

Towards a Morph-syntactic Typology of Split Intransitivity

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Abstract This paper analyses the split intransitivity by introducing data from Japanese and Mongolian. The finding reveals that Japanese split intransitivity links to postposition selection, i.e. unergative motion verbs describe processes with a durative motion event and thus are likely to yield directional postpositions or a route with an endpoint. Unaccusative verbs, on the other hand, indicate a punctual motion event and therefore often occur with locative postpositions. Intransitives further split in lexicalisation, i.e. Japanese unergative verbs tend to convey the MANNER of motion while unaccusative verbs appear to favour the PATH of motion. Mongolian seems to render the path in the main verb, leaving manner to be encoded in an optional constituent, i.e. a converbial construction. The combination of converbial construction is restricted to [non-scale change morphemes + totally closed-scale change morphemes] and [non-scale change morphemes + lower closed-scale morphemes]. Essentially, unergative verbs can be non-scale change morpheme or totally open-scale morpheme, contributing to the manner of motion. Unaccusative verbs can be totally closed-scale, or upper closed-scale, or lower closed-scale morpheme, denoting the path of motion.

Keywords Split Intransitivity, Unaccusative, Unergative, Morpho- syntax, Japanese, Mongolian

1. Introduction

Split intransitivity refers to a phenomenon that different intransitive verbs in certain language may display different linguistic behaviours. Intransitives could split in syntax or semantics.

Following the Unaccusativity Hypothesis (Perlmutter [22]), intransitive verbs can be subcategorised into two types: unaccusatives and unergatives. An unaccusative verb has a syntactic external argument that is not the semantic agent. Semantically, the subject of an unaccusative verb is similar to the direct object of a transitive verb. For instance, *fall*, *rise*. An unergative verb semantically has an agent

argument, such as *run*, *walk*.

The syntactic distinctions of the two lies in that, unaccusatives have an internal argument (1a) whilst unergatives have an external argument (1b).

(1) Syntactic distinction

- a. Unergative: NP [VP V]
- b. Unaccusative: [VP V NP]

A semantic characteristic regarding split intransitivity is their concurrences with predicates, i.e. unergativity is likely to correlate with ‘agentivity’ and unaccusativity with patient-hood (Dowty [6]).

(2) Semantic distinction

- a. Unergative: Agentivity
- b. Unaccusative: Patient-hood

Split intransitivity has been studied a good deal within European languages. The central point for cross-linguistic interests is the diagnostics of unaccusativity/unergativity. Various theories have been devoted to pursue a satisfactory diagnostic, e.g. the Universal Alignment Hypothesis (Perlmutter & Postal [23]). Recently, Sorace [25] proposes ‘Auxiliary Selection Hierarchy’, which appears a welcome one, i.e. unaccusative verbs are likely to select BE whilst unergative verbs tend to choose HAVE. Table 1 is Sorace’s *Auxiliary Selection Hierarchy*.

Table 1. Auxiliary Selection Hierarchy

Change of location	come, arrive, leave, fall . . .
Change of state	rise, become, decay, die, be born, happen . . .
Continuation of a pre-existing state	stay, remain, last, survive, persist . . .
Existence of state	be, belong, sit, seem, be useful, depend on . . .
Uncontrolled process	tremble, catch on, skid, cough, rumble, rain . . .
Controlled process (motional)	swim, run, walk . . .
Controlled process (non-motional)	work, play, talk . . .

Another pathway comes from lexical semanticists who contend that different verbs have different meanings, which in turn results in various lexical semantic representations as well as argument structure realisation. This comment

inspires a projectionist approach and representative work includes Hale & Keyser [10, 11], Levin & Rappaport Hovav [17-19]. For instance, in English resultatives, direct object NP must be governed by the verb (Levin & Rappaport Hovav [19]), c.f. (3).

- (3) a. The bottle broke open. (unaccusative)
 b. *John shouted hoarse. (unergative)

Legendre [15-16] presents a universal set-inclusion hierarchy of eventive features based on the optimality-theoretic, as in (4).

- (4) Universal set-inclusion hierarchy
 (a) Inherent volitionality
 (b) State
 (c) Directed change
 (d) Telicity
 (e) Inhomogeneity
 (f) Inherent displacement

There is another line of research that bears significance to the study of lexicalisation, arguing in favour of constructional factors. Remarkable works in this field are Arad [1], Borer [5], van Hout [26, 27], McClure [21]. The constructional approach considers the unaccusativity and unergativity of verbs are not solely lexical properties, but are derived from the syntactic configurations of where verbs appear or how they are combined. The challenge remains, however, cross-linguistically, some verbs displays inconsistent behaviours, e.g. ‘blush’ is unaccusative in Italian whilst unergative in Dutch. Intra-linguistically, *continuare* ‘continue’ can take both auxiliary *essere/E* ‘be’ and auxiliary *avere/A* ‘have’ in Italian (Legendre [16]). It appears that split intransitivity within or across languages is far from being a clear-cut case.

Split intransitivity within Altaic languages remains unexplored. For instance, Japanese and Mongolian. A large number of unaccusative/unergative verbs co-existed in the two languages, c.f. (5).

- (5) Japanese
 a. Mado ga ware-ta. (unaccusative, inchoative)
 window NOM break_{intr}-PAST
 ‘The window broke.’
 b. Taro ga nai-ta. (unergative)
 Taro NOM cry-PAST
 ‘Taro cried.’

(5a) is anticausativisation. Japanese unaccusative verbs usually accompany transitive alternations, as in (6).

- (6) Taro wa mado wo wa-tta. (causative)
 Taro TOP¹ window ACC break_{tran}-PAST
 ‘Taro broke the window.’

Inchoative (5a) and causative (6) alternation in Japanese is mainly facilitated in morphological level: a morpheme that indicates intransitive and transitive properties is added

to the verb stem, e.g. *kowa-s-(r)u/kowa-re-ru* and *kir-0/-(r)u/kir-e-ru*. In fact, Japanese inchoative/causative alternation presents two variations.

Anticausativisation: The object changes in terms of the property of the object itself. The transitive verb comes to bear an intransitive function via identifying the object and causer.

x CONTROL [y BECOME [y BE AT- z]]
 $x = y$ CONTROL [y BECOME [y BE AT- z]]

e.g. *waru/wareru* ; *yaburu/yabureru*

Decausativisation: The object changes in terms of external factors. The intransitivisation affix ‘-ar-’ suppresses the causer in semantic structure, without projection to the syntactical structure. Through this manipulation, transitive verbs come to have an intransitive function.

x CONTROL [y BECOME [y BE AT- z]]
 ↓
 Ø

e.g. *kimeru / kimiru*; *atumaru / atumeru*

(Based upon Kageyama [9])

Split intransitivity in Japanese further extends to motion construction. It occurs that unergative verbs and unaccusative verbs show a very different preference:

- (7) a. Taroo a eki ni **i-tta**. (unaccusative)
 Taroo NOM station DAT go-PAST
 ‘Taroo went to the station.’

b. *Taroo ga eki ni **arui-ta**. (unergative)
 ill-formed

Taroo NOM station DAT walk-PAST
 ‘Taroo walked to the station.’

- c. Taroo ga **arui-ta**. (unergative) well-formed
 Taroo NOM walk-PAST
 ‘Taroo walked.’

In (7a), the verb *iku* (past tense is ‘*itta*’) is unaccusative. It renders the path of the motion: go to the station. In (7b), *aruku* denotes the manner of ‘walk’; the manner verb *aruku* alone cannot render a motion expression. Unergative verbs tend to yield the MANNER of motion while unaccusative verbs tend to convey the PATH of motion.

Turning to Mongolian, unaccusative and unergatives verbs are illustrated in (8) and (9)²:

(8) **Mongolian unaccusative verbs**

хагарax ‘break_{intr}.’
 тасарax ‘cut_{intr}.’
 эвдэрэх ‘break_{intr}.’

¹ TOP: topic; NOM: nominative; ACC: accusative; PAST: past tense.

² There are three writing systems in Mongolian: Todo Biciq (Xinjiang area), Traditional Mongolian alphabet (Hudum) (Inner Mongolia) and Cyrillic Mongolian (Outer Mongolia). In this study, Cyrillic Mongolian was adopted. A list of Mongolian Cyrillic alphabet is provided at the end of the paper.

шатах 'burn_{intr.}'
хүрэх 'arrive'

(9) **Mongolian unergative verbs**

Уйлах 'cry'
ажиллах 'work'
бүжиглэх 'dance'

The equivalent constructions of (5) are given in (10):

(10) **Mongolian**

- a. шил **награв.** (unaccusative, inchoative)
window-NOM break_{intr.}-PAST
'The window broke.'
b. тароо **уйлав.** (unergative)
Taro-NOM cry-PAST
'Taro cried.'

The manner of motion/action in Mongolian is usually realised via a converbal construction:

- (11) a. сэмэрхэн ойртох 'crawl towards'
b. аваад гаргах 'take out'

In (11), the second constituent, which renders the PATH, is the core of the motion/action expression. The manner/means is conveyed by a converb (the first constituent).

The above are preliminary illustrations that inspire us to investigate the phenomenon of Altaic split intransitivity in more depth. The analysis will follow the 'scale structure' framework to account for the similarities as well as distinctions of the two languages. The data for Modern Japanese is from the corpus of Balanced Corpus of Modern Written Japanese by National Institute for Japanese language and linguistics. The data for Modern Mongolian use 'hand-made examples'. Two Mongolian native speakers from different parts of Mongolia judge all data.

The paper is mapped out as follows: Section 2 introduces the framework that is adopted in this study: scale structure. Section 3 discusses the semantic representations in terms of motion event, delving into the split regarding postposition selections. Section 4 turns to Mongolian, exploring the split regarding motion expression. Section 5 draws some general conclusions.

2. Framework: Scalar Structure

This paper takes the scalar structure theory as the framework. The adoption of *scale* in linguistic track can be traced back to 70 years ago (Sapir [24]). Later, it was adopted in formal semantics (Bolinger [4]). It was not until 1990s that *scale* was started being introduced to syntax (Hay et al. [8]). Recently, lexical semantics apply it to adjectives, verbs, etc. (e.g. Kennedy and McNally [14]; Kennedy and Levin [13]). A *scale* is constituted of a set of degrees on a particular dimension (e.g. cost, depth, height, temperature), with an ordering relation. The dimension

represents an attribute of an entity, with the degrees indicating the possible values of this attribute (Kennedy and McNally [14]).

3. Split Intransitivity in Japanese

3.1. Split Intransitivity Regarding Motion Event

With the framework of *scale structure* highlighted, this section proceeds by posing the questions of how motion constructions might reflect Japanese split intransitivity.

To begin with, motion verbs in Japanese can be divided into five groups based upon their scale structure: (a) totally open-scale morphemes; (b) totally closed-scale morphemes; (c) upper closed-scale morphemes; (d) lower closed-scale morphemes; (e) non-scale change morphemes. The classification is demonstrated in (12):

(12) a. **Totally open-scale morphemes:**

kuguru 'pass through', *yokeru* 'ward off', *mukau* 'go toward', *sakarau* 'go against', *zureru* 'slip out', *utsuru* 'shift', *kayou* 'ply', *narabu* 'queue up', *mawaru* 'around'

b. **Totally closed-scale morphemes:**

tsuku 'arrive', *itaru* 'get to', *todoku* 'reach', *noru* 'get on', *koeru* 'transcend', *oriru* 'descend', *tooru* 'through', *sugiru* 'past', *yokogiru* 'cross', *deru* 'exit', *hairu* 'entre'

c. **Upper closed-scale morphemes:**

modoru 'return', *kuru* 'come', *wataru* 'cross', *kaeru* 'return', *heru* 'pass', *chikazuku* 'approach', *kudaru* 'descend', *noboru* 'climb'

d. **Lower closed-scale morphemes:**

meguru 'move around', *iku* 'go', *sou* 'go along', *yoru* 'approach', *hanareru* 'leave', *noku* 'move backward', *kasumeru* 'flit', *saru* 'go away', *sagaru* 'descend', *agaru* 'ascend'

e. **Non-scale change morphemes:**

aruku 'walk', *ayumu* 'walk', *oyogu* 'swim', *hashiru* 'run', *haseru* 'run', *kakeru* 'run', *hau* 'crawl', *suberu* 'slide', *odoru* 'dance', *korogaru* 'tumble', *haneru* 'jump', *mau* 'dance', *moguru* 'dive', *samayou* 'wander', *tobu* 'fly'

The distribution of unergatives and unaccusatives is given in (13):

- (13) a. **Totally open-scale** morpheme: unaccusative V, denoting the path of motion
b. **Totally closed-scale** morpheme: unaccusative V, denoting the path of motion
c. **Upper closed-scale** morpheme: unaccusative V, denoting the path of motion
d. **Lower closed-scale** morpheme: unaccusative V, denoting the path of motion
e. **Non-scale change** morpheme: unergative V, conveying the manner of motion

Totally closed-scale morphemes as well as upper closed-scale morpheme have specific goals. Therefore they can take *ni* ‘to’, *e* ‘toward’ case particles. On the other hand, non-scalar change morpheme, totally open-scale morphemes and lower closed-scale morpheme do not have inherent endpoints. When expressing a motion, they would have to employ a boundary marker *made* ‘until’ to indicate the endpoint of motion, as in (14):

- (14) Taroo wa eki **made** aruita.
 Taroo TOP station till walk PAST
 ‘Taroo went to the station.’

The addition of the goal phrase makes the aspectual properties of those morphemes available for an endpoint reading (Aske [2]; Beavers et al. [3]). In fact, this applies to change-of-state events. The goal phrase functions as an accomplishment, indicating the result of an action, e.g. (15).

- (15) a. Taroo ga chokkaku **made** kinzokuboo
 o mage-ta.
 Taroo NOM square until metal bar
 ACC bend-PAST
 ‘Taroo bent the metal bar to square.’

3.2. Split Intransitivity Regarding the Postpositions

The split further links the selection of postpositions (PPs). Below is a list of Japanese postpositions. Their scale property is given in (16).

- (16) a. **Totally open-scale** morpheme: *e* ‘toward’
 b. **Totally closed-scale** morpheme: *ni* ‘to’, *made* ‘until’; *ni sotto* ‘along’
 c. **Upper closed-scale** morpheme: *e-to*³ ‘towards’
 d. **Lower closed-scale** morpheme: *kara* ‘from’; *yor*
 ‘from’
 e. **Non-scale change** morpheme: unergative V,
 conveying the manner of motion

Recall the following ill-formed motion expression.

- (17) *Taroo ga kooen **ni** aruita.
 Taroo NOM park DAT walk PAST
 ‘Taroo walked to the park.’

Japanese unergative verbs fail to combine with the PP *ni*. This is due to the following reasons: *ni* is locative. Unergative verbs convey the manner of motion and therefore is unable to predicate a result location with the postposition *ni*. *ni* may perfectly well co-occur with an unaccusative verb, because an unaccusative verb denotes the path, therefore the PP can bear a directional interpretation.

The ungrammaticality of (17) can be improved by replacing *ni* with *e*, which itself is a totally open-scale

postposition. With this *e* in place, the motion expression changes the aspect from telic to atelic, c.f. (18):

- (18) Taroo ga kooen **e** aruita.
 Taroo NOM park toward walk PAST
 ‘Taroo walked to the park.’

(18) can also be improved by replacing *ni* with an allative case marker *made* ‘until’, which is delimited and denotes an endpoint of motion. The scope of *made* includes the route and endpoint. On the other hand, *ni* denotes a scope limited to the goal, as furnished by its appearance in locational motion events. Consequently, *ni* tends to favour path verbs solely, such as *tsuku* ‘arrive’ and *chakuriku suru* ‘land’ (e.g. *eki ni *aruita/tsuita*), *made* is likely to occur with unergative verbs, such as *aruku* ‘walk’ as well as unaccusative verbs.

Furthermore, *e-to*, an upper-closed postposition, also appears compatible with unergative verbs, as in (19).

- (19) Taroo ga kooen **e-to** aruita.
 Taroo NOM park DAT walk PAST
 ‘Taroo walked to the park.’

It seems that unaccusative verbs can well form a motion with all the postpositions in Japanese, i.e. *e*, *e-to*, and *ni*, as in (20):

- (20) Taroo ga nikai **e/ni/e-to** agatta.
 Taroo NOM upstairs DAT go up PAST
 ‘Taroo went up to the second floor.’

Perhaps we can pause and draw a preliminary conclusion: unergative motion verbs such as *aruku* ‘walk’ and *hashiru* ‘run’ tend to describe processes with a durative motion event and are likely to yield directional PPs, e.g. *e-to*, *e*; or a route with an endpoint, e.g. *made* ‘till’. On the other hand, unaccusative verbs such as *tsuku* ‘reach’ or *hairu* ‘enter’ tend to indicate a punctual motion event and therefore often occur with locative PPs, e.g. *ni*. The foregoing discussion is summarised in Table 2:

Table 2. Split intransitivity in terms of postposition selections

Scale structure	P	Intransitive V
Totally open-scale	<i>e</i> ‘toward’	unaccusative
Totally closed-scale	<i>ni</i> ‘to’, <i>made</i> ‘until’	unaccusative
Upper closed-scale	<i>e-to</i> ‘towards’	unaccusative
Lower closed-scale	<i>kara</i> ‘from’; <i>yor</i> ‘from’; <i>ni sotto</i> ‘along’	unaccusative
Non-scale change		unergative

4. Split Intransitivity in Mongolian

4.1. Mongolian Case System Regarding Motion

Having drawn a picture of Japanese split intransitivity;

³ *e-to* is between direction *e* and delimitation *made*.

we are in a better position to engage in the analysis of Mongolian data. Our starting point is the case selection in terms of motion event. Then, we will move on to the scale property of Mongolian motion verbs.

The Mongolian case system regarding motion event is as follows: Nominative Case, Accusative Case, Genitive Case, Dative-Locative Case, Ablative Case, Instrumental Case, Illative Case and Comitative Case. Table 3 provides a list of case particles with regard to motion in Mongolian and Japanese.

Table 3. Case particles in terms of motion in Mongolian and Japanese

Case particle	Japanese	Mongolian
Nominative	が <i>ga</i>	φ
Accusative	を <i>o</i>	-ыг/-ийг/-г
Genitive	の <i>no</i>	-ын/-ы/-ийн/-ий
Dative	に <i>ni</i>	-т/-д
Ablative	で <i>de</i>	-аас ⁴
Instrumental	で <i>de</i>	-аар ⁴
Illative	へ <i>e</i>	-руу ²
Comitative	と <i>to</i>	-гай ³

4.2. Split Intransitivity Regarding Motion Expression in Mongolian

Mongolian case system distinguishes from Japanese case system in many respects, for instance, the manner of Mongolian motion verb *уна* takes an accusative case particle, e.g. *-ыг/-ийг/-г*, while the corresponding manner verb in Japanese, i.e. *noru* takes the dative particle *ni*. The path of Mongolian motion verb *чилэх* takes an accusative case particle, e.g. *-ыг/-ийг/-г*; while the corresponding path verb in Japanese *mukau* takes the dative particle *ni*. Some path verbs, such as *явах* ‘go’, *салах* ‘leave’ take the instrumental particle *-аар*⁴. The path verb *явах* ‘go toward’ takes an illative case particle, *-руу*². Table 4 is a comparison of case selection in terms of motion in Japanese and Mongolian.

Table 4. The case system regarding motion construction in Japanese and Mongolian

Motion expression (English translation)	Japanese	Mongolian
(i) Cross the bridge.	Accusative	Instrumental
(ii) Get off the bus.	Accusative	Ablative
(iii) Train stopped due to heavy snow.	Instrumental	Ablative, Dative, Instrumental
(iv) Get out of a car.	Ablative	Ablative
(v) Go back home./Attend a meeting	Dative	Dative
(vi) Drive toward Tokyo	Dative	Dative
(vii) Go shopping./Come to see me.	Dative	Instrumental

This study gives a partial list of mostly used unaccusative verbs and unergative verbs. Based upon scale structure, they are classified into five variations:

(21) a. **Totally open-scale morphemes:**

явах ‘pass through’
 зайлах ‘ward off’
 явах ‘go toward’
 үл ойшоох ‘go against’
 шилжүүлэн ‘slip out’
 зөөх ‘shift’
 явах ‘ply’
 зэрэгцүүлэх ‘queue up’
 эргэх *mawaru* ‘around’

b. **Totally closed-scale morphemes:**

ирэх ‘arrive’
 хүрэх ‘get to’
 дамжуулах ‘reach’
 мордох ‘get on’
 давах ‘transcend’
 гарах ‘get down’
 тоолох ‘through’
 дэргэдүүр ‘past’
 огтлох *u* ‘cross’
 гарах ‘exit’
 орох ‘entre’

c. **Upper closed-scale morphemes:**

буцах ‘return’
 ирэх ‘come’
 гарах ‘cross’
 харих ‘return’
 өнгөрөх ‘pass’
 ойргон ‘approach’
 буух ‘descend’
 гарах ‘climb’

d. **Lower closed-scale morphemes:**

тойрох ‘move around’
 явах ‘go’
 мөрдөх ‘go along’
 ойртох ‘approach’
 салах ‘leave’
 ухрах ‘move backward’
 булаах ‘flit’
 мордох ‘go away’
 буух ‘descend’
 гарах ‘ascend’

e. **Non-scale change morphemes:**

явган явах ‘walk’
 алхах ‘walk’
 усанд сэлэх ‘swim’
 драйв ‘run’
 гүйх ‘run’
 мөлхөх ‘crawl’
 гулгах ‘slide’
 бүжиглэх ‘dance’
 гүйлгэх ‘tumble’

харайх ‘jump’
 намалзах ‘dance’
 шургалан орох ‘dive’
 эргэлжэх ‘wander’
 нисэх ‘fly’

The distribution of split intransitivity is as follows.

(22) a. **Non-scale change** morpheme: unergative V, conveying the manner of motion

b. **Totally open-scale** morpheme: unergative V, denoting the manner of motion

c. **Totally closed-scale** morpheme: unaccusative V, denoting the path of motion

d. **Upper closed-scale** morpheme: unaccusative V, denoting the path of motion

e. **Lower closed-scale** morpheme: unaccusative V, denoting the path of motion

(23) illustrates two motion expressions in Mongolian.

(23) a. Япон руу явах
 Japan **Illative** go.
 ‘Go to Japan.’

b. Улаангом оос ирсэн.
 Улаангом **Ablative** come-PAST
 ‘I came from Улаангом.’

Mongolian tends to lexicalise the path in the main verb, leaving manner to be encoded in an optional constituent, as in (24), where the core of the motion expression is rendered by verb *гарах* ‘climb’; the manner of motion is expressed by a converbial construction.

(24) дээр гарах
 upwards climb

There are two variations in regard to expressing manner of motion: (i) coordinate relation of Manner and Path. (ii) accompanying Manner + Path. (25) provides the illustrations.

(25) Motion expression with Manner and Path

a. Coordinate relation
 эргэн - гүйх ‘run about’
 тойрон - гүйх ‘run about’

b. Accompanying Manner + Path

сэмэрхэн - ойртох ‘crawl towards’
 бүдэрэн - унах ‘tumble-fall’

Essentially, the combination of converbial construction is not arbitrary, but restricted to the order of [Non-scale change morphemes + totally closed-scale change morphemes] or [Non-scale change morphemes + Lower closed-scale morphemes]. That is, the second constituent has to be a closed-scale change morpheme. This rule applies not only to motion event but also change-of-state event.

5. Summary

There are variations in split intransitivity even within the same language family, i.e. Japanese and Mongolian. This paper conducted a comparison of the two languages based upon the mereological framework: scale structure. The finding brings us to the point that intransitives split in lexicalisation of motion events as well as postposition selections. Mongolian tends to lexicalise the path in the main verb, leaving manner to be encoded in an optional constituent, i.e. a converbial construction. Japanese unergative verbs tend to yield the MANNER of motion while unaccusative verbs tend to convey the PATH of motion. Furthermore, unergative motion verbs tend to describe processes with a durative motion event and are likely to yield directional PPs. On the other hand, unaccusative verbs tend to indicate a punctual motion event and therefore often occur with locative PPs. This is a preliminary work that inspires us to explore the phenomenon of split intransitivity regarding Altaic language in more depth.

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Mongolian Cyrillic alphabet

а а	б б	в в	г г	д д	е е	ё ё	ж ж	з з	и и	й у	к к
л л	м м	н н	о о	ө ө	п п	р р	с с	т т	у у	ү ү	ф ф
х х	ц ц	ч ч	ш ш	щ щ	ь ь	ы ы	ь ь	э э	ю ю	я я	

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