

DETERMINANTS OF SPLIT INTRANSITIVITY IN BLACKFOOT: EVIDENCE FROM VERBS OF EMISSION*

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1. DETERMINANTS OF SPLIT INTRANSITIVITY

According to Perlmutter’s (1978) Unaccusativity Hypothesis, intransitive verbs can be divided into two classes: UNACCUSATIVE verbs, which have an underlying internal argument, such as a theme or patient, and UNERGATIVE verbs, which have an underlying external argument, such as an agent. Van Valin (1990) identifies two types of languages based on the semantic factors which determine whether a particular intransitive verb is unergative or unaccusative.¹ In one type of language, classification of intransitive verbs is based exclusively on argument selection. More specifically, all verbs whose single argument is a volitional agent are unergative. We will refer to these as TYPE I languages. In the other type of language lexical aspect also plays a role. In this type of language, telic verbs are unaccusative, and unergative verbs are agentive and/or atelic, and thus constitute a more heterogenous set.² We will refer to these as Type II languages.

Table 1: A typology of split intransitivity

TYPE	DETERMINANTS OF SPLIT INTRANSITIVITY	UNERGATIVE	UNACCUSATIVE
Type I	Argument-based split	agentive	non-agentive
Type II	Argument & Aspect-based split	agentive and/or atelic	non-agentive and/or telic

* We thank Rachel Ermineskin and Noreen Breaker for teaching us about their language. Both are native speakers of Siksika Blackfoot. This research was funded in part by a PURE grant to Sara Johansson and SSHRC grant 410-2008-0892 to Elizabeth Ritter. Additional funding was provided by the Faculty of Social Sciences at the University of Calgary.

¹ In fact, Perlmutter (1978) proposed that unaccusativity is semantically determined, but syntactically represented. On his analysis, a direct internal argument is an underlying direct object and an external argument is a subject at all levels of representation. However, the question of whether the single argument of an unaccusative verb is an underlying direct object has been the subject of significant debate. (See Levin & Rappaport Hovav 1995 for an overview.) Van Valin (1991) argues that the distinction between unergative and unaccusative verbs can be characterized entirely in semantic terms, without recourse to syntactic movement. In this paper, we eschew the question of syntactic derivation, and focus on the semantic determinants of unaccusativity in Blackfoot.

² A TELIC verb has an incremental theme, i.e. a direct internal argument that measures out the event. For example, *the table* is an incremental theme in *John painted the table*. Progression of the painting event in this example correlates with changes in the table, e.g. when half the table is painted, half the event has been completed. See Dowty 1991 and Tenny 1994 for discussion.

The goal of this paper is to identify the semantic determinants of split intransitivity in Blackfoot. In order to address this question, we develop language-specific tests for unergativity /unaccusativity and apply them to verbs that are both non-agentive and atelic. Such verbs are unaccusative in Type I languages but unergative in Type II. We show that these verbs are unergative in Blackfoot, and thus that both agentivity and (a)telicity are determinants of split intransitivity in this language.

2. Animacy, Agentivity and Blackfoot Verb Classification

Following Bloomfield (1946), it is standardly assumed in the literature on Algonquian languages that verb stems belong to one of four classes, depending on the number of arguments they require and the gender of one of those arguments. As summarized in Table 2, there are two classes of intransitive verb stems, distinguished by the grammatical gender (animate or inanimate) of the subject, and two classes of transitive verb stems, distinguished by the grammatical gender (animate or inanimate) of the object.³ Verb class is indicated by a morpheme which appears at the right edge of the verb stem, called a FINAL, and whose form is lexically determined. This is exemplified in Table 2 with the various verbs ‘burst’ listed in Frantz & Russell (1995).

Table 2: Blackfoot Verb Classification

VERB CLASS	INDICATIONS	EXAMPLE
Intransitive Animate (AI)	subject is animate	<i>ipakksskaa</i> ‘sthg _{animate} burst’
Intransitive Inanimate (II)	subject is inanimate	<i>ipakksii</i> ‘sthg _{inanimate} burst’
Transitive Animate (TA)	object is animate	<i>ipakksk</i> ‘sbdy burst sthg _{animate} ’
Transitive Inanimate (TI)	object is inanimate	<i>ipakkski</i> ‘sbdy burst sthg _{inanimate} ’

We are concerned here with the question of whether the subjects of unergative intransitive verbs are always agentive. There is an indirect relationship between the traditional verb class system and agentivity. In Blackfoot, agentive subjects must refer to semantically animate beings that exercise volitional control over their actions. Frantz (1991: 45) observes that TA and TI verbs *must* have semantically animate subjects.⁴ Johansson (2008) further shows that AI verbs *may* have

³ We use the terms SUBJECT and OBJECT for ease of exposition. The term object refers to the internal argument of a transitive verb, and corresponds to the traditional Algonquianist term, goal. The object is a proto-patient in the sense of Dowty (1991), or an undergoer in the sense of Van Valen (1990). The term subject refers here to the single argument of an intransitive verb or the external argument of a transitive verb, and corresponds to the traditional Algonquianist term, actor. The subject of a transitive verb is a proto-agent in the sense of Dowty, and an actor in the sense of Van Valen. The subject of an intransitive verb is either a proto-agent/actor or a proto-patient/undergoer.

⁴ An anonymous reviewer points out that other Algonquian languages require only that one of the arguments of a transitive verb be animate. This is the case for so-called inverse-only verbs such as ‘make someone sick’ ‘give someone a headache’. Consistent with Frantz’s characterization of agents as strictly animate in Blackfoot, no mention is made of inverse-only

semantically animate subjects, but II verbs *cannot* have semantically animate subjects. She reports that Blackfoot speakers must resort to a strategy of ‘gender mismatch’ in order to describe a fictional world where inanimate objects think, feel and act. This gender mismatch strategy is illustrated in (1), where the grammatically inanimate DP *ámostsi písátssaisskiistsi* ‘these flowers’ function as external arguments of the AI verb stem *inihki* ‘sing’.⁵

- (1) *ámostsi písátssaisskiistsi áinihkiyaawa*
 amo-istsi písátssaisski-istsi a-inihki-yi-aawa
 DEM-IN.PL flower-IN.PL IMPERF-sing.AI-PL-PRON
 'These flowers are singing.'

Johansson 2008

Significantly, there are no agentive II verb stems listed in Frantz and Russell (1995), and Johansson found that all attempts to coin one were categorically rejected by her consultant as ill-formed. Thus, in order to determine whether agentivity is the only determinant of unergativity, we focus on II verbs. If agentivity were the *only* semantic determinant of unergativity in Blackfoot there would be no unergative II verbs. However, we shall show that in fact there are unergative II verbs, and thus that atelicity is also a factor.

3. Verbs of Emission: A Test Case

Levin & Rappaport Hovav (1995) show that verbs which denote the emission of a sound, light, smell or substance are unergative in languages that allow non-agentive external arguments. English is such a language, and the verbs of emission listed in Table 3 below are all unergative.

Table 3: English verbs of emission

SOUND EMISSION	LIGHT EMISSION	SMELL EMISSION	SUBSTANCE EMISSION
burble	flash	reek	bubble
buzz	gleam	smell	gush
clang	glitter	stink	ooze
crackle	sparkle		puff
jingle	shimmer		spew
whistle	twinkle		squirt

verbs in either his (1991) grammar or Frantz and Russell’s (1995) dictionary. We have also found the same restriction in our own field work on the language.

⁵ Unless otherwise noted, examples are taken from our field notes, and are transcribed using the orthographic conventions described in Frantz (1991: 1-6). The following abbreviations are used in this paper: **1/2/3/4** - 1st/2nd/3rd/4th person; **AI** – animate intransitive; **AN** – animate; **DEM** – demonstrative; **IA** - intransitive animate; **II** – intransitive inanimate; **IMPERF** – imperfective; **IN** – inanimate; **INV** – inverse theme; **PL** – plural; **PRON** – pronominal clitic; **PROX** – proximate; **SG** – singular; **TA** – transitive animate; **TI** – transitive inanimate; **TH** – transitive inanimate theme.

Levin and Rappaport Hovav argue that verb classification requires language specific diagnostics for unergativity/unaccusativity. For example, English diagnostics of unergative verbs include (i) the requirement for the addition of a non-argument DP object whenever a resultative secondary predicate is present, and (ii) the ‘X’s way’ construction. As shown in (2), *stink*, a verb of smell emission, passes both of these tests.

- (2) a. The skunk stank us out of house and home.
 b. He stank his smelly way home.

Levin and Rapaport Hovav 1995: 139 (10)

Verbs of emission are also unergative in Italian, but in this language the evidence for this claim comes from auxiliary verb selection. More specifically, unergative verbs form the composite past tense with the auxiliary *habere* ‘have’ whereas unaccusatives require the auxiliary *essere* ‘be’. As shown in Table 4, Italian verbs of emission select the unergative auxiliary rather than the unaccusative one (Rosen 1984).

Table 4: Italian verbs of emission

SOUND EMISSION		LIGHT EMISSION		SMELL EMISSION		SUBSTANCE EMISSION	
ITALIAN VERB	GLOSS	ITALIAN VERB	GLOSS	ITALIAN VERB	GLOSS	ITALIAN VERB	GLOSS
<i>ha cigolato</i>	creaked	<i>ha scintillato</i>	glittered	<i>ha puzzato</i>	stank	<i>ha schiumato</i>	foamed
<i>ha stormito</i>	rustled	<i>ha brillato</i>	shone				

adapted from Rosen 1984: 64 (77)

Thus, verbs of emission provide an excellent testing ground for the question of whether a language allows non-agentive unergative verbs. We can now refine our question as follows: Are Blackfoot II verbs of emission unergative or unaccusative?

Table 5: Blackfoot II verbs of emission

SOUND EMISSION		LIGHT EMISSION		SMELL EMISSION		SUBSTANCE EMISSION	
Bf II VERB	GLOSS	Bf II VERB	GLOSS	Bf II VERB	GLOSS	Bf II VERB	GLOSS
<i>ipaksksissskaa</i>	creak	<i>ikkanattsi</i>	glitter	<i>ipahkai'mimm</i>	smell rotten	<i>si'tsii</i>	smoke
<i>ohtako</i>	make a sound	<i>istssikaittsi</i>	shine, glitter	<i>itsiyimo</i>	have a fragrant odor	<i>saakotsii</i>	bubble up
<i>isatsiksi</i>	jingle/ring			<i>ipahksimo</i>	smell like urine		
<i>isitsipohtako</i>	rattle			<i>itsimo</i>	stink		
				<i>ipahksikaimo</i>	stink like feet		

If telicity is not a factor in determining split intransitivity in Blackfoot then all unergative verbs in Blackfoot must be agentive AI verbs. This hypothesis predicts that II verbs of emission will be unaccusative. However, if aspect is a factor, then there should be unergative AI and II verbs that are atelic but non-agentive. In particular, we predict that there will be unergative II verbs of emission that are atelic but non-agentive. In the next section we explore the properties of II verbs of emission, showing first that they are atelic, and second that they are unergative. Thus, the evidence indicates that aspect is a determinant of split intransitivity in Blackfoot.

4. Blackfoot has Atelic, Non-agentive Unergative Verbs of Emission:

According to Van Valin (1990) non-agentive unergative verbs are atelic, i.e. they lack a natural end point. Thus, we first show that Blackfoot verbs of emission are atelic, applying a telicity test developed by Ritter and Rosen (2009) based on work by Dunham (2007). We then turn our attention to the classification of these verbs as unergative or unaccusative. To the best of our knowledge, no language-specific tests for unergativity/unaccusativity have been developed for Blackfoot. Below we report results for three candidate diagnostics for unergativity in Blackfoot applied to atelic verbs of emission. This preliminary evidence suggests that these atelic verbs are indeed unergative.

4.1 Blackfoot Verbs of Emission are Atelic

Dunham (2007) analyses the Blackfoot prefix *a-* as a marker of imperfective aspect for a number of reasons, including the fact that it cannot occur on telic verbs that express culminated or completed events.⁶ Using a video image matching task he found that telic accomplishments must be interpreted as in progress when imperfective *a-* is present, and as completed when imperfective *a-* is absent. Ritter and Rosen (2009) replicated his results for telic predicates using still images. They presented their consultant with either a picture of a telic event in progress (e.g. a half-eaten plate of fish) or a picture of a culminated telic event (e.g. a plate of fish bones). In each case the consultant was asked to judge whether a sentence containing a bare verb (e.g. ‘eat’) and/or one contain the same verb with the imperfective prefix could be used to describe the picture. The consultant consistently matched only the bare form with the culminated event, and only the imperfective form with the event in progress.⁷ Ritter and Rosen also applied their methodology to atelic activities (e.g. ‘sleep’, ‘dance’ and ‘run’), and obtained very different results: For these verbs, a picture of the event in progress could be described using either the bare verb or the prefixed form with imperfective *á-*.

We applied Ritter and Rosen’s picture-matching task to verbs of emission to determine their aspectual classification. The same picture could be described with both bare verb and a prefixed form, as illustrated in (3) and (4).

(3) *matónni ámo sáittsikihtaisoka’simi aisaittsikohtako*
 matonni amo saittsikihta-isoka’sim-yi a-saittsik-ohtako
 yesterday DEM jingle.dress-IN IMPERF-bell-make.a.sound.II
 ‘Yesterday this jingle dress jingled/was jingling.’

(4) *anni pomiáána’kimaa’tsis álsi’tsii matónni*
 ann-yi pomiaana’kimaa’tsis a-isi’tsii matonni
 DEM-IN.SG oil.lamp IMPERF-smoke.II yesterday
 ‘Yesterday this oil lamp smoked/was smoking.’

⁶ This is the well-known IMPERFECTIVE PARADOX (cf. Dowty 1977).

⁷ Ritter and Rosen (2009) tested TA, TI and pseudotransitive AI forms of the verb ‘eat’ and found no difference among them. The term PSEUDOTRANSTIVE refers to the use of an AI verb with an indefinite NP object. (See Taylor 1969, Frantz 1970, 1991, and Glougie 2000 for discussion.)

The fact that there is no contrast suggests that these non-agentive verbs of emission are atelic. What remains to be determined then is whether they are also unergative. We address this question in the remainder of this section.

4.2 *Blackfoot Verbs of Emission have Non-Agentive External Arguments*

Agents are always external arguments and, as noted above, in some languages they are the only kind of external argument licensed by unergative verbs. In fact, agents are the principle subtype of INTERNAL CAUSERS, i.e. external arguments that have the inherent capacity to independently generate the event (Levin & Rappaport Hovav 1995, Folli & Harley 2008). Since agents have volitional control over their action, they can choose to act in such a way as to generate an event. While non-agentive internal causers lack volitional control, they nevertheless have the necessary constitution to generate the event.

The sentences below demonstrate that the external arguments of English verbs of emission must be internal causers, though they need not be agentive. As illustrated in (5), the verb *whistle* may be predicated of subject whose referent is a train or a person, but not a bullet. Trains are internal causers because they have a whistle as part of their standard equipment, and people are internal causers because they can whistle (with a little practice) by appropriately configuring their mouths. However, bullets are not internal causers because they are not designed to whistle. Similarly, the examples in (6) show that the verb *ring* may be predicated of a subject whose referent is a phone or a bell, because both of these inanimate objects are designed to produce a ringing sound, but *ring* cannot be predicated of a subject with a human referent. The reason is that people cannot produce a ringing sound simply by manipulating some body part.⁸

- (5) a. The train whistled.
b. John whistled.
c. #The bullet whistled.
- (6) a. The phone rang.
b. The bell rang.
c. #John rang.

In order to determine whether Blackfoot verbs of emission also select internal causers as their arguments, we first elicited verbs of sound emission, and used these verbs to construct simple sentences consisting of only a subject and verb. Next we presented the sentences we had constructed to our consultants along with a series of pictures, depicting different emitters. In each case, they were asked to judge whether the sentence could be used to describe the picture. For example, the sentence in (7) was paired with an ordinary dress and with a jingle dress. (A

⁸ We mark ill-formedness in examples (5)c and (6)c with the symbol # to show that these sentences are pragmatically odd, but with appropriate context could be considered acceptable. For example, if you built a giant bullet and included a whistle as part of its equipment, you should be able to say that the giant bullet whistled. And as shown in (8) below, in a fictional world where people are bell-shaped you could also say that somebody rang.

jingle dress is a ceremonial garment with small metal cones sewn onto it so that it will make a jingling sound.) Our consultants judged that only the latter could be referenced by the subject of *saittsikohtako* ‘jingle (=make a bell sound)’. Similar results were obtained when the subject of *saittsikohtako* ‘jingle’ had a human referent: The sentence in (8) was paired with a girl who had been turned into a bell, a girl holding a bell, and a girl wearing a jingle dress. Strikingly, only the girl who was a bell was judged a suitable referent for the subject of this example. The results of this task clearly show that Blackfoot verbs of emission, like their English counterparts, require an internal causer.

- (7) *anna* *Miaaniwa* *anni* *osoka'simi* *aisaittsikohtako*
 ann-wa miaani-wa ann-yi ot-soka'sim-yi a-saittsik-ohtako
 DEM-3.SG Mary-3.SG DEM-IN.SG 3-dress- IN.SG IMPERF-bell-sound.II
 ‘Mary’s dress is jingling.’⁹

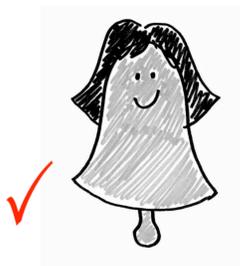


Mary’s jingle dress



Mary’s (ordinary) dress

- (8) *anna* *miaaniwa* *aisaittsikohtamm*
 ann-wa miaani-wa a-saittsik-ohtako-mm
 DEM-3.SG Mary-3.SG IMPERF-bell-sound.AI-3SG
 ‘Mary is jingling.’



Mary is a bell.



Mary is holding a bell.



Mary is wearing a jingle dress.

Following Levin and Rappaport (1995), we assume that internal causers are non-agentive external arguments. Thus, the fact that emitters must be internal causers constitutes a first argument that Blackfoot has non-agentive unergative verbs, and thus that aspect is also a determinant of split intransitivity in this language.

⁹ In different fieldwork sessions, the name Mary is alternatively given as *Mary* or *Miaani* in Blackfoot. This variation can be seen in transcription of examples (7), (8), (10) and (12).

4.3 External Causers cannot be added to Blackfoot Verbs of Emission

A second diagnostic of unergativity/unaccusativity has to do with the possibility of deriving a transitive verb with an added external argument whose semantic role is external causer or agent. Since unaccusative verbs have only an internal argument, there is a position available for an added external argument. In Blackfoot, such alternations involve the addition of an abstract transitive (TI or TA) final, as illustrated in (9):

- (9) a. i'pii (II) 'it is wet'
 b. i'piiststoo (TI) 's/he wet it'

Frantz & Russell 1995

Unergative verbs, which have only an external argument, will not enter into this type of transitivity alternation.

Our hypothesis that intransitive verbs of emission are unergative in Blackfoot leads us to predict that there will be no II-TI pairs like the one in (9). In other words, it will be impossible to derive a transitive alternant with an external causer by adding an abstract TI final to an II verb of emission. We further predict that if an external causer *is* expressed, one of the following strategies will be used: (i) The verb will remain intransitive, and the means prefix *iiht-* will be added to the verb, signaling that the added phrase is the means or instrument used to perform the action denoted by the verb, or (ii) a derived causative verb will be produced using the concrete causative final *-atts*.

The evidence bears out these predictions. First, Frantz and Russell (1995) list no TI verbs related to the II verbs of emission in Table 5. Second, we were unsuccessful in eliciting TI verbs from our consultants. Rather, as shown in (10), the means prefix *iiht-* was added to the II verb 'jingle' to indicate the presence of an external causer.¹⁰

- (10) MEANS PREFIX IIHT-
anna miaaniwa aipahpaapiksima anni sayaittsikitaishoka'simi
 ann-wa miaani-wa a-ipahpaapiksi-m-wa ann-yi sayaittsikita-isoka'sim-yi
 DEM-3.SG Mary-3.SG IMPERF-shake.TI-TH-3SG DEM-IN.SG bell-dress- IN.SG

iihtaisaittsikohtako

iiht-a-saittsik-ohtako

MEANS-IMPERF-bell-make.sound.II

'Mary shook this dress and made it jingle'

Lit. 'Mary shook this dress and that's how it jingled.'

In section 4.2 we established that the subjects of verbs of emission are internal causers. Both external causers and internal causers are external arguments. Consequently, we attribute the

¹⁰ There is a pseudo-intransitive AI verb meaning 'to jingle (something)' *iisaittsikaapiksistaki*, but this is not derived from the II verb *saittsikohtako* 'to jingle'. A pseudo-intransitive verb is a morphologically intransitive, but syntactically transitive verb that selects a non-specific bare NP object. Frantz (1991) uses the term paratransitive for this class of AI verbs.

non-existence of transitive verbs of emission with external causers in Blackfoot to the fact that an internal causer already occupies the external argument position.

4.4 Unselected Objects Can be Added to Blackfoot Verbs of Emission

While unaccusative verbs have an empty subject position that may be filled by an added external argument, unergative verbs have an empty object position that may be filled by something other than an internal argument. In particular, this position may be filled by a cognate object or a benefactive/ goal object. As noted in section 2, all transitive verbs in Blackfoot have a sentient external argument. Thus, transitive verbs with either type of non-argument object will be derived from an AI verb. When a cognate object is added (e.g. laugh a *laugh*, dream a *dream*), a TI verb is derived. The addition of cognate objects is sometimes possible, but does not seem to be available for all Blackfoot verbs. However, animate and sentient benefactive objects may be productively added to AI verbs to derive related TA verbs.

Although these test cannot be applied to II verbs of emission or to AI verbs with non-sentient animate emitters, they can be applied to AI verbs of emission with a sentient animate emitter. Our hypothesis that intransitive verbs of emission are unergative in Blackfoot predicts that it should be possible to derive both TI verbs with cognate objects and TA verbs with benefactive/goal objects from verbs of this semantic class. Both predictions are borne out for the AI verb *iksiksiimohki* ‘whistle’. In their entry for this verb, Frantz and Russell (1995) include two related transitive verbs, a TA verb with a goal object and a TI verb with a cognate object (11).¹¹ Examples containing each of these verbs are given in (12):

(11)	a.	<i>iksiksiimohki</i>	(AI)	‘whistle’	V
	b.	<i>iksiksiimohkatoo</i>	(TI)	‘whistle (e.g. a song)’	V & cognate object
	c.	<i>iksiksiimohkat</i>	(TA)	‘whistle at’	V & goal object
					Frantz and Russell 1995

(12)	a.	<i>aiksiksiimohki</i>	<i>anna</i>	<i>Mary</i>	
		<i>á-iksiksiimohk-i</i>	<i>ann-wa</i>	<i>Mary</i>	
		IMPERF-whistle-AI	DEM-3.SG.	<i>Mary</i>	
		‘Mary whistled.’			
	b.	<i>na</i>	<i>Mary</i>	<i>áiksiksiimohkatoom</i>	<i>ni</i>
		<i>ann-wa</i>	<i>Mary</i>	<i>á-iksiksiimohk-atoom-wa</i>	<i>ann-yi</i>
		DEM-3.SG	<i>Mary</i>	IMPERF-whistle-TI-TH-3SG	DEM-IN.SG
					<i>song-IN.SG</i>
				‘Mary whistled a song.’	

¹¹ We use the term COGNATE OBJECT as defined in the *Oxford Pocket Dictionary of Current English* (2009) to refer to object nouns that “make explicit a semantic concept that is already wholly present in the semantics of the verb which governs it.” This definition includes both object nouns that are derivationally related to the verb (e.g. *dream* a *dream*) and those that are not (e.g. *whistle* a *song*).

c.	<i>nitáiksiksiimohkaka</i>	<i>anna</i>	<i>mary</i>
	nit-á-iksiksiimohk-a(t)-(o)k-a	ann-wa	Mary
	1-IMPERF-whistle-TA-INV-AN.SG	DEM-3.SG	Mary
	‘Mary whistled at me.’		

5. Conclusions

Summarizing the results of this study, we have argued that Blackfoot II verbs of emission are unergative verbs that are non-agentive and atelic. This conclusion is based on the following facts: first, the subject of a verb of emission must be an internal causer, i.e. an external argument with inherent properties necessary to generate the event; second it is not possible to add an external causer argument, and finally, it is possible to add a non-argument object.

Table 6: Summary

DIAGNOSTIC	UNERGATIVE Vs	UNACCUSATIVE Vs	Vs OF EMISSION
#1 - imperfective prefix a-	✓ atelic	? telic	✓ atelic
#2 – argument role	✓ internal causer	* internal causer	✓ internal causer
#3 – added causer	* derived TA/TI verb	✓ derived TA/TI verb	* derived TA/TI verb
#4 – added object	✓ benefactive object ✓ cognate object	* benefactive object * cognate object	✓ benefactive object ✓ cognate object

Thus, both aspect and agentivity are determinants of split intransitivity in this language. With respect to this property, Blackfoot belongs to the same type as English. This is perhaps surprising, given that Blackfoot imposes a strict animacy requirement on agents, while English does not. What remains to be determined then is whether there is some common characteristic that distinguishes languages of this type from those in which all unergative verbs are agentive.

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