atsi-imma-ika
 1SG-DUR-wipe-cause-FIN-foot
 'I'm washing his feet.' [SCB JEL-004a]
- b. **nítóhkoonii'pa omi ika*
 nit-ohkoon-i-hp-wa om-yi ika
 1SG-find-TI-DIR-3SG DEM-IN.SG foot
 'I found that foot.' (Dunham 2009: 3)

Now, how about the root-root compounding account?

¹¹I produce the sentence, which is adopted from Dunham's (2009) paper as an ungrammatical sentence. My language consultant says that I cannot extract *ika* 'foot' since it is part of the sentence; however, she does not know that *ika* means foot.

3.3 Wiltschko's analysis of Halkomelem Salish

In Wiltschko's (2009) analysis, NI in Halkomelem Salish is considered as 'root-root compounding'. The main claim of her root analysis is that incorporated lexical suffixes are not distributed like nouns: they have no possessive or plural morphology, determiners nor do they co-occur with lexical suffixes of Halkomelem Salish. For Wiltschko, this means that lexical suffixes lack the grammatical category N, due to their different distribution. Moreover, lexical suffixes do not saturate arguments. That is, they do not affect a verb's transitivity; an object NP co-occurs with incorporated elements to satisfy a verb's argument structure. Therefore, she claims that lexical suffixes as incorporated do not have categorial information. Here is the corresponding Blackfoot data (Dunham 2009) from (28) to (30).

(28) No possessive morphology

- a. *anna* *Sam* *ássiikaawaatsimii*
 ann-wa Sam á-ssi-ika-atsi-m-yi
 DEM-PROX.SG Sam DUR-wash-foot-FIN-TA-DIR

anní *Jane*
 ann-yi Jane
 DEM-OBV.SG Jane

'Sam washed Jane's feet.'

- b. **anna* *Sam* *ássiotikaawaatsimii*
 ann-wa Sam á-ssi-ot-ika-atsi-m-yi
 DEM-PROX.SG Sam DUR-wash-3-foot-FIN-TA-DIR

anní *Jane*
 ann-yi Jane
 DEM-OBV.SG Jane

'Same washed Jane's feet.'

(Dunham 2009: 8)

(29) No plural

**ássiikaistsawaatsimii*
 á -ssi-ika-**istsi**-atsi-m-yii
 IMPF-wipe-foot-**IN.PL**-FIN-TA-DIR

'She is washing his feet.' (Dunham 2009: 9)

(30) No demonstrative

**ássomiikaawaatsimii*
 á -ssi-**om-yi**-ika-atsi-m-yii
 IMPF-wipe-**DEM-IN/OBV.SG**-foot-FIN-TA-DIR

'She is washing his foot.'

(Dunham 2009: 10)

The other thing Dunham might miss is that incorporated sentences are hard to elicit. As I indicated earlier, my language consultant is reluctant to use NI unless complex verbs are already in the dictionary. Here are examples of lexicalized complex verbs.

- (33) AI complex verbs (Frantz & Russell 1995)
- Wash one's own hair: *ssiikkináwaatsi*
 - Wash one's own foot: *ssiikaawaatsi*
 - Wash one's own face: *sisssiitsi*
 - Comb one's own hair: *yáakihkiniyi*

If 'm' in a verb *ássiikaawaatsimii* ('wash one's own foot') is a transitive animate suffix as Dunham glosses in (28a), then, it does not agree with the verb's transitivity, as it is an AI verb, which generally cannot co-occur with an object. Interestingly, all complex verbs, which incorporate body part medials, are AI verbs. However, Dunham (2009) claims that medials cannot saturate an argument, which means that it does not affect a verb's transitivity. If that is the case, the difference between (24) and (25) is hard to explain, where the medial is used with AI while the noun is used with TI; I repeat them here for convenience.

- (24) *nitaissiikawatsima*
 nit-a-ssi-ika-atts-i-imma¹⁴
 1SG-DUR-wash(vrt)-foot-cause-FIN(AI)
 'I'm washing his feet.' [SCB-JEL 010j]

- (25) *ohkatsists nitaissii'p*
 ot-mohkat-sistsi nit-a-sii-i-hp
 3POSS-foot-PL 1SG-DUR-wash(vrt)-FIN(TI)-THEME
 'I'm washing his feet.' [SCB-JEL 010k]

3.5 Summary of previous accounts

Firstly, Baker's (1988, 2009) head-to-head movement successfully captures NI in Mohawk and Mapudungun. However, if a NI sentence is derived from a non-NI sentence in Blackfoot, it is hard to capture why morphemes in a verb stem have a different form. Secondly, Wiltschko's (2009) root-root compounding is a very attractive analysis for Blackfoot NI as well; however, since the Blackfoot verb root has its own category in the first place it cannot be bare root-root compounding in Blackfoot. Even though Dunham (2009) argues that medials and corresponding nouns are the same lexical item (which I also

¹⁴ *Imma* is a deriving suffix according to Armoskaite (2011). Based on her classification of finals, I claim that the verb root 'wash' is a semantically transitive verb and the final *imma* changes the morphological transitivity of the verb *ssiikaawaatsi* 'wash one's own foot' to the intransitive verb following Frantz & Russell (1995).

argue), some data from Frantz suggests both forms can incorporate, thus weakening Dunham’s distribution-based argument.

4 My proposal

I claim that medials are allomorphs of corresponding independent nouns and their distribution is different from each other due to verb roots’ transitivity. First, I will provide my arguments for the conditions of medials in section 4.1. Then the category of medials will be discussed in section 4.2.

4.1 Motivations for medials

In this section, I will investigate what properties of NI condition the incorporation of medials (versus nouns).

4.1.1 Animacy of medials

The easiest way to explain the motivation for NI is to find a reason for its trigger. Not all body part medials are animate, since Blackfoot animacy is a grammatical notion. A typical animate medial/noun is *appini/moápssp* ‘eye’.

(34) *Nitsaaptsaaki* *nimáátsstaa’ptahksinis*
 nit-yaaptsaaki nit-máát-sstaa-hp-ááhk-ini
 1SG-close eyes(AI) 1SG-NEG-want-THEME-might-see
 ‘I closed my eyes because I didn’t want to see that.’ [SCB-JEL 007h]

(35) *kaksi’náksinim* *noápssp*
 káák-i’nák-iksin-m n-moápssp
 merely-small-touch(TA)-TA 1POSS-eye
 ‘He lightly touched my eye.’ [SCB-JEL 006a]

As the sentences in (34) and (35) show, the medial ‘eye’ occurs with the AI verb while the corresponding noun is with the TA verb, resulting in the non-NI sentence. If only animate medials can be incorporated, inanimate medials should not be used in NI, which is not the case in Blackfoot. As the sentences in (31) and (36), and expressions in (33) show, inanimate nouns can be incorporated into complex verbs.¹⁵ Therefore, animacy of nouns does not affect the use of medials or nouns in body part NI.

(36) a. *niistó nitsikomahkskin* *kiistoó kitopohkskin*
 I nit-iik-omahk-ihkin you kit-opohk-ihkin
 PRO 1SG-INTS-big-head PRO 2SG-small-head
 ‘My head is big and your head is small.’ [SCB-JEL 006k]

¹⁵ For animacy of nouns, refer to the table (13).

- b. *nitássótsi'p* *kó'tsis*
 nit-a-ssó'tsi-hp k-mo'tsis
 1SG-DUR-feel-THEME 2POSS-hand
 'I'm feeling your hand.' [SCB-JEL 004d]

4.1.2 Transitivity of verbs

Another possible motivation for NI is a characteristic of verb roots. I have shown that verb roots' transitivity might play a role in body part NI. Let's take a close look here. The initial puzzles are that 1) there are two different sentences which express the same meaning as in (2a) and (24), repeated here as (37) and (38) respectively; how do we account for this difference? Secondly, 2) there is a similar sentence to (37) as in (3), repeated here as (39). The sentence in (39) shows that only the direct object is changed to 'hand' from the sentence (38).

- (37) *nitaissiikawatsima*
 nit-a-ssi-ika-attsi-imma
 1SG-DUR-wash-foot-cause-FIN(AI)
 'I'm washing his feet.' [SCB-JEL 010j]
- (38) *ohkatsists* *nitaissii'p*
 ot-mohkat-sistsi nit-a-sii-i-hp
 3POSS-foot-PL 1SG-DUR-wash-FIN(TI)-THEME
 'I'm washing his feet.' [SCB-JEL 010k]
- (39) *nitaissii'p* *o'tsis*
 nit-a-ssi-i-hp ot-motsis
 1SG-DUR-wash-FIN(TI)-THEME 3POSS-hand
 'I'm washing his hand.' [SCB-JEL 006l]

The difference among these three sentences seems to be related to the transitivity of verb, seen by its taking different finals. By examining similar or the same structure sentences with different body part nominals, the role of verb roots' transitivity becomes clearer. As expressions in (33) show, there are 'wash' expressions which are lexicalized as AI verbs. Here are elicited data with *ssi* 'wash' sentences with lexicalized verbs on the one hand, and non-lexicalized expressions on the other hand.

- (40) Lexicalized NI AI verbs (containing medials)
- a. *nitssiskiits*
 nit-ssi-sski-itsi
 1SG-wash-face-FIN
 'I wash my face.' [SCB-JEL 008h]

- b. *nitayáakihkin*
 nit-a-yaak-**ihkin**
 1SG-DUR-comb-**hair**
 ‘I combed my hair.’ [SCB-JEL 005a]
- c. *nitaikssihkinawats*
 nit-a-ssi-**ihkin**-watsi
 1SG-DUR-wash-**hair**-FIN
 ‘I wash my hair.’ [SCB-JEL 007f]
- d. *nitssiihkinaatsimok*
 nit-ssi-**ihkin**-attsi-imm-ok
 1SG-wash-**hair**-cause-FIN-INV
 ‘He washed my hair.’ [SCB-JEL 007e]
- (41) ‘wash’ sentences with independent nouns
- a. *nitssiyahki’p* *nostoksís*¹⁶
 nit-ssi-ahki-hp n-mohksisís
 1SG-wash-FIN-THEME 1POSS-nose
 ‘I wash my nose.’ [SCB-JEL 008b]
- b. *nitssiyahki’p* *noápsp*
 nit-ssi-ahki-hp n-moápsp
 1SG-wash-FIN-THEME 1POSS-eye
 ‘I wash my eye.’ [SCB-JEL 008g]
- c. *nitssiyahki’p* *notokiáápinihspis*
 nit-ssi-ahki-hp n-otokiáápinihspis
 1SG-wash-FIN-THEME 1POSS-eyelid
 ‘I wash my eyelid.’ [SCB-JEL 008i]
- d. *kiakohkssi’p* *ainni* *kohkínssts*
 kit-a-ohkatt-ssi-hp ann-i k-ohkínssts
 2SG-DUR-also-wash-THEME DEM-SG.IN 2POSS-elbow
 ‘You should wash your elbow.’ [SCB-JEL 008k]

Sentences in (41) have direct objects, contrary to those in (40). Since the verb root *ssi* ‘wash’ inherently needs two arguments (external and internal

¹⁶ The verb *ssiyaki* ‘cleanse (purify before a religious ceremony)’ is a TA verb which takes an animate object, which is not the case in this sentence (Frantz & Russell 1995). I assume that ‘*ahki*’ could be an agreeing TI final.

prefers the noun analysis for incorporated elements but does not fully reject the bare root analysis.

4.2.1 Root

Armoskaite (2011) provides clear definitions of roots. According to her, there are two types of roots in languages.

(44) Definitions of root (Armoskaite 2011: 2)

- root_{def} = non-decomposable conceptual part of a word with categorial information
- ROOT_{def} = simplex correspondence between sound and conceptual content, devoid of any grammatical information (including categorial information)

If we posit that verb roots are inherently of the lexical category V, and medials of category N, it is easy to explain Blackfoot body part NI: the transitive verb root *ssi* ‘wash’ should take an internal argument. Therefore, when it takes a medial, this satisfies the verb’s syntactic requirements (‘wash one’s own something’). After that, it takes a deriving intransitive final to be an AI verb. When it combines with a corresponding independent noun, its argument structure will be satisfied since it will take an agreeing transitive final. Consequently, I claim that Blackfoot verb roots are roots not ROOTs. However, for incorporated elements, it is hard to decide whether they are roots or ROOTs.

4.2.2 Allomorphy

I claim that, generally, medials go with intransitive verbs while independent nouns are found with transitive verbs; I established the conditions of the complementary distribution for medials and corresponding nouns in NI in terms of the verb’s transitivity and its final. If medials are allomorphs of corresponding nouns, then both have the same grammatical information in the lexicon. Then the question is whether incorporated elements are category-less ROOTs or roots. If incorporated elements are roots, the animacy of nouns (Armoskaite 2011) should affect the lexical NI process; however, medials are absorbed into a verb root so there is no way to test their animacy. NI with independent nouns as direct objects can be found in (30) and (31), and these data show that their animacy is matched. I claim that Blackfoot body part NI is V root-N root compounding which have its own lexical categories.

5 Residual issues

My hypothesis depends on relations in verb roots and finals with relevant morpheme orders in a verb stem. However, it might not cover all verb roots and expressions. The first issue is the order of morphemes. There is a lexicalized AI verb *sstsimiyi* ‘wash one’s own hands’, which has a different morpheme order as shown in (45). Why some sentences or words do not follow

the morpheme order in (10) is unanswered. If (45) is already lexicalized, it may be hard to break it down; I need more data to compare why morpheme orders are changed in (45), or to determine whether there is any other factor that I missed.

- (45) *sstsimiyyi*
 sst-ssi-miyyi
 hand-wash(vrt)-FIN
 ‘wash one’s own hands’ (Frantz & Russell 1995)

Another issue related to the morpheme order is found, as I indicated earlier, in the sentence ‘somebody poked someone in the eye’ as in (42) and (46). Why does the medial incorporate into a verb root with the reverse order preceding the verb root? There might be two possibilities: it could be due to the inverse form or the adjunct¹⁷ *sáp* ‘in’.

- (46) *kitsáapino’tok*
 kit-sáp-aapin-o’t-o-ok
 2SG-in-eye-grasp-TA-INV
 ‘He/She poked your eye.’ [SCB-JEL 004j]

However, (47) has no incorporated medial in the inverse sentence with the adjunct *sáp*. Since a sentence like (46) expresses severe danger to the experiencer, there might be a sort of pragmatic effect, intensifying the injured someone’s eye. To conclude this, however, we need further research on this expression.

- | | | |
|------|----------------------------|-------------------|
| (47) | <i>kipitsápssammokit’</i> | <i>noapsspiks</i> |
| | kippit-sap-ssamm-ok-t | n-moápssp-iksi |
| | please-in-look(TA)-INV-IMP | 1POSS-eye-AN.PL |
| | ‘Look me in the eyes.’ | [SCB-JEL 011a] |

Sentence (48) suggests that pragmatic emphasis might play a role in NI sentences with doubling in Blackfoot. The verb *yáakihkiniyyi* ‘comb one’s own hair’ is an AI verb in the dictionary. However, in the context, the speaker emphasizes the fact that “I combed my son’s hair, not my daughter’s hair”;

¹⁷ There is a word *ikaaw* ‘on foot’ consists of *ika* ‘foot’ and *aw* (probably ‘on’). This might indicate a possibility that the sentence in (46) shows the reversed order of morphemes.

possibly due to this discourse effect¹⁸, the full DP object is realized overtly with the overt agreeing TI suffix *i*.

- (48) *ann á nohk ó oo 'tokáán*
 ann-wa n-ohk ó o-mo'tokáán
 DEM-PROX.SG 1POSS-son 3POSS-hair
nitsiyaakhhinii'p
 nit-yaak-ihkin-i-hp
 1SG-comb-hair-FIN(TI)-THEME
 'I combed my son's hair.'
[SCB0201]

Since finals are not predictable, how finals interact with verbs is unclear in the sentences in (46-48). If finals are not lexically determined, then we could posit that NI is pseudo-incorporation, which uses the Merge operation (Chomsky 1995). On the one hand, processes in (49) show cases of a medial selected in the process of NI. On the other hand, (50) shows a case when an independent noun is selected in NI. Since there is only one simple Merge operation, the difference between selecting medials or selecting independent nouns does not matter in this hypothesis. The numeration simply selects medials or corresponding nouns according to the speaker's intention if there is any. In these cases, we need to closely examine whether native speakers can predict or productively use these kinds of structures with knowledge of restrictions of use of relevant finals. How do speakers select finals to change verb roots' transitivity, or why they do so, should be investigated. Or, as I assume for the sentence in (48), when speakers need discourse effects such as emphasis, specific finals could be used systematically. To investigate this hypothesis, more research on Blackfoot finals is needed, since finals are generally not predictable.

- (49) a. [Verb Root_{TRANS} +¹⁹ Medial] → [[Verb Root_{TRANS} + Medial] + Final_{INT}]
 → [Verb stem]_{PseudoINT}
 b. [Verb Root_{TRANS} + Medial] → [[Verb Root_{TRANS} + Medial] + Final_{TRANS}] → [Verb stem]_{TRANS}
 (50) [Verb Root_{TRANS} + Corresponding Noun] → [[Verb Root_{TRANS} + C. Noun] + Final_{TRANS}] → [Verb stem]_{TRANS}

Therefore, in this paper, I claim that Blackfoot body part NI is a compounding process with lexically defined finals before syntactic operations. I assume that,

¹⁸ According to my consultant, there is no raising pitch in emphasized or contrastive elements in Blackfoot. I assume that changing the verb's transitivity might be related to the fact that Blackfoot has no phonetic focus prominence.

¹⁹ Here the sign '+' indicates that it is syntactic Merge rather than lexical compounding.

due to lesser phonological weight, medials are used to satisfy verb roots' inherent meaning while corresponding independent nouns cannot be incorporated; when corresponding nouns are incorporated into verb roots, the verb stems must be a transitive verb.

6 Conclusion

In this paper, I investigated Blackfoot body part NI. In short, medials generally are used with intransitive verbs along with lexically determined finals; corresponding independent nouns are used with transitive verbs; these forms also co-occur with TRANS verbs when they incorporate into complex verbs. Since the transitivity of verbs reveals the complementary distribution of medials and corresponding nouns, I argue that medials are phonetically reduced allomorphs of corresponding nouns. The question of whether Blackfoot NI is a lexical compounding process as per Rosen's (1989) classification,²⁰ or a syntactic process with Merge needs more research; however, I claim that the explanation for the complementary distribution of medials and corresponding nouns in my lexical hypothesis is more explanatory than the syntactic approach for Blackfoot body part NI.

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²⁰ Blackfoot could be a Compound NI language according to Rosen's classification, however, it seems that Blackfoot also has some Classifier NI characteristics.

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