Spatial PPs and the structure of motion verbs in Blackfoot*

Kyumin Kim
University of Calgary

Abstract: In recent studies on Blackfoot (Algonquian), it has been numerously shown that the grammar of the language is animacy oriented. This paper provides novel empirical evidence for the animacy oriented grammar of Blackfoot from the interaction between motion/posture verbs and spatial PPs. In particular, the evidence shows that aspectual verb classification in Blackfoot is based on semantic animacy, rather than boundedeness in temporal languages like English. This paper suggests that not all of the morphologically same verb class is mapped onto the same aspectual verb class.

Keywords: animacy, boundedness, telicity, spatial PPs

1 Verb classification in Blackfoot and temporal language

In Blackfoot, verb classification is based on transitivity and animacy (Bloomfield 1946), as illustrated in Table 1. For instance, AI of verbs is marked with a final morpheme that indicates that the verb is intransitive and its subject is animate. II morphology on the verb indicates that the verb is intransitive, like AI, but that its subject is inanimate. Thus, the Bloomfield verb classes are arranged in terms of morphological animacy.

Table 1. Bloomfield verb classes for Algonquian languages

Verb Class	Transitivity	Animacy
Transitive Animate (TA)	Yes	Animate (obj)
Transitive Inanimate (TI)	Yes	Inanimate (obj)
Intransitive Animate (AI)	No	Animate (subj)
Intransitive Inanimate (II)	No	Inanimate (subj)

It is also suggested that Bloomfield verb classes are the Algonquian counterpart of Vendler-Dowty verb classes (Louie 2008, Ritter 2014a, b, Wiltschko 2009). The Vendler-Dowty verb classes are presented in Table 2.

* I would like to thank Sandra Many Feathers (formerly Crazybull) and Brent Prairie Chicken for sharing their language with me, and Betsy Ritter for her support and valuable comments. I also wish to thank Martina Wiltschko for support. Of course, all errors are my own. This research is supported by the SocialScience and Humanities Research Council (SSHRC) of Canada Postdoctoral fellowship to the author (#756-2012-0483). Unless otherwise noted, all data presented in this paper are from my own fieldwork. The data presented come from the Kainai (Blood) dialect. The following abbreviations are used in the paper: The following abbreviations are used in the paper: 1/2/3 – 1st/2nd/3rd person; AN – animate; AI – animate intransitive; DEM – demonstrative; FUT– future; II – intransitive inanimate; INAN – inanimate; INST – instrument; INTS – intensifier; LOC – locative linker; PATH – path linker; PL – plural; S – singular; TA – transitive animate; TI – transitive inanimate.
Contact info: kyumin.kim2012@gmail.com

In Proceedings of the Workshop on Structure and Constituency in the Languages of the Americas 18 & 19, University of British Columbia Working Papers in Linguistics 39,
Natalie Weber and Sihwei Chen (eds.), 2015.

Table 2. Vendler-Dowty classes for temporal languages

Verb Class	Process	Boundeness
Accomplishments	Yes	Telic
Activities	Yes	Atelic
Achievements	No	Telic
States	No	Atelic

Unlike the verb classification in Blackfoot, which is animacy oriented, Vendler-Dowty classes are a temporal-based aspectual classification. A temporal language like English, where INFL is marked with [+/-past], is an example of this type of classification. As indicated in Table 2, there are two factors that affect event classification in Vendler-Dowty classes. An event with a process is an event that unfolds over a period of time, while an event without a process is punctual, giving rise to a distinction among event classification, e.g., an accomplishment vs. an achievement. Another factor that distinguishes among eventualities is boundedness: whether an event has an inherent temporal endpoint or not.[1] A goal PP expressed by a preposition 'to' in English marks a temporal endpoint of an event. For instance, contrast (1a), whose event is atelic without an endpoint, with a goal PP 'to the store' in (1b), which indicates that the event of pushing a cart has an endpoint, namely 'the store'; i.e., the event temporally terminates at the spatial point 'the store'. This second factor, boundedness, gives rise to a distinction between a telic and an atelic event. A bounded event is telic having a spatial endpoint, while an unbounded event is atelic lacking an endpoint.

(1) a. John pushed a cart [for an hour/?in an hour]. atelic
b. John pushed a cart <u>to the store</u> [?for an hour/in an hour]. telic

One well-known diagnostic for boundedness distinctions is time adverbial phrases, the time span adverbial phrase, 'in X time', and the durative phrase, 'for X time'. The former is compatible with a telic event in that the phrase expresses the amount of time that passes before the end of the event. The latter is compatible with an atelic event in that the phrase expresses how much time is passed with respect to the event. For example, in (1a) where no endpoint phrase appears and thus the event is atelic, a durative phrase is grammatical, rather than a time span adverbial. In contrast, in (1b) where an endpoint appears and thus the event is telic, the durative phrase is ungrammatical but the time span adverbial is grammatical.

Having this background on the Vender-Dowty aspectual verb classification in mind, let us go back to the initial discussion where the Bloomfield classification is the counterpart of Vendler-Dowty verb classification. Ritter (2014b) suggests that the two systems are very alike; the core aspect of her suggestion crucial to this paper is that there is correspondence between the two factors that classify events in the Bloomfield and the Vender-Dowty classifications. Animacy in the Bloomfield classification corresponds to boundedness in the Vendler-Dowty classification and transitivity to process; consequently, AI verbs may correspond to achievement, while II verbs correspond to states. Abstracting away from the correspondence between transitivity and process, a question is whether animacy plays a role in event classification in the way that telicity does in

[1] An incremental theme (Dowty 1979) can also contribute to boundedness of an event. I do not discuss how this can play a role in Blackfoot verb classification, but see Ritter (2014b) for some discussion.

English type languages.[2] As a first step to address this question, in what follows, I discuss Inner-Asp, a locus of boundedness in temporal languages.

1.1 Boundedness and Inner-Asp

Inner-Asp (I-AspP) is the lowest functional category, as illustrated in (2). In temporal languages like English, the feature [bounded] is associated with I-Asp and it is responsible for a distinction between telic and atelic events (Wiltschko 2009, adopted from Travis 2005).[3]

(2) $[_{vP}$ v $[_{I\text{-}AspP}$ **I-Asp** $[_{VP}$ V]]
[bounded]

More specifically, a telic event is licensed by the feature [bounded] on I-Asp. For instance, the telic event in (1b) in the previous section has I-Asp projected with a [bounded] feature. When I-Asp is not specified for the feature, an event is not bounded. That is, the event is atelic.

Ritter's (2014b) suggestion that animacy in Bloomfield classification corresponds to boundedness in the Vendler-Dowty verb classification predicts that I-Asp in Blackfoot is animacy oriented, not telicity oriented, as in (3).[4] In other words, instead of having [bounded] feature, I-Asp in Blackfoot bears [animate] feature. In particular, I show that animacy in (3) refers to semantic animacy, not grammatical animacy.

(3) $[_{vP}$ v $[_{I\text{-}AspP}$ **I-Asp** $[_{VP}$ V]] Blackfoot
[animate]

The main focus of this paper is AI motion and posture verbs, as the verbs often require spatial PPs that indicate a goal of motion (i.e., an endpoint) or a location where an event takes place. Thus, these types of verbs and their interaction with spatial PPs are an ideal testing ground for how animacy oriented I-Asp (3) can be characterized. To this end, this paper addresses two questions: (i) what predictions does animacy based I-Asp make about AI motion verbs?, and (ii) what does (3) suggest for the aspectual classification in Blackfoot? Regarding question (i), I show that in Blackfoot what matters for aspectual classification is semantic animacy, rather than the presence of an endpoint phrase, unlike temporal languages. Regarding question (ii), this paper suggests that there is no one-to-one mapping between morphology and aspectual verb classification. It is shown that the same morphological class of AI verbs are not aspectually the same. In other words, some AIs correspond to a telic event, but others correspond to an atelic event.

Before leaving this section, I would like to lay out the relationship between types of spatial PPs and types of events, as established in the literature regarding temporal languages, which will provide important background for the comparison between Blackfoot and temporal languages in Section 3. In temporal languages, in general, a goal PP can change an event structure by adding an endpoint (e.g., MacDonald 2008, Svenonius 2010). As discussed earlier, the event with a goal PP

[2] See Ritter (2014b) for a larger picture on how Bloomfield class should be understood with respect to Vendler-Dowty class. Largely, this paper pursues the same direction as Ritter, but is different from Ritter in that it develops how animacy plays a role with spatial PPs.
[3] I assume features are privative following Ritter (2014b).
[4] Underlying assumption for this is Universal Spine Hypothesis (USH) approach (Ritter and Wiltschko 2014, Wiltschko 2014).

in (1a) is atelic; however, by adding a goal PP ‘to the store’, the event becomes telic as in (1b). In contrast to goal PPs, locative PPs do not alter an event structure, as shown in (4).

(4) John pushed a cart in the store [for an hour/ ? in an hour]. atelic.

Differently from (1a), the same event of pushing a cart in (4) has a locative PP ‘in the store.’ However, adding the locative PP does not change the event structure at all: it is atelic as in (1a), as indicated by the contrast between the time adverbial phrases. The event in (4) is compatible with the durative phrase ‘for an hour’, but not with the time span phrase ‘in an hour’. Goal and locative PPs contribute to event structure in different ways: a goal PP change an event structure to telic by adding a temporal endpoint phrase, but a locative PP does not. In other words, a goal PP is licensed by the [bounded] feature on I-Asp, but with a locative PP, I-Asp is not bounded.

2 Spatial PPs in Blackfoot

Spatial PPs refer to PPs that indicate either path or location (Jackendoff 1983). Consider an example in (5).

(5) a. John went to the store.
b. John is in the room.

In (5a), the P *to* indicates path, a trajectory that John (Figure) followed with respect to the reference point object ‘the store’ (Ground). In particular, the P in (5a) specifies Ground as a goal of motion. On the other hand, in (5b), the P *in* indicates a place (Ground) where John is located.

In Blackfoot, path or location meanings are expressed with a set of prefixes called linkers and non-linkers (Frantz 2009, Kim 2014a), which are often called relative roots in the Algonquian literature (Rhodes 2010). Except where the distinction between linkers and non-linkers is necessary, I call these prefixes spatial PPs. Examples of spatial PPs are provided in (6–7).

(6) a. *anna John itapoo anni niitahtaayi*

anna	John	**itap**-oo-wa	**anni**	**niitahtaayi**	path
DEM	John	GOAL-go.AI-3s	DEM	river	

‘John is going **to the river**.’

b. *anna John itohpaipiiyi anni niitahtaayi*

anna	John	**it**-ohpai’piiyi-wa	**anni**	**niitahtaayi**	locative
DEM	John	LOC-jump.AI-3S	DEM	river	

‘John is jumping **in the river**.’

(7) a. *anna John aamisoo*

anna	John	**waamis**-oo-wa	(*anni	niitahtaayi)	vertical
DEM	John	up-go.AI-3s	(*DEM	river)	

‘John is going **up**.’

b. *anna John naawokska’si*

anna	John	**naaw**-okska’si-wa	(*anni	niitahtaayi)	lateral
DEM	John	left-run.AI-3s	(*DEM	river)	

‘John is running **leftwards**.’

Among the motion verbs, inherently directed motion verbs such as 'go' or 'flee' obligatorily require spatial PPs. In other words, the verb 'go' in (6a) and (7a) cannot appear alone in Blackfoot; a linker such as *itap-* 'to' or a non-linker such as *waamis-* 'up' is obligatory with these verbs. In contrast, manner of motion verbs in (6b) or (7b) do not require spatial PPs.

As noted in Jackendoff (1983), English has several types of path expressed by different prepositions; for instance, goal ('to'), source ('from'), direction ('toward'), and route ('along'/'pass'). In Blackfoot, these paths can be expressed by two linkers: the linker *itap-* expresses a goal or a direction, as shown in (6a) above, while the linker *oht-* expresses source or route, as illustrated in (8). The linker *oht-* undergoes initial change and thus it appears as *iiht-* in (8a) (see Frantz 2009).

(8) a. *anna saahkomaapi iihto'too Mohkinsstsisi*

anna	ssahkomaapi	iiht-o'too-wa	Mohkinsstsisi	source
DEM	boy	SOURCE-arrive.AI-3S	Calgary	

'The boy is coming from Calgary.'

b. *nitaakohtaamisoo ami niitahtaayi*

nit-yaak-oht-aamis-oo	ami	niitahtaayi	route
I-FUT-ROUTE-go.AI	DEM	river	

'I will go along the river.'

Non-linkers can express a similar range of meanings without introducing a Ground, as shown in (9).

(9) a. *aaksainnisoo*

yaak-sainnis-oo-wa	vertical
will-**down**-go.AI-3S	

'(S)he will go downward.'

b. *nitaakiistapohpai'piiyi*

nit-yaak-miistap-ohpai'piiyi	central
I-will-**away**-jump.AI	

'I will jump away.'

c. *aakopamoo*

yaak-opam-oo-wa	route
will-**across**-go.AI-3S	

'(S)he will go across.'

3 I-Asp in Blackfoot is not [bounded]: no telic/atelic distinction

3.1 No telic/atelic distinction in Blackfoot

Unlike temporal languages (e.g., English, see Section 1), no telicity distinction, and thus no boundedness distinction, is observed in Blackfoot. For instance, time adverbial expressions, which are often used for distinguishing between telic and atelic events, do not show a distinction with respect to the types of spatial PPs. For example, consider the examples in (10) with a time adverbial expression (lit. 'one hour clock').

(10) a. *nitsitaamisoo ni'to'takoohssini iihtaiksistsikomio'p*
nit-it-**waamis**-oo [ni't-o'takoohssini iihtaiksistsikomio'p]
I-time-**up**-go.AI one-hour clock
'I went up for an hour / in an hour.'
(i.e., 'I was going up for an hour.' / 'It took an hour for me to go up.')

b. *nitsitsitapaamisoo anni isspakohyi ni'to'takoohssini iihtaiksistsikomio'p*
nit-it-**itap**-waamis-oo anni isspakohyi [ni't-o'takoohssini iihtaiksistsikomio'p]
I-time-**goal**-up-go.AI DEM hill one-hour clock
'I went up the hill for an hour / in an hour.'
(i.e., 'I was going up the hill for an hour, regardless of getting to the hill.' / 'It took an hour for me to get to the hill.')

The time adverbial phrase in (10) is ambiguous between 'in X time' and 'for X time'; thus, there is no distinction in telicity between the spatial PPs. As in (10a), where English counterpart would be interpreted as an atelic event, the sentence is compatible with both 'for an hour' (atelic) and 'in an hour' (telic) readings. The sentence in (10b) where the goal phrase of the motion is expressed by the linker *itap*- shows the same ambiguity.

In English, not all path types are telic as shown in (11): the route path 'past' can be telic (11a) like a goal path (see (1b)), but the same route type of path 'along' is atelic (11b).

(11) a. [The boy ran **past** the tree] ?for one minute /in one minute. telic
b. [The children walk **along** the river] for an hour /?in an hour. atelic

In contrast, in Blackfoot, all path types seem to be insensitive to temporality, as the two different route paths illustrate in (12). Like the goal path in (10), the route path in (12) allows either a telic or an atelic reading as evidenced by the grammaticality of either reading of the time adverbial. The same type of paraphrase as in (10) applies to these examples.

(12) a. *nitohtaamisoo ami niitahtaayi ni'to'takoohssini iihtaiksistsikomio'p*
nit-**oht**-waamis-oo ami niitahtaayi [ni't-o'takoohssini iihtaiksistsikomio'p]
I-**ROUTE**-go.AI DEM river one-hour clock
'I walked along the river for an hour/in an hour.'

b. *nitohtsitskoo anni niimoyistyi ni'to'takoohssini iihtaiksistsikomio'p*
nit-**oht**-itsk-oo anni niitmoyisyi [ni't-o'takoohssini iihtaiksistsikomio'p]
I-**ROUTE**-past-go.AI DEM tipi one-hour clock
'I walked past the tipi for an hour/in an hour.'

These examples show that in Blackfoot, telicity is not a crucial factor in the determination of event classification. The remaining puzzle is what this factor is, if it is not telicity. In the next section, I argue that it is semantic animacy that determines Blackfoot aspectual event classification.

3.2 Semantic animacy and spatial PPs

In this section, I show that in Blackfoot, it is not the presence of an endpoint but the presence of semantically animate argument that determines the event type. I first discuss animacy of nouns in Blackfoot. In this language, a noun is classified into two grammatical types, animate and inanimate

(Frantz 2009). The inanimate class of nouns are those that refer to objects or things. The animate class of nouns are those that refer to humans or animals. In addition, there are a set of semantically inanimate nouns that belong to grammatically animate noun class. e.g., 'wagon', 'car' or 'train'. These grammatically animate nouns show the same type of noun inflections as real world animate nouns. For instance, they are marked with an animate plural marker: *saahkompaapi-iksi* 'boy-PL' and *ainaka'si-iksi* 'wagon-PL' unlike grammatically inanimate noun *saakokotoissko-istis* 'bottle-PL'.

Turning to the data of spatial PPs and motion verbs, the semantically animate subject of the verb can appear with path PPs, as shown in (13).

(13) *anna saahkomaapi itapoo oomi isspahkoyi*

anna	**saahkomaapi**	itap-oo-wa	oomi	isspahkoyi	goal/direction
DEM	boy	GOAL-go.AI-3S	DEM	hill	

'The boy went toward/to that hill.'

In (13), the semantically animate subject 'the boy' can mark the endpoint of the motion event, *oomi isspahkoyi* 'the hill' that is introduced by the goal/direction linker *itap-*. The prediction for semantically inanimate but grammatically animate subjects such as 'wagon' is that they should show the same pattern as in (13). Surprisingly, however, this is not the case, as illustrated in (14).

(14) * *anna ainaka'si itapoo oomi isspahkoyi*

anna	**ainaka'si**	itap-oo-wa	oomi	isspahkoyi
DEM	wagon	GOAL-go.AI-3S	DEM	hill

'**The wagon** went toward/to that hill.'

In (14), the subject of the motion verb 'the wagon' is grammatically animate like the semantically animate subject 'the boy' in (13). However, as the ungrammaticality of (14) shows, semantically inanimate subjects cannot mark an endpoint. This is not only true of the goal/direction path, but other paths, e.g., route, also show the same pattern, as exemplified in (15). In passing, note that this is also different from English-type languages, where a different path type shows different telicity (compare (1b) vs. (11b) and (11a) vs. (11b))

(15) a. *anna akiikoan iihtoo anni niitahtaayi*

anna	**akiikoan**	iiht-oo-wa	anni	niitahtaayi	route
DEM	girl	ROUTE-go.AI-3S	DEM	river	

'That girl went along the river.'

b.* *anna ainaka'si iihtoo anni niitahtaayi*

anna	**ainaka'si**	iiht-oo-wa	anni	niitahtaayi
DEM	wagon	ROUTE-go.AI-3S	DEM	river

'That wagon went along the river.'

In contrast, when the endpoint-denoting PP is absent, this contrast in semantic animacy is not observed. In other words, both semantically and grammatically animate subjects show no difference when a path non-linker or a locative linker appears with them. Consider examples in (16) with a non-linker and in (17) with a locative linker.

(16) a. *anna akiikoan sainnisoo*

anna	akiikoan	sainnis-oo-wa	vertical
DEM	girl	down-go.AI-3S	

'That girl went downward.'

b. *anna ainaka'si itskoo*

anna	ainaka'si	itsk-oo-wa	route
DEM	wagon	route-go.AI-3S	

'That wagon passed by.'

(17) a. *anna saahkomaapi itsipoyi anni itaisooyo'p*

anna	**saahkomaapi**	**it**-ipoyi-wa	anni	itaisooyo'p	locative linker
DEM	boy	LOC-stand.AI-3S	DEM	table	

'**That boy** is standing **on** the table.'

b. *anna ainak'si itsipoyi anni kssahkoyi*

anna	**ainaka'si**	**it**-ipoyi-wa	anni	ikssahkoyi
DEM	wagon	LOC-stand.AI-3S	DEM	earth

'**That wagon** is standing **on** the ground.'

Although additional examples cannot be replicated here due to space reasons, I found that not only more agent-like grammatically animate nouns like 'wagon' or 'car', but also less agent-like grammatically animate nouns such as 'ball', 'doll' or 'stone' show the same behavior in a relevant context; e.g., with path linkers, they are ungrammatical, while with non-linkers or locative linkers, they are grammatical.

The data discussed in this section suggest that in Blackfoot, it is not the presence of an endpoint-denoting PP, but the presence of a semantically animate subject that determines an event type. Only in the presence of a semantically animate subject can an endpoint be marked. Moreover, it is not only an endpoint-denoting PP, but also other path types such as direction or route that are licensed by a semantically animate subject. The feature [bounded] on I-Asp cannot capture the range of facts in Blackfoot; otherwise, regardless of semantic animacy, an endpoint-denoting PP should be grammatical, contrary to the facts. I argue that I-Asp in Blackfoot does not have a [bounded] feature but has an [animate] feature, as presented in table 3. In other words, the feature [animate] in Blackfoot is the counterpart of feature [bounded] in English. As a locative PP in English is licensed by the absence of a [bounded] feature on I-Asp, the locative linker and path non-linker are licensed by the absence of an [animate] feature on I-Asp.

In sum, Blackfoot does not have telicity-based I-Asp, but has animacy-based I-Asp.

Table 3. Summary on correspondence between English and Blackfoot

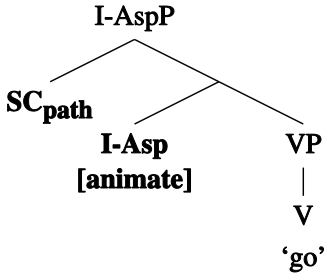
English	Path PP	Loc PP
I-Asp	[bounded]	--------
Blackfoot	**Path linker**	Loc linker & path non-linker
I-Asp	**[animate]**	--------

4 Structure of motion AIs in Blackfoot: [animate]

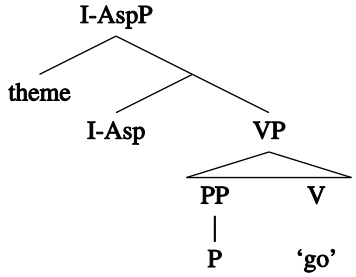
The data presented in the previous section suggest that the difference between temporal languages and Blackfoot can be captured by the feature [animate] on I-Asp, where the feature [bounded] is realized in temporal languages. The proposed structures of motion and posture verbs with spatial PPs are shown in (18). I assume that linkers are functional categories such as p while non-linkers are lexical categories P, following the previous studies (Kim 2014a, *forthcoming*).

Path linkers – goal, direction, and route – are licensed by [animate] on I-Asp (18a), which captures their distribution with semantically animate subjects (i.e., theme of the motion event). By contrast, the distribution of a non-linker or locative linker is not subject to the animacy of the theme: either a semantically animate or inanimate subject is allowed. In these cases, the feature [animate] is absent on I-Asp as presented in (18b–c).

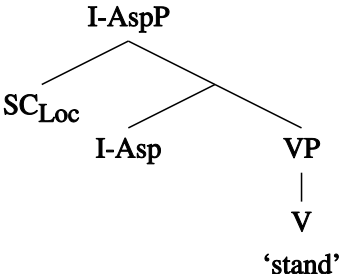
(18) a. Path linker (p)



b. Non-linker (P)



c. Loc linker (p)



d. [$SC_{path/loc}$ theme [$p_{path/loc}$ DP/NP]]

Building on the previous studies on Figure (usually a theme) and Ground relations (e.g., Svenonius 2010), I propose that a linker is like a predicator mediating a relation between the theme of the verb and the nominal that it introduces. For instance, in (13), a path linker indicates a path relation between a theme of the verb (i.e., Figure) 'the boy' and a goal of motion 'the hill' (Ground). As shown in (18d), a linker is a realization of the head of SC, and mediates a path or locative relation between the theme and its complement (DP or NP) introduced by a linker.

In the rest of this section, I focus on the details of the structure in (18). Linkers and non-linkers appear inside I-Asp but at different levels. More specifically, linkers appear in the specifier of I-AspP in a form of SC, and non-linkers appear at the VP level.[5] I provide evidence for this aspect of the structure from abstract nominalization, idioms, and initial position in the stem.

4.1 Spatial PPs and abstract nominalization

Abstract nominalization in Blackfoot is one of the several nominalization types available in the language (Frantz 2009), and is morphologically marked with *-n* or *-hsin*. The first variant attaches to stems ending in *-aa*. The second allomorph appears elsewhere. Abstract nominalization indicates either the state or process described by the verb (Frantz 2009). Crucial to the present discussion is that abstract nominalization is only possible with intransitives such as AIs, not with verbs marked with TA or TI finals (Frantz 2009).

[5] Bliss et al. (2013) proposed that locative linkers are an adjunction to IP, in contrast to the proposed structures for spatial linkers in this paper (see (18)). Unlike this paper, their data are not on motion and posture verbs. As suggested in Kim (*forthcoming c*), it may be the case that not all linkers appear in the same position in the structure.

In recent approaches to abstract nominalization, I-Asp is proposed to be the target of abstract nominalization, and AI finals are realized as I-Asp (Ritter 2014a). A prediction is that an element outside I-AspP would be ungrammatical with abstract nominalization, but that an element inside I-AspP would be grammatical. This is schematically represented in (19).

(19) abstract nominalization ✘ ✓

... [$_{XP}$ X [$_{I\text{-}AspP}$ I-Asp [$_{YP}$ Y]]]

AI

Another fact shown in Ritter is that pseudo-transitive AI verbs, which allow an optional NP object, do not allow abstract nominalization, as shown in (20). The pseudo-transitive AI verb 'hunt' in (20) can have an optional NP object 'elk' and the abstract nominalization of the verb is ungrammatical.

(20) * *ikskiimaani ponoka aakohkotsiksstonatapi*

ikskimaa-n-yi	**ponoka**	yaak-ohkot-ik-sstonnat-a'pii
hunt.AI-NOM-INAN	elk	will-able-INTNS-dangerous-BE.AI

Intended: 'Hunting an elk can be really dangerous.' (Ritter 2014a)

However, the nominalization becomes grammatical if the NP undergoes incorporation into the verb, as shown in (21).

(21) *ponokaiksskimaani aakohkotsiksstonatapi*

ponoka-ikskimaa-n-yi	yaak-ohkit-ik-sstonnat-a'pii
elk-hunt.AI-NOM-INAN	will-able-INTNS-dangerous-BE.AI

'Elk-hunting can be really dangerous.' (Ritter 2014a)

Motion and posture verbs are AI verbs, and they do not allow an object, as shown throughout the paper, which suggests that abstract nominalization would be grammatical with these verbs. Importantly, however, some of them obligatorily require path or locative spatial PPs. Thus, their abstract nominalization should be considered with those spatial elements together. With non-linkers, the nominalization of these verbs is always grammatical, as shown in (22). The grammaticality supports the proposed structure (18b), where non-linkers must appear inside I-AspP.

(22) a. *nitaamisoohsin*
nit-waamis-oo-hsin
1-up-go.AI-NOM
'My going

b. *nitsinnoohsin*
nit-inn-oo-hsin
1-down-go.AI-NOM
'My going down. (Kim 2014a)

With respect to linkers, the nominalization seems to be ungrammatical. Consider the examples in (23). In (23a), the direction linker *itap-* introduces a goal of the motion event 'going', namely, 'school'. When (23a) is abstract nominalized as in (23b), it is ungrammatical.

(23) a. *aakitapoo iitaissksinimatsohko'p*

yaak-itap-oo-wa	iitaissksinimatsohkio'p
FUT-GOAL-go.AI-3S	school

'He will go to school.'

b.* *itapoohsini iitaissksinimatsohkio'p aaksoka'pii*
itap-oo-hsin-yi **iitaissksinimatsohkio'p** yaak-sok-a'pii
GOAL-go.AI-INAN school will-good-be.AI
'Going **to school** will be good.'

Interestingly, however, as with pseudo transitive AI verbs as in (23a), the abstract nominalization is grammatical if the object of the direction linker, 'school' incorporates into the verb 'go', as shown in (24).

(24) *itapiitaissksinimatsohkio'poohsiniaaksoka'pii*
itap-**iitaissksinimatsohkio'p**-**oo**-hsin-yi yaak-sok-a'pii
GOAL-school-go.AI-NOM-INAN will-good-be.AI
'**School going** will be good.'

The locative linker *it-* with posture verbs is also grammatical with abstract nominalization, as shown in (25):

(25) *nitsitopiihsin*
nit-it-opii-hsin-yi
1-loc-sit.ai-nom-inan
Lit. 'sitting in the office.' / Idiomatic: 'my term in the public office ('My sitting')

The data on abstract nominalization suggest that both linkers and non-linkers appear inside I-AspP, providing support for the proposed analysis in (18).

4.2 Spatial PPs and idioms

In a previous study (Kim 2014a), I have shown that patterns found in idioms suggest that linkers and non-linkers in Blackfoot appear in different domains, functional vs. lexical. This conclusion is based on previous studies of idioms (Marantz 1997, Svenonius 2005, Harley and Stone *in press*, Kim 2014b). These studies collectively suggest that elements *outside* lexical domains such as VP do not belong to idioms, while elements *inside* lexical domains tend to belong to idioms, as illustrated in (26a). The arrow in (26) indicates the boundary for idiomatic interpretation. A similar split is found with linkers and non-linkers in Blackfoot with respect to idiom formation, such that a linker will appear in the functional domain but a non-linker will appear in the lexical domain, as illustrated in (26a). As shown in the previous section, both spatial PPs appear in I-Asp, and thus the relevant FP in Blackfoot (26b) is I-Asp.

(26) a. $[_{FP}$ F ... ↓ $[_{VP}$ V]] (adapted from Kim 2014b)

b. $[_{I\text{-}AspP}$ Linker ↓ $[_{VP}$ Non-linker V]] Blackfoot

This prediction is borne out by the data. In Blackfoot it is easy to find idioms formed with non-linkers, lexical Ps, but this is not the case with the linkers. The Blackfoot dictionary (Frantz and Russell 1995) shows numerous idioms that consist of a non-linker and a verb, some of which are illustrated in (27). Strikingly, in the dictionary, there are no idioms formed with the linkers.

(27) a. *aakistaahtooa*
yaak-[VP [PP **istaaht**] -oo] -wa
will- under -go.AI -3S
'He will [go to Hell].' (Lit. 'He will go under.')

b. *ohkitopii*
ohkit-opii
on-sit.AI
'ride a horse.' (Lit. sit on) (Frantz and Russell 1995)

As our concern is I-AspP, and given that both linkers and non-linkers appear inside I-AspP as evidenced by abstract nominalization, the patterns of the idioms support the proposed structures in (18), where a linker appears in the functional domain, I-AspP, while a non-linker appears in the lexical domain VP.

4.3 Spatial PPs as occupying initial position of the stem

It is well known that verb stems in Algonquian are tripartite, consisting of initial-medial-final (Bloomfield 1946, Goddard 1990), as schematically presented in (28). Initial is the position at the left edge of the stem, and the elements that fill the position are often called left edge elements: initial position can be filled with any syntactic category. Final position is at the right edge of the stem, and usually a category-defining element occupies the position. Medial position is filled with a noun. Initial and final positions are obligatorily filled (Goddard 1990), while medial position is optional.

(28)

INITIAL	MEDIAL	FINAL
Any syntactic category	N	V

Among the elements that can occupy initial position, preverbs often fill the initial position (Goddard 1990, Branigan et al. 2005, Brittain 2005). Preverbs typically have an adverbial meaning, and they appear between the tense marker and the stem (29).

(29) personal prefix – tense – preverb(s) – [stem initial – medial – final] – inflection

For the purpose of this paper, an important question with respect to an initial element is what syntactic position it occupies. In recent studies, one answer to this question has been that it fills a specifier of XP; for instance, in Ojibwe, it occupies a specifier of *v*P (Mathieu 2007, Slavin 2012).

Adopting this approach, I argue that some spatial linkers and non-linkers in Blackfoot are left-edge elements in the stem and occupy the specifier of I-AspP and the specifier of VP, respectively. As noted earlier, linkers and non-linkers are obligatory with motion verbs such as 'go' or 'flee' or posture verbs such as 'stand'. Moreover, like left edge elements, the linkers or non-linkers appear between tense marker and stem, as exemplified with a linker in (30).

(30) *nitaakitapoo oomi isspahkoyi*
nit-**yaak-itap-oo** oomi isspahkoyi
1-will-GOAL-go.AI DEM hill
'I will go to that hill.'

The two previous sections provide support that linkers and non-linkers appear in I-AspP. More specifically, linkers appear in I-Asp above VP, but non-linkers appear below VP. Given that these elements are left-edge elements occupying relevant specifier positions, as the previous studies suggest, I propose that linkers appear in the specifier of I-AspP and non-linkers appear in the specifier of VP (see (18)), satisfying the left edge requirement.

5 Consequences

I have shown that I-Asp in Blackfoot is not bounded, but has an [animate] feature that corresponds to [bounded] in temporal languages. Recall the discussion in section 1 that verb classification in Blackfoot is oriented by morphological animacy, as the Bloomfield verb class suggests, but it is also aspectual, as suggested by recent studies. In particular, Ritter (2014b) suggests that there is a correspondence between boundedness and animacy. The results of this study provides strong novel evidence for the suggested correspondence. Moreover, this study shows that the correspondence may not be one-to-one (see Table 4 below). If animacy corresponds to boundedness in a one-to-one manner, for instance, all AI verbs would correspond to telic events. In other words, all AI verbs are predicted to allow endpoint-denoting PPs. Contrary to this prediction, what I have shown is that not all AI verbs allow an endpoint-denoting PP, i.e., a path linker. Only those that have a semantically animate subject allow a path linker; otherwise, the AIs with inanimate subjects correspond to atelic events only allowing a non-linker or a locative linker. In other words, AIs whose I-Asp is [animate] correspond to telic events, while AIs whose I-Asp is not specified with the feature can correspond to atelic events. Motion AI verbs appear to be of two types, although their specification of morphological animacy (i.e., AI) is identical. That is, there is no one-to-one mapping between morphology and aspectual verb classification.

Table 4. Sub-classification of motion AIs

Verb Class	Semantic Animacy	Correspondence	I-Asp
Motion AIs	Animate	telic	[animate]
	Inanimate	atelic	--------

6 Conclusion

This paper discussed the distribution of spatial PPs in Blackfoot with respect to motion and posture verbs, which has not previously been studied in the literature. This paper showed how the distribution of spatial PPs in Blackfoot is animacy-based, rather than boundedness-based, which is consistent with previous studies on various parts of Blackfoot grammar (Ritter and Rosen 2010, Wiltschko 2009, 2012, Bliss 2010, Kim 2014c, Ritter 2014a, b). I argued that the feature [animate] plays a central role in the distribution of spatial PPs in Blackfoot, which is in parallel with [bounded] in temporal languages. A significant consequence of this paper is that not all verbs belonging to the same morphological class are aspectually identical. Rather, verbs are mapped onto different aspectual classes corresponding to telic or atelic, i.e., animate or inanimate.

References

Bliss, H. (2010). Argument structure, applicatives, and animacy in Blackfoot. In H. Bliss & R. Girard (Eds.), *WSCLA 13 & 14: Proceedings of the 13 and 14th Workshop on the Structure*

and Constituency of Languages of the Americas, *February, 4–7, 2008* (pp. 58–69).Vancouver: UBC Working Papers in Linguistics.

Bliss, H., R.-M. Déchaine & T. Hirose. (2013, June). Locative PPs in Blackfoot and Plains Cree. Paper presented at the 2013 Canadian Linguistics Association (CLA), University of Victoria, BC.

Bloomfield, L. (1946). Algonquian. In Harry Hoijer (Ed.), *Linguistic Structures of Native America*. (pp. 85–129). New York: Viking Fund Publications in Anthropology 6.

Branigan, P., J Brittain, and C. Dyck. (2005). Balancing syntax and prosody in the Algonquian verb complex. In H. Christoph Wolfart (Ed.), *Papers of the Thirty-sixth Algonquian Conference, October 28–31, 2004*. (pp. 1–19). Winnipeg: University of Manitoba.

Brittain, J. (2005). A distributed morphology account of the syntax of the Algonquian verb. In S. Somesfalean and S. Burrell (Eds.), *CLA 2003: Proceedings of the 2003 Annual Conference of the Canadian Linguistic Association*, *June 1–4, 2003*.

Dowty, D. R. (1979). *Word Meaning and Montague Grammar*. Dordrecht: Reidel.

Frantz, D.G. (2009). *Blackfoot grammar*. University of Toronto Press.

Frantz, D.G. and Russell, N. (1995). *Blackfoot dictionary of stems, roots, and affixes*. University of Toronto Press.

Goddard, I. (1990). Primary and secondary stem derivation in Algonquian. *International Journal of American Linguistics,* 56, 449–83.

Harley and Stone. (in press). The 'No Agent Idioms' hypothesis. *Proceedings of OnLi (On Linguistic Interfaces)*. Oxford: Oxford University Press.

Jackendoff, R. (1983). *Semantics and Cognition*. Cambridge: MIT press.

Kim, K. (forthcoming). The instrument linker *iiht-*/*oht-* in Blackfoot as a functional p. In N. Weber (Eds.), *WSCLA 18: Proceedings of the 18th Workshop on the Structure and Constituency of Languages of the Americas*, *April, 5–7, 2013*.Vancouver: UBC Working Papers in Linguistics.

Kim, K. (2014a). *Refining the syntax of non-core arguments: P, applicative, and functional p*. In L. Kusmer and J. Iyer (Eds.), *NELS 2013: Proceedings of the 2013 North East Linguistic Society, October 18–20, 2013.*

Kim, K. (2014b). Phase and idioms. In E. Predolac and A. Joseph. (Eds.), *WAFL 9: MIT Working Papers in Linguistics: Proceedings of 9th Workshop on Altaic Formal Linguistics*, *August 23–25, 2013*.

Kim, K. (2014c). PERSON all the way in Blackfoot: evidence from psych-predicates. In S. Leo (Eds.), CLA 2013: Proceedings of the 2013 Annual Meeting of Canadian Linguistic Association, June 1–3, 2013.

Louie. (2008). Atemporal Anchoring of Individuals, Events and Subevents in Blackfoot: Consequences for the syntax-semantics interface. MA Thesis, University of Toronto.

MacDonald, J. (2008). The syntactic nature of inner aspect. John Benjamins.

Marantz, A. (1997). No escape from syntax: Don't try morphological analysis in the privacy of your own Lexicon, In A. Dimitriadis et al. (Eds.), PLC 21: Proceedings of the 21st Annual Penn Linguistics Colloquium: Penn Working Papers in Linguistics 4. (pp. 201–225).

Mathieu, E. (2007). *The syntax of abstract and concrete finals in Ojibwe*. Manuscript. University of Ottawa.

Rhodes, R. A. (2010). Relative root complement: A unique grammatical relation in Algonquian syntax. In J. Wohlgemuth & M. Cysouw (Eds.), *Rara & rarissima: Documenting the fringes of linguistic diversity* (pp. 305–324). Berlin: Mouton De Gruyter.

Ritter, E. (2014a). Nominalizing inner-aspect: Evidence from Blackfoot. In P. Ileana (Ed.), *Cross linguistic investigations of nominalization patterns* (pp. 20–50). Amsterdam: John Benjamins.

Ritter, E. (2014b). *Featuring Animacy*. Manuscript submitted for publication. Ben Gurion University.

Ritter, E., & S. Rosen. (2010). Animacy in Blackfoot: Implication for event structure and clause structure. In M. Rappaport-Hovav, E. Doron, & I. Sichel (Eds.), *Syntax, lexical semantics and event structure* (pp. 124−152). Oxford: Oxford University Press.

Ritter, E., & M. Wiltschko. (2014). The composition of INFL. An exploration of tense, tenseless languages, and tenseless constructions. *Natural Language and Linguistic Theory* 32: 1331–1386.

Slavin, T. (2012). Phonological and syntactic evidence for stem structure in Oji-Cree. *International Journal of American Linguistics,* 78, 497–532.

Svenonius, P. (2010). Spatial P in English. In Guglielmo Cinque, and Luigi Rizzi (Eds.), *Mapping spatial PPs* (pp. 127–160). Oxford: Oxford University Press.

Svenonius, P. (2005). Extending the extension condition to discontinuous Idioms. *Linguistic Variation Yearbook,* 5, 227–263.

Wiltschko, M. (2014). *The Universal structure of categories: Towards a formal typology*. Cambridge: Cambridge University Press.

Wiltschko, M. (2012). Decomposing the count-mass distinction: Evidence from languages that lack it. In Diane Massam (Ed.), *Count and mass across languages* (pp. 146–171). Oxford: Oxford University Press.

Wiltschko, M. (2009). How do languages classify their nouns? Cross-linguistic variation in the manifestation of the mass count distinction. In WSCLA 13 & 14: *Proceedings of the 13 and 14th Workshop on the Structure and Constituency of Languages of the Americas*, *February, 4-7, 2008* (pp. 223–241). Vancouver: UBC Working Papers in Linguistics.