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## The inverse in Japhug Rgyalrong<sup>1</sup>

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This paper will present a detailed description of the inverse and the obviative in Japhug. The inverse marking was first described for Algonquian languages, and it is present in several Amerindian language families (see the recent survey by Zuñiga 2006). In Sino-Tibetan, the existence of inverse marking was unknown until DeLancey (1981) brought it to light.

We will first present a general account of inversion and obviation in a typological perspective, drawing data from Amerindian languages, then analyze how Rgyalrong languages (Japhug and Situ) fit in the typology of inversion, and finally propose a description of the use of the inverse in Japhug, based on textual data. One of our aims will be to determine to which extent the use of the inverse is syntactically, semantically or pragmatically determined in Japhug.

### A. Inverse and Direction

Direct-inverse marking is a type of alignment by which the syntactic roles<sup>2</sup> of the two arguments of a transitive verb is linked to the so-called Empathy Hierarchy (Silverstein 1976, EH).<sup>3</sup> Although the exact structure of the EH varies from language to language, in general, the following ranking prevails:

(1) 1 person > 2 person > 3 person human > 3 person non human animate > 3 inanimate  
Some languages (Algonquian) seem to have in some cases a 2 person > 1 person ranking, but the EH is in general quite robust. In particular, speech-act participants (first and second persons, SAP) are always ranked higher than third persons. In Direct-Inverse languages, transitive verbs bear a *direction* marking.<sup>4</sup> The direction can be either *Direct* or *Inverse*. Direct marking appears on the verb when the Agent is higher than the Patient on the EH, for instance when the Agent is a SAP and the patient third person, while Inverse will be used when the Patient ranks higher than the Agent.

A language with a quasi-prototypical Direct-Inverse system is Movima (Isolate, Boliva). Data in the following table are adapted from Haude (2006). The suffix –kay is the inverse marker, while the suffix –a is the direct marker. Direct verbal forms are colored in yellow, and inverse forms in blue.

<sup>1</sup> I wish to thank Jackson T.-S. Sun, Katharina Haude and Alexis Michaud for their comments on former versions of this paper.

<sup>2</sup> By syntactic roles, we mean S (unique argument of an intransitive verb), A (agent of a transitive verb) or O (patient of a transitive verb), following Dixon (1994).

<sup>3</sup> Also called Animacy Hierarchy, or Indexability Hierarchy.

<sup>4</sup> Direction marking in this context has nothing to do with Directional marking or Cis-locative/Trans-locative marking; Japhug, the target language of this study, has all three of them.

1sg	1in	1ex	2sg	2pl	3	
			(iɬ)-V-a		(iɬ)-V-a-(3)	1sg
					(iɬ)-V-a-n-(3)	1in
			(iɬ)-V-a-y'ɬi		(iɬ)-V-a-y'ɬi-(3)	1ex
(iɬ)-V-kay		(iɬ)-V-kay-iy'ɬi			V-a-n-(3)	2sg
					V-a-nkweɬ-(3)	2pl
(iɬ)-V-kay-(3)	(iɬ)-V-kay-n-(3)	(iɬ)-V-kay-iy'ɬi-(3)	V-kay-n-(3)	V-kay-nkweɬ-(3)	a-(3) / kay-(3)	3

Table 1: Direct/Inverse marking in Movima (Haude 2006)

When both arguments are third person, the choice of the Direction marker is determined by various syntactic (syntactic pivot, word order), semantic (animacy, EH) and pragmatic (topicality) factors. For instance, if an inanimate acts upon a human third person argument, the inverse marker will appear.

Few languages have a Direction marking system as neat as Movima. As shown in Zuñiga (2006)'s survey, Direction marking is often limited to a portion of the transitive situations. Zuñiga distinguishes three basic situations: local (both arguments are SAP), core (SAP and third person) and non-local (two third persons).

Some languages lack direction marking in non-local contexts (Nez Percé), while others have direction marking only in non-local contexts (Athabaskan, Kutenai). Besides, ranking of SAP is not always straightforward, and one language can have several competing rankings (Zuñiga 2006:85-6, 92).

## B. Direction marking in Rgyalrong

Direction marking is widespread throughout the Americas, ranging from Athabaskan and Algonquian in the extreme north to Mapuche in the south. In other continents, the only known family to have a full-fledged inverse system is Sino-Tibetan. As pointed out by DeLancey (1981), Direct/Inverse marking is found in Nocte (Northern Naga) and Rgyalrong (Qiangic).

Rgyalrong comprises at least four mutually unintelligible languages: Japhug (Chabao), Tshobdun (Caodeng), Zbu (Showu, Ribu) and Situ. It is spoken in the southern of Rnga-ba (Aba) prefecture, especially in 'Bar-khams (Maerkang) county, the heart of the Rgyalrong area, when the maximal linguistic diversity lies.

### B.1. Marking of argument relations on the noun

Japhug is a strongly head-marking language, and most information on actantial relations, as we shall see, appear on the verb. However, a small set of clitic suffixes marking grammatical relations also exist in this language. Among them is the ergative marker *ku*, possibly a loanword from the Tibetan ergative suffix *gis / gyis / kyis*<sup>5</sup>. S and O are left unmarked, as can be seen in sentences 1 and 2. A is marked with the ergative suffix.

<sup>5</sup> Jackson Sun, 2003, p.c.

- (2) **ɬamu ci jɣ-nɣre**  
 Lhamo a little EVD-laugh:3SG  
 Lhamo laughed a little.

- (3) **ɣdɣɣzi ku ɬamu pu-a-mto**  
 Rdorje ERG Lhamo AOR-3SG>3-see  
 Rdorje saw Lhamo.

Ergative marking is compulsory with third person participants in Japhug for all TAM categories, but only rarely appears with SAP pronouns such as *azo* ‘I’ and *nyzo* ‘you’. Ergative of SAP mostly occurs in contrastive sentences such as (3):

- (4) **azo ku ɣ-nu-nurdɔɣ-a ɕti ma**  
 1SG ERG AOR-AUTO-gather-1SG>3SG NONPAST:be.intensive:3SG CONJ  
**uzo ku ta-nurdɔɣ ɣ-nu-ndɔ-t-a me**  
 3SG ERG AOR:3SG>3-gather AOR-AUTO-take-PAST-1SG>3 NONPAST:not\_be:3SG  
 I gathered myself (the fruits), I did not take what he gathered.

As we shall see, the explanation for this split is very straightforward, as any transitive verb has personal indices for both patient and agent: it is only when both arguments are third person that ambiguity may arise to determine which is patient and which is agent.

Like all Qiangic languages, Japhug is a verb-final language, and the agent is generally placed before the patient. However, the patient may also appear before the agent in marked contexts; this issue will be discussed below, when treating of the inverse prefix.

## B.2 Person marking on intransitive verbs

We will first describe the system of person marking on intransitive verbs, as it is simpler than the one on transitive verbs. This system is very similar to the system found in Situ Rgyalrong (Lin 1993) and Tshobdun Rgyalrong (Sun 2003).

Intransitive verbs mark both the person and the number (singular, dual and plural) of S. In some ST languages, in the case where S is 3rd person and the possessor of S is an SAP, there is agreement with the SAP possessor rather than with S (we will see that this is the case in Tangut, in particular). However, in Japhug Rgyalrong, agreement never occurs with the possessor. For instance:

- (5) **a-xtu juu-mjɣm**  
 1SG.POSS-belly DIREV-hurt:3SG  
 My belly hurts.

In example (4), we see that the verb has no agreement affix, and therefore mark the third person singular, agreeing with ‘belly’ rather than with ‘I’.

Unlike Situ Rgyalrong, there is no inclusive/exclusive distinction in the 1Du and 1Pl in Japhug Rgyalrong. Most personal affixes are suffixes, the only exception being the second person *tu-* prefix. Agreement suffixes are similar to the possessive prefixes and the independent pronouns (which are constructed by adding *-zo* ‘self’ to personal prefixes), a fact suggesting that they could be relatively recently grammaticalized from the pronouns. There is no suffix in 2Sg – it would be redundant<sup>6</sup>. 3Sg is marked by the bare stem.

<sup>6</sup> In Situ Rgyalrong, intransitive 2Sg is marked by both a *tə-* prefix and an *-n* suffix, the latter being related to the

In the following Table, agreement marking on the verb is compared to possessive prefixes and pronouns; R represents the radical of the verb:

Person	Verbal affixes	Possessive prefix	Pronoun
1Sg	R-a	a-	aʒo
1Du	R-tɕi	tɕi-	tɕiʒo
1Pl	R-i	ji-	jiʒo
2Sg	tu-R	nɣ-	nɣʒo
2Du	tu-R-ndʒi	ndʒi-	ndʒiʒo
2Pl	tu-R-nu	nu-	nuʒo
3Dg	R	u-	uʒo
3Du	R-ndʒi	ndʒi-	ʒɣni
3Pl	R-nu	nu-	ʒara

Table 2: Person and number marking on intransitive verbs in Japhug.

The second person prefix in all Rgyalrong languages is unrelated to the pronouns, and it has been compared to the second person tə- prefix in southern Kiranti languages (Ebert 1991). It might belong to an older stratum of personal markers, though it is difficult to determine whether the second person prefixes of Rgyalrong and Kiranti languages are indeed related.

The only morphological irregularities in Japhug with person marking affixes are found in the verbs *ɣɣʒu* ‘to have’ and *maje* ‘not to have’, which have the unusual forms *ɣɣɣʒu* and *mataje* in the second person singular: the second person prefix appears as a sort of infix rather than as a true prefix. These irregularities are one more piece of evidence suggesting that the tu- prefix is older than the suffixes.

### B.3 Person marking on transitive verbs

As we have already said above, all transitive verbs agree with two arguments.<sup>7</sup> Many agreement affixes are similar with those of intransitive verbs. We shall first present person markers where both arguments are in the singular, then the entire system with variation in person and number.

In order to present argument marking on a transitive verb, we use a table where columns represent Patients (O) and rows Agents (A). The cases where both A and O are 1Sg or 2Sg are shaded in grey, because an intransitivizing reflexive prefix would be needed to express this kind of meaning in Japhug:

		O		
		1Sg	2Sg	3Sg
A	1Sg		ta-R	R-a
	2Sg	ku-R-a		tu-R
	3Sg	wy-R-a	tu-wy-R	R / wy-R

Table 3: Person marking on transitive verbs in Japhug (singular forms).

When the patient is 3Sg, the agreement affixes on the verb are identical to those of an intransitive verb (however, see section 1.4 for other personal and number markings on intransitive

<sup>2</sup>Sg pronoun.

<sup>7</sup> On the few syntactically transitive verbs that have intransitive morphology in Japhug, see Jacques (2004:338).

verbs). This might appear at first glance as an indication that person marking on the verb follows an accusative alignment: if  $1>3 = 1$ ,  $2>3=2$  and  $3>3=3$ , we have the alignment S=A.

However, a simple look at the other forms shows that it is not the case: the personal affixes *-a* and *tu-* found on intransitive verbs appear not only in  $1>3$  and  $2>3$  forms, but also in  $3>1$  and  $3>2$ , where the SAP are O not A. The marking of  $SAP>3$  is not identical with  $3>SAP$ , though: in  $3>1$  and  $3>2$  forms, one more affix appears: the *wy-* prefix.

Moreover, when both arguments are SAP, two affixes unfound on intransitive verbs are present: the portmanteau prefixes *ta-* ( $1>2$ ) and *ku-* ( $2>1$ ). In the  $2>1$  form, the verb also takes the first person suffix *-a* that marks the patient. We shall see below that in  $1>2$  forms, the verb stem has a suffix coreferent with the patient too; it does not appear in Table 2 because the second person singular suffix is zero (see Table 1). The fact that the suffixes mark the patient rather than the agent seems to indicate here an ergative ( $1>2=2$ ,  $2>1=1$ ), rather than an accusative alignment.

It is obvious that Japhug Rgyalrong verbal morphology is neither purely accusative nor ergative. The *wy-* prefix that appears in  $3>1$  and  $3>2$  can be described as an inverse marker,<sup>8</sup> and the system is based on the empathy hierarchy (Silverstein 1976), rather than on a purely syntactic principle: when one argument is SAP and the other non-SAP, regardless of which is agent and which is patient, the verb takes a suffix coreferent with the SAP. First and second persons are higher on the hierarchy than third persons:

(5)  $SAP > non-SAP$

The inverse prefix appears in situations where the agent is non-SAP and the patient is SAP ( $3>1$  and  $3>2$ ), that is when the agent lies lower in the empathy hierarchy than the patient. In these forms, the presence or absence of an inverse prefix is semantically determined.

However, when both arguments are non-SAP, the inverse prefix can also indicate pragmatic parameters (see Sun and Shi 2002:89, Givon 1994). When the patient is placed before the agent marked with the ergative suffix, the inverse prefix normally appear on the verb (a similar phenomenon occurs in Tshobdun Rgyalrong (Caodeng), see Sun and Shi 2002:93). Compare sentence 5, where the normal order Agent-Patient-Verb is followed, and sentence 6, where the order is reversed:

- (6) **ꞑꞑꞑꞑꞑꞑ ꞑꞑ ꞑꞑꞑ ꞑꞑꞑꞑꞑꞑꞑ**  
 Rdorje ERG Lhamo AOR-3SG>3-see  
 Rdo-rje saw Lhamo.

- (7) **ꞑꞑꞑꞑꞑꞑ ꞑꞑꞑꞑꞑꞑ ꞑꞑ ꞑꞑꞑꞑꞑꞑꞑꞑꞑꞑ**  
 Lhamo Rdorje ERG AOR-INV-see:3>3SG

Lhamo was seen by Rdorje.

However, these are elicited sentences. In texts, as we will show in part D, the presence or absence of the inverse cannot be predicted by word order in any straightforward way, unlike the *yi-/bi-* distinction in Athabaskan languages.

<sup>8</sup> DeLancey (1981) first noticed the existence of inverse marking in Rgyalrong languages, based on data from the Lcogrtse dialect. The inverse system of the Tshobdun Rgyalrong dialect was analyzed in detail by Sun and Shi (2002). DeLancey proposed that the inverse prefix (Lcogrtse *w-*) came from the third person pronoun (*wə-jo*) prefixed to the verb stem.

## B.4 Other person and number indices

Apart from the affixes presented in Table (2), person and number of the arguments can be indicated by three other marks on the verb, but these marks do not occur at all TAM categories and not on all verbs, and are largely redundant with the affixes presented in Table 1.

First, on the condition that (a) both arguments are third person (b) there is no inverse prefix, and (c) the verb is in the Aorist, an *a-* prefix is inserted between the verb stem and the Aorist prefix. For instance, ‘he saw him’ is *puu-a-mto* (see examples 2 and 6).

Second, when (a) 1Sg>3 or 2Sg>3 (b) the verb is in any past TAM category (Aorist, Past Evidential etc) and (c) the verb stem ends in a vowel, a *-t* suffix appears between the verb stem and the personal suffix if any: *puu-mtó-t-a* ‘I saw him’, *puu-tuu-mto-t* ‘You saw him’.

Third, when (a) the verb stem ends in *-a*, *-o*, *-u* or *-uu* (b) the Agent is singular and the Patient is third person (c) no inverse prefix (d) the verb is in any non-past category (present, direct evidential, imperfect, irrealis etc), a regular stem alternation occurs (Jacques 2004:353).<sup>9</sup>

## B.5 Person and number

In Table 3, we presented a simplified version of the Japhug Rgyalrong agreement system, including only singular forms for the sake of clarity. The complete paradigm comprises 33 different forms. Theoretically, we could have expected as much as 72 (even more if Rgyalrong had an inclusive/exclusive distinction), but in most cases, the number of only one argument is marked.

All the affixes present in Table 3 already appeared either in Table 1 or in Table 2. As can be seen, in direct forms (1>3, 2>3 and 3>3 without inverse prefix), the suffix agrees with the A. In inverse forms (3>1, 3>2 and 3>3 with inverse prefix), it agrees with the O. Therefore, in the following example:

- (8) **lamu turme ra ku puí-wy-mto**  
 Lhamo man Pl ERG AOR-INV-see :3>3SG

Lhamo was seen by the men.

The verb form has no plural suffix *-nuu* because it bears the inverse prefix, and therefore agrees in number not with its Agent, but with its Patient.

When one of the arguments (A or O) is 1Sg, an additional number suffix can be added to it, and it is coreferent with the other second or third person argument. This phenomenon also occurs in Tshobdun Rgyalrong (Caodeng), and Sun and Shi (2002: 85) see it as evidence that the first person is slightly higher than the second person on the Rgyalrong empathy hierarchy,<sup>10</sup> as double number coreference does not exist with other persons. However, in the Tshobdun dialect, unlike Japhug, the inverse prefix also occurs in 2>1 forms (Sun and Shi 2002:84). Therefore, there is no evidence that first person dual and plural arguments are higher in the hierarchy than second person arguments in Japhug. The Japhug Rgyalrong empathy hierarchy would therefore be:

- (9) 1Sg > 1Du/Pl = 2 > 3

Since first person dual and plural can be interpreted as both inclusive and exclusive, it is logical to suppose that even first person dual and plural are ranked higher than second person:

<sup>9</sup> Stem alternation in Rgyalrong languages was first described in Sun (2000, 2004).

<sup>10</sup> In the Situ Rgyalrong and Tshobdun dialects, the inverse prefix also occurs in 2>1 forms (Sun and Shi 2002:84).

(10) 1Sg > 1Du/Pl > 2 > 3

1s	1d	1p	2s	2d	2p	3s	3d	3p
			ta-R	ta-R-ndzi	ta-R-nuu	R-a	R-a-ndzi	R-a-nuu
						R-tçi		
						R-i		
kũ-R-a	kũ-R-tçi	kũ-R-i				tuu-R		
kũ-R-a-ndzi						tuu-R-ndzi		
kũ-R-a-nuu						tuu-R-nuu		
wy-R-a	wy-R-tçi	wy-R-i	tuu-wy-R	tuu-wy-R-ndzi	tuu-wy-R-nuu	R		
wy-R-a-ndzi						R-ndzi		
wy-R-a-nuu						R-nuu		
						wy-R	wy-R-ndzi	wy-R-nuu

Table 4: Person and number marking on transitive verbs in Japhug.

In the Situ dialect of Rgyalrong, an *-w* suffix (related to the third person singular pronoun *wəjo*) appears in 2Sg>3<sup>11</sup> and 3Sg>3 forms, where Japhug has zero marking. In 1>2Sg forms, an *-n* suffix (related to the second person pronoun *no*) is used together with the *ta-* portmanteau prefix. The absence of these suffixes is most probably an innovation of Japhug (and other Rgyalrong languages such as Tshobdun and Zbu).

Here is the Situ paradigm, rearranged from the data in Lin (1993:195-226):

1s	1d	1p	2s	2d	2p	3			
			ta-R-n	ta-R-ntʃ	ta-R-ɲ	R-ɲ			
						R-tʃ			
						R-i			
kə-w-R-ɲ	kə-w-R-tʃ	kə-w-R-i				tə-R-w			
						tə-R-ntʃ			
						tə-R-ɲ			
wə-R-ɲ	wə-R-tʃ	wə-R-i	tə-w-R-n	tə-w-R-ntʃ	tə-w-R-ɲ	R-w			
						R-ntʃ			
						R-ɲ			
						wə-R			

Table 5: Situ transitive paradigm.

### B.5 The portmanteau prefixes

Many ST languages have portmanteau affixes for 1>2 or 2>1 forms. For instance, all Kiranti

<sup>11</sup> This form is unexpected since the suffix (3Sg) is coreferent with the patient, not with the agent, although the verbal form is direct.



languages have a suffix (Limbu *-ne* etc) for 1>2 that seems to be linked to the second person pronoun<sup>12</sup> (Van Driem 1993). In Rgyalrong, the 1>2 and 2>1 prefixes *ta-* and *ku-* are remarkable in being apparently unrelated to the free pronouns.

As many have already noticed, *ta-* (1>2) might be related to the second person *tu-* prefix by addition of an *-a-* element of unknown function. DeLancey (1981: 643) conjectured that this *-a-* element might originally have been a direct marker, and his hypothesis seems reasonable: in Rgyalrong languages, unlike in Algonquian languages, first person is higher than second person in the empathy hierarchy. The only other trace of this direct marker in the language would be the *-a-* prefix that appears in 3>3 forms in the Aorist (see 1.4), which never co-occurs with the inverse prefix. In this theory, the direct marker prefix would have disappeared in 1>3 and 2>3 because it was redundant, and was only maintained in 1>2 and (partially) 3>3. It should however be noticed that the direct marker that we conjectured would have been different from the *-ā* suffix in Cree (cf. Table 8), which is restricted to 1>3 and 2>3 and never appears when both arguments are SAP.

## B.6 Inverse and impersonal

The Japhug inverse marker *wy-* is also used to mark the impersonal form of transitive verbs, expressing in particular general truths and appearing very commonly in procedural texts. For intransitive verbs, a *ku-* prefix (unrelated to the 2>1 *ku-* prefix) is used instead:

- (11) **tuʒo**    **tʃ-wy-ndza**            **tʃe**    **ju-ku-tso**  
 oneself    AOR-IMPERS:A-eat    CONJ    IMPF-IMPERS:S-understand

One has to eat to know (if it is tasty or not).

This form is not normally found with first or second person objects, only with 3>3 scenario, and never bear dual or plural suffixes. It is not formally distinguishable from an inverse form 3>3sg form.

The *ku-* prefix is also used when the impersonal argument is the patient (O) of the verb, as can be seen in example (12), taken from a story about the yeti:

- (12) **u-ʒari**    **nʃ**    **u-ʒari**    **zo**    **ju-ku-phyo**            **a-pu-ŋu**    **tʃe,**  
 3SG-front    CONJ    3SG-front    PART    IMPF-IMPERS:S-flee    IRR-IMPF-be    CONJ  
**maka**    **zo**    **mu-pjʃ-ku-mto**            **khi**  
 at\_all    PART    Neg-Ev-IMPERS:O-see    Hearsay

If one runs in the direction front of (the yeti<sup>i</sup>), one will not be seen by (him<sup>i</sup>).

It is clear from these data that the impersonal markers follow an ergative alignment in Japhug: S=O≠A, unlike nominalizers which follow rather an accusative alignment (Sun 2003:497, Jacques 2004:444), but in conformity with the case marking system.

As Jackson T.-S. Sun has pointed out in his magistral study of generic arguments in Rgyalrongic languages (Sun 2005)<sup>13</sup>, this *ku-* impersonal prefix is related to the nominalizing prefixes *ku-* ‘agent noun’ and *kʃ-* ‘patient/action noun’.

<sup>12</sup> This prefix is in my opinion one of the strongest example of a common morphological innovation common to all Kiranti languages (including Hayu).

<sup>13</sup> The systems of impersonal markers in Tshobdun (Caodeng), Lavrung, Situ and Horpa described in this paper, though closely related to the Japhug one, all differ from it.

## B.7 Conclusion

Japhug has a clear 1sg > 1nsg > 2 > 3 hierarchy. Unlike Cree (Zuñiga 2007:84), there is no need to suppose several distinct competing hierarchies. However, a major difference between Japhug and the better-known Situ and Tashobdun/Caodeng dialect is that the inverse prefix only appears in core (SAP<->3) and non-local (3<->3) contexts, never in local contexts (SAP<->SAP): the 2→1 form is not redundantly marked with the wy- prefix.

The morphemes studied in this chapter and their function can be summarized in the following table:

Form	Function
-a	1sg
-tɕi	1du
-i	1pl
tu-	2
-ndzi	2/3du
-nu	2/3pl
ta-	1→2
ku-	2→1
wy-	inverse (3>SAP, some 3>3)
a-	3>3 direct Aorist
-t	1sg/2sg>3 Aorist (open syllable)
(stem alternation)	123sg>3 non-past direct form (open syllable)

Table 6: Agreement affixes in Japhug.

## C. Rgyalrong direction marking and other languages

As Zuñiga's survey has shown, inverse systems vary considerably from language to language. Now that Japhug verbal agreement morphology has been summarily described, we will point out some obvious differences that can be detected between Japhug inverse and the other languages.

We will focus on four distinct topics: obviative/proximate marking, inverse and impersonal and constraints on the proximate/obviative status of nouns.

### C.1 Proximate/Obviative marking

Some languages, such as Algonquian and Kutenai, have a so-called Proximate/Obviative distinction on nouns besides Direction marking on the verb. At most one argument can be proximate (there may be none), while there may be several obviative arguments. When the A of a transitive verb is proximate and the P obviative, the verb has Direct marking, whereas Inverse marking appears when the A is obviative and the P Proximate. When both arguments are obviative, both Direct and Inverse can appear. Here is a Plain Cree example slightly adapted from Zuñiga (2007:82, citing Wolfart 1996:397):

- (13) tāpwē awa iskwēw pakamahw-ē-w ēsa ōhi wīhtiko-wa  
 truly Dem.PROX woman.PROX strike-DIR-3 REP Dem.OBV windigo-OBV  
 Truly the woman (prox) struck down that windigo (obv).

Using inverse marking on the verb *pakamahw-ikw-w* in this sentence would have resulted here in the opposite meaning ‘the windigo struck the woman’.

This Proximate/Obviative opposition also has a reflection on verbal morphology in both Kutenai and Algonquian languages. In Kutenai, intransitive verbs whose S is obviative have a special obviative marking (Dryer 1992:71-2). In Cree, argument marking on both intransitive and transitive verbs differs whether a third person is Proximate or Obviative. As an illustration, the following table includes all singular forms of the Transitive Animate verb *sēkih-* ‘frighten’ (Zuñiga 2007:266, from Dahlstrom 1986):

	1	2	3Prox	3Obv
1		ki-sēkih-iti-n	ni-sēkih-ā-w	ni-sēkih-im-āw-a
2	ki-sēkih-i-n		ki-sēkih-ā-w	ki-sēkih-im-āw-a
3Prox	ni-sēkih-ikw-w	ki-sēkih-ikw-w		sēkih-ē-w
3Obv	ni-sēkih-iko-yi-w-a	ki-sēkih-iko-yi-w-a	sēkih-ikw-w	sēkih-ē-yi-w-a

Table 7: Direct/Inverse marking in Cree (singular forms).

Zuñiga (2007:73-80) provides the following analysis for each of the morphemes appearing in :

Form	Gloss
ki-	+addressee
ni-	+speaker, -addressee
-im	strong direct (SAP → obv, 3prox → further obv)
-ā	direct (SAP → 3)
-ē	direct (3prox → 3obv)
-ikw / -iko	inverse (3 → SAP, 3obv → 3prox)
-i	portmanteau 2 → 1
-iti	portmanteau 1 → 2
yi-	obviative subject (except 3obv → 3prox)
-n	singular SAP
-w	3 argument
-a	singular obviative actant

Table 8: Analysis of the agreement morphemes in the Cree transitive paradigm.

The mutually exclusive forms *-im-* and *-yi-* as well as *-a* encode the obviative/proximate distinction in the verb morphology. On intransitive verbs, *yi-* and *-a* also appear on verbs with obviative S: *pimipahtā-w* (he ran, 3prox) vs. *pimipahtā-yi-w-a* (3obv).

In Japhug, nothing similar exists. Japhug and other Rgyalrongic languages are not unique in lacking obviative/proximate marking. Mapudungu and Athasaskan languages also lack such a system. As we will see in chapter D, this will make our analysis of the non-local usage of the inverse more difficult than in Algonquian or Kutenai. In particular, with intransitive verbs, no clues exist in languages such as Rgyalrong regarding the proximate/obviative status of the S.

## C.2 Inverse and Impersonal

One interesting property of the Rgyalrong inverse is the homonymy between the inverse and the A impersonal *wy-*. Nothing of the sort is found in any of the languages under study in Zuñiga 2006's survey.

Algonquian languages have agentless forms that occur with both SAP or non-SAP as O, unlike Rgyalrong where the O must be third person. In all three Algonquian languages investigated in Zuñiga (2006:112), two distinct agentless suffixes appear: *-ikawi-* in forms with SAP patient, and *-ā* (instead of *-ē*) with third person patient. The third person agentless form is thus more similar to the direct form than to the inverse one. This is the reverse of the Rgyalrong situation.

In Mapudungun (Zuñiga 2006: 228), where a special indefinite A form also appears, it is clearly distinct from the inverse: the indefinite is *-nge*, whereas the inverse is *-e*.

The homonymy found in Rgyalrong between inverse and impersonal seems therefore to be unfound in other languages, though the development from inverse to impersonal seems relatively straightforward, as the inverse construction (like a passive construction) implies that the O is more relevant/ important than the A.

## C.3 Hierarchy of local arguments

In Rgyalrong languages, we have seen that either  $1 > 2$  (as in Situ) or  $1\text{sg} > 1\text{du/pl} > 2$  (as in Japhug). Unlike Plain Cree, where as many as three distinct hierarchies need to be taken into account (Zuñiga 2006:85-6), these hierarchies account for all syntactic and morphological phenomena in Rgyalrong languages.

Another phenomenon that does not occur in Rgyalrongic languages is a pragmatic use of inverse in local scenarios. In Movima (Haude 2006 :276), the hierarchy is the following:

(14)  $1\text{sg} > 1\text{incl/excl} > 2\text{sg} > 2\text{pl} > 3\text{human} > 3\text{non-human}$

However, Haude (2006 :278) reports rare cases where  $1 > 2$  verbal forms can bear the inverse, or  $2 > 1$  forms with the direct marker. According to her these unusual constructions are used to 'focus on the hierarchically higher person'.

Nothing of the sort exist as far as we know in Rgyalrongic languages:  $1 > 2$  forms never cooccur with an inverse prefix.

## C.4 Constraints on the proximate status of nouns

In Algonquian languages, possessed nouns must be obviative if the possessor is third person, because as Zuñiga (2006:83) points out 'no possessed noun may outrank its possessor on the obviation scale'. This constraint does not apply if the possessor is SAP. A similar constraint also exists in Athabaskan languages.

As we pointed out in C.1, there is no proximate/obviative distinction in Japhug, but in order to test whether such a constraint exists, only very few few examples are really usable. Since no obviative marking on nouns exists, we can only rely on verb morphology, but even there

intransitive verbs lack obviative indices, so that the only type of sentence where such a constraint would apply would be one where (1) The verb has two animate arguments (unlike ‘to speak’, whose O, as we shall see, is the complement clause) (2), the A has a third person prefix (3) the O (overt or non-overt) is coreferent with the third person prefix of the A. We found only two clear examples in our entire corpus of Japhug texts, and in both examples, no inverse prefix appears:

(14) **thu-thuuci ku-nu-ŋu ku u-pi ku ɲɣ-z-nuqatuukur**  
 RED-some PRES-MED-be ERG 3SG.POSS-elder\_sister ERG EV-CAUS-behave\_badly  
 Somehow, her elder sister caused her to behave badly (Kun-bzang, 272)

(15) **ji-βdaɹmu kuuki u-pi ku ɣu-ja-su-ye**  
 1PL.POSS-queen Dem 3SG.POSS-elder\_sister ERG CIS-AOR:3>3-CAUS-come[2]  
 Our Queen, her elder sister invited her (Kun-bzang, 147)

These examples clearly prove that no constraint similar to the one described in Algonquian languages exists in Japhug.

## C.5 Conclusion

This section has presented evidence that some morphological and syntactic phenomena described in other languages with an inverse/direct marking system are absent in Rgyalrong. In particular, possessed nouns are not ranked lower than their possessor on the EH in Japhug.

## D. The use of the inverse in non-local scenarios.

The previous chapters have outlined the major morphological properties of inverse marking in Japhug. The present section will focus on the most complex cases, the non-local scenarios, where the choice of using or not using the inverse is dictated by a variety of factors. Three main categories of factors will be taken into account: semantic, syntactic and pragmatic.

In order to study the use of the inverse in a systematic way, we made exhaustive counts on a series of Japhug texts. These counts concerned the relation of anaphora of the non-overt arguments with the arguments of preceding sentences and the syntactic pivots.

We chose twelve stories from a larger corpus of more than thirty texts, and encoded them into a spreadsheet database. Only narratives were included; we decided to exclude procedural texts because inverse verbals forms are almost non-existent in those texts (though the homonymous impersonal form is pervasive) and conversations, because anaphora is more difficult to study there. In these texts, we only found 49 examples of inverse, and several relatively long stories did not even contain a single example of verb with an inverse marker. When the same sentence was repeated two times, it was only counted as one in our database. Besides, complex predicates formed of an intransitive verb with a non-finite transitive verb complement were counted as intransitives in the database, even if the agent of the complement transitive verb was marked with the ergative.

The basic unit of our database was the sentence, defined as any syntactic constituent whose head is a finite verb. Quoted speech was excluded from the database. Each sentence was associated with five columns, corresponding to S, A, O, E, plus one column specifying whether the verb was inverse or direct. Overt arguments were marked with a special symbol +. For

instance, sentence (16) (see p. 13) was coded as (notice that the S column is empty, as the verb is transitive):

S	A	O	E	direction
---	water +	hero		inv

This database allowed us to study semantic features, pivots and various pragmatic properties in a consistent way for all these texts. From each of the 49 examples of sentences with the inverse marker, we made Table 19, where each example is correlated with five parameters: anaphora of A and O with the preceding sentence, the semantic features of A and O, as well as three pragmatic parameters: referential distance, persistence and overt/covert.

In order to have comparable data with direct sentences, we collected 98 examples of direct forms, i.e. all the transitive direct sentences (excluding verbs of speech whose O is the complement clause) from three of our twelve stories, and performed the same analysis (Table 20). We did not intend on purpose to have exactly twice as many direct sentences as inverse ones ( $98=2*49$ ).

## D.1 Semantic constraints

Sun and Shi (2002) have already pointed out that the use of the inverse in Rgyalrong when both arguments are third person is sensitive to the Empathy Hierarchy. As we will show in this section, semantic constraints on the inverse are very robust, and usually override syntactic and pragmatic factors.

When a verb has non-animate A and a human O, the inverse must *always* appear; no counterexample is found in any text:

- (16) **tu-ci nu ku taʁ-nʁ-taʁ taʁ-nʁ-taʁ zo tó-wy-tsum**  
 ABS-water Dem ERG up-CONJ-up up-CONJ-up PART EV:UP-INV-take

The water drained him upwards (The Flood, 24)

Likewise, the inverse *cannot* occur when the A is human and the O inanimate, regardless of word order. In the following sentence, the O is placed before the A, but no inverse appears on the verb.

- (17) **gro u-ndzi tu-rdoʁ nu tʁ-tɕu nu ku ko-nʁtsu**  
 pigeon 3SG-skin one-piece Dem ABS-boy Dem ERG EV-hide

The boy hid one of those pigeon skins (The Flood, 53)

This implies that many verbs, whose O is always inanimate, will never take the inverse prefix, regardless of the status of their A. This is the case with the verb ‘to speak’ *ti* and the verb ‘to give’ *kho*; these verbs have three arguments, but the theme is treated as the O, and the recipient is usually expressed with a postposition. The O of the verb ‘to give’ is the quoted complement clause, which can be considered as inanimate as far as the EH is concerned.

- (18) **kuʁtsʁk nu u-ɕki nu tɕu qala ku ... to-ti**  
 leopard Dem 3SG-DAT Dem LOC rabbit ERG EV-say

The rabbit said “...” to the leopard (the smart rabbit, 56-70)

- (19) **azuʁ a-yu-thu-tu-khʁm ra**  
 1SG.GEN IRR-CIS-PF:DOWNSTREAM-2-give[3] NONPAST:must

You will then have to give it to me (the three sisters, 131)

Even if the recipient is higher than the speaker on the Empathy Hierarchy, the verb will therefore

never bear the inverse prefix. This is different from Cree (Zuñiga 2006:82-3), where the verb ‘to say’ has its recipient coded as an O, and therefore can be either direct (it-ē-w) or inverse (it-ikw-w). This makes it more difficult to study proximate continuity in Rgyalrong than in Cree or other languages, since the verb ‘to say’ is probably by far the most common verb in narratives. Some triactantial verbs have their recipient coded as O, such as *mbi* ‘to give’:

- (20) **nu-me**                      **stu**    **ku-xtçi**                      **nu-ku-mbi-a**                      **ra**  
 2PL.POSS-daughter    most    NMLZ:STAT-small    IMPF-2>1-give-1SG    NONPAST:must  
 You have to give me your youngest daughter (Gesar, 9)

These verbs can have two human arguments, and therefore occur with (or without) the inverse.

Between humans and animals, as noticed before by Sun and Shi (2002:92), the hierarchy is less strict than between animates and inanimates. Examples of human O with animal A without inverse marking on the verb sometimes occur in texts:

- (21) **ndzi-sytçha**                      **nunu**    **yu**    **jil**                      **nunu**    **khu**    **ku**    **lonba**    **zo**  
 3DU-place                      dem    GEN    neighbour    dem    tiger    ERG    all    PART  
**tha-çkuut**                      **nu-ju**  
 AOR:3>3-eat\_up    IMPF-be

All their neighbours had been eaten by a tiger (Tiger, line 1)

Nevertheless, such examples are extremely rare. In most stories, even when an animal is a major character able to speak (such as the fox in the story ‘the Fox’ and the horse character in Gesar and the story ‘the Bdud’), inverse is *always* used when the animal character is A and the main human character is O.

In our database, we found the following results for inverse and direct forms in relation to the degree of animacy of their arguments. These results confirm the account presented above. Notice, however, the unexpected high proportion (63%) of human>human configurations in inverse sentences, a much higher proportion than in direct sentences.<sup>14</sup>

A>O	Inverse (49)	Direct (98)
<i>inanimate&gt;inanimate/animal</i> (unattested)	0	0
inanimate>human	<b>4</b> (8%)	0
animal>inanimate	0	<b>3</b>
animal>animal	<b>1</b> (2%)	0
animal>human	<b>13</b> (26%)	0
human>inanimate	0	<b>81</b>
<i>human&gt; animal</i> (unattested)	0	0
human>human	<b>31</b> (63%)	<b>14</b>

Table 9: Animacy and direction.

Given the limited size of our database, some possible configurations are not attested (*human> animal* or *inanimate>inanimate*).

<sup>14</sup> This does not mean, though, that most sentences with hum>hum configuration will be in the inverse form, as direct sentences are much more common, as section D.2.1 will show.

## D.2 Syntactic constraints

The empathy hierarchy is not the only factor governing the use of the inverse in Rgyalrong. Syntactic constraints also have some influence on Direction marking. We already suggested above that word order had some influence on the use of the inverse, but we did not make a systematic research on this subject, as sentences with two overt arguments are relatively rare in Rgyalrong texts, and most sentences are limited to a finite verb form (only one of our 49 examples of inverse had both arguments as overt NP). Therefore, our research concentrated on the use of inverse in pivot constructions.

In order to represent the trans-clausal pivot, we make use of the following conventions:  $X \rightarrow Y$  indicates that the argument whose syntactic role is Y in the present sentence is coreferent with an argument whose role was X in the preceding sentence. When a given argument has the same role X in the present and the preceding sentence, the notation  $X =$  is used. For instance,  $S \rightarrow A$  means that the agent of the present sentence is co-referent with the only argument of the intransitive verb in the preceding clause, and  $AO =$  indicates that both arguments are the same between the present and the preceding sentence.

In the examples from our database, all sentences with inverse had a non-overt argument when that argument was coreferent with any argument from the preceding sentence, except for two examples:  $S \rightarrow A + S \rightarrow O$ , one of the  $AO =$  and one of the  $S \rightarrow O$ . In all the remaining 46 examples, we have examples of zero-anaphora constructions.

Rgyalrong languages has ergative alignment on nouns, but accusative alignment in its nominalization patterns (Sun 2003). The presence of Accusative or Ergative pivots in other constructions has not yet been investigated in detail. If a syntactic pivot existed in Japhug in zero-anaphora constructions, we would expect the following:

1. Inverse marking should not appear if both A and O are identical with those of the preceding sentence, regardless of whether the pivot is accusative or ergative.
2. Inverse should appear if the A of the preceding sentence becomes the O.
3. In the case of  $S \rightarrow A$  or  $S \rightarrow O$  pivots, we would expect inverse to appear in the  $S \rightarrow O$  configuration if the pivot were accusative S/A and to appear in the  $S \rightarrow A$  configuration if it were ergative S/O.

As we will see, counterexamples can be found for these three assumptions in our Rgyalrong data.

First, inverse can appear even if a preceding direct sentence has the same A and O:

- (22) **lulu nuu ku ci ko-mja, ci no-mja tce,**  
 cat dem ERG one EV:EAST-take one EV:WEST-take CONJ  
**ndyre kha na zo cho-wy-ndza-ndzi tce**  
 CONJ two PART EV-INV-eat-DU CONJ

The cat **took** (direct) one of them on the left, the other on the right, and **ate** (inverse) them both. (the mouse and the sparrow, 78-9).

The inverse often appears on several verbs in a row, without indicating any change of participant:

- (23) **ndyre kha to-ce-ndzi tce, tu-ci no-wy-jtshi-ndzi, tu-mgo**  
 CONJ house EV:UP-go-DU CONJ ABS-water Ev-INV-give\_to\_drink-DU ABS-food



**ɲó-wy-mbí-ndzi tɕe pǰó-wy-suu-rmá-ndzi,**  
 Ev-INV-give-DU CONJ EV-INV-CAUS-stay-DU

(The two boys) went to his house, (The old man) gave them water and food, and let them stay for the night. (Nyima vodzer, 79).

Second, in  $A \rightarrow O$  constructions, we do find inverse forms, but direct form are not unfound either, even in cases where both arguments are humans (equal on the EH), and therefore it cannot be argued that the absence of inverse is due to the A being higher than the O on the EH:

(24) **"mɯ-mɣ-kuu-tsum-á-nuu nɣ mɣ-khám-a" to-ti,**  
 RED-NEG-2>1-take\_away-1SG-PL CONJ NEG-NONPAST:give[3]-1SG EV-say  
**tɕendɣre kuumáqhu tɕendɣre to-tsum-nuu pǰɣ-ra.**  
 CONJ after CONJ EV:UP-take\_away-PL EVIMPF-have\_to

He said « If you don't take me away with, I won't give (the skin) back », and they had no choice but to take him with them (The Flood, 62-3)

In such an example, we would expect the inverse to appear on the verb **to-tsum-nuu** if the pivot were really strictly syntactically determined.

Third, we find examples of both inverse and direct forms in  $S \rightarrow A$  and  $S \rightarrow O$  configurations. Sentence (23) is an example of inverse in  $S \rightarrow O$ , and here is an example with  $S \rightarrow A$ :

(25) **tɕe tɣ-ye tɕe yuu-ndza pǰɣ-ɲu ri**  
 CONJ AOR-come[2] CONJ INV-NONPAST:eat EVIMPF-be CONJ

(The monk) came and was about to eat (Gesar).<sup>15</sup>

Although the examples above show that no syntactic pivot exists in Japhug in zero-anaphora, syntax does influence the use of the inverse. The clearest example of this is the *absence* of  $O \rightarrow A$  anaphora with inverse marking (whereas a few can be found with direct marking), as can be seen from the following table:

Anaphora	Inverse (49)	Direct (98)
<b>A--&gt;O</b>	10 (20 %)	3
<b>O--&gt;A</b>	0	2
<b>S--&gt;O</b>	11-1 (22 %)	5
<b>S--&gt;A</b>	4 (-1, 8%)	17 (-1)
<b>S--&gt;A+S--&gt;O</b>	1(-1)	2 (-2)
O=	2 (4%)	1
AO=	12 (-1; 24%)	13
A=	3 (6%)	19
no argument	6 (12%)	36

Table 10: Zero-anaphora pivot constructions in Japhug texts.

Clear tendencies appear from this table: if we exclude the cases where several verbs appear with the inverse in a row (example (23)), inverse forms appear mostly in  $A \rightarrow O$  and  $S \rightarrow O$

<sup>15</sup> In this sentence *yuu-* must be the inverse, not the cislocative prefix, because the verb has a non-past third person singular form and we should expect verbal stem 3 *ndze* in this context instead of stem 1 if this prefix was cislocative.

constructions. As for direct forms, they appear mostly in two situations: (1) the present sentence has no common argument with the preceding one; (2) the preceding sentence's A or S is coreferent with the present sentence A (a weak tendency towards accusativity).

## D.2 Pragmatic constraints

In order to obtain cross-linguistically comparable data, it seemed better to use an existing methodology rather than devising an entirely original one. We chose Dryer (1994)'s study of Kutenai inverse as a model for the present study, because he used Givón (1983)'s text count methodology to a language with inverse marking in a very clear and simple way, straightforward to apply to a new language.

Dryer used five different variables in his analysis of Kutenai inverse: Overall frequency, Referential Distance, Persistence, Overt NP vs. Pronouns and Proximate shifts. Except for the last one, which require Obviative marking on nouns, all other four variables can also be calculated in Rgyalrong texts.

Unlike Dryer, we will not include the passive forms in this study, because the Rgyalrong passive in a- (Jacques and Chen 2007) makes transitive verbs syntactically and morphologically intransitive and often expresses an agentless passive, and unlike the inverse prefix, belongs to the domain of derivational, rather than flexional, morphology. Besides, since an antipassive prefix also exists in Rgyalrong, it would not have been logical to study only the passive forms without paying attention to antipassive in text counts.

### D.2.1 Overall frequency

A striking difference between Inverse marking in Kutenai and Japhug is that inverse forms are much more common in Kutenai: Dryer (1994:73) counted 70 inverse forms for 295 direct ones in a sample of 503 sentences: inverse make 19% of syntactically transitive clauses (excluding passive sentences, which were included in his sample). In the Algonquian language Ojibwa, on which he performed similar calculations, he found 16% of sentences with inverse (Dryer 1992), a figure close to the one observed in Kutenai.

We counted all transitive sentences for ten of the twelve stories in our corpus. Among these ten stories, we obtain the following results:

Category	Count	Percentage
Direct	861	94%
Direct (excluding 'say')	523	57%
Inverse	46	5%
Impersonal (S)	4	>0%
Impersonal (A)	2	>0%
Impersonal (O)	4	>0%

Table 11: Frequency of clause types in Japhug.

Even if we exclude all sentences with the verb 'say' from the count of transitive sentences (which, as noticed above, can never have the inverse prefix), inverse forms still only account for 8% of all

transitive sentences. This figure is more than two times lower than the one found in Kutenai and Ojibwa. It is all the more surprising that Kutenai passive is also very common in texts, whereas Japhug passive is even rarer than the inverse.

This result shows how different Japhug Inverse marking is from Kutenai and Algonquian languages; Japhug inverse forms are considerably more marked than direct forms.

## D.2.2 Referential distance

*Referential distance* (henceforth RD) is a text measure of topicality first proposed by Givón (1983). It indicates how many clauses back a given argument was mentioned. Following Dryer (1994:74), we only distinguish three degrees: 1 (mentioned in the previous sentence), 3 (mentioned two or three sentences back) and >3 (mentioned previously). An argument never mentioned before is coded as 0 (Dryer coded this kind of examples as >3). We performed these calculations in our database, and the results can be summarized in the following table:

RD	Inverse (A)	Inverse (O)	Direct (A)	Direct (O)
1	23 (46 %)	<b>36 (72%)</b>	<b>64</b>	28
3	16 (32 %)	7 (14%)	28	12
>3	8 (16%)	6 (12%)	5	23
0	2 (4%)	0	1	35
Total	49	49	98	98

Table 12: Referential distance of A and O in Inverse and Direct sentences in Japhug.

These data present striking similarities with Dryer (1994 :75-6)'s findings for Kutenai:

RD	Inverse (A)	Inverse (O)	Direct (A)	Direct (O)
1	46%	<b>80%</b>	<b>74%</b>	38
3	9%	17%	15%	14
>3	46%	3%	11%	48

Table 13: Referential distance of A and O in Kutenai.

In both languages, we find that the most frequent type of Inverse clause is the one where O has a RD of 1, whereas the most frequent direct clause is the one where A has a RD of 1. This reflects the fact that, in Japhug as in Kutenai, A is most topical in direct sentences, whereas O is most topical in inverse ones.

Another way to study RD is by computing the relative RD of A and O in each of the sentences in the database. Here our data, compared with Dryer's findings:

	Inverse (Rgyalrong)	Direct (R)	Inverse (Kutenai)	Direct (K)
RD of A lower	8 (16%)	58	13%	53%
RD of A and O equal	17 (34%)	30	34%	36%
RD of O lower	24 (48%)	10	37%	34%

Table 14: Relative referential distance of A and O in Rgyalrong and Kutenai.

We see clearly from this table that in Japhug, as in Kutenai, inverse clauses tend to have  $RD(O) < RD(A)$ , whereas the reversed situation is observed in direct clauses,  $RD(A) < RD(O)$ . This confirms the idea that A tends to be more topical in direct sentences and O more topical in inverse ones; unlike the previous variable, Overall frequency, the results obtained for RD are quite similar

in Japhug and Kutenai.

### D.2.3 Persistence

*Persistence* is the second measure of topicality proposed by Givón (1983) and applied to Kutenai by Dryer. This measure consists in counting the occurrences of a referent in subsequent text, rather than preceding clauses as RD.

Like Dryer (1994), we counted only two classes: X (the referent never appears again in the text, or only one or two times), Y (the referent appears at least in three sentences after the present sentence).

Persistence	Inverse (A)	Inverse (O)	Direct (A)	Direct (O)
X	22 (45%)	7 (15%)	9	49
Y	27 (55%)	<b>42 (85%)</b>	<b>89</b>	49

Table 15: Persistence of A and O in Japhug.

Here again the results obtained are quite similar to those observed in Dryer's study of Kutenai:

Persistence	Inverse (A)	Inverse (O)	Direct (A)	Direct (O)
X	51%	23%	29%	62%
Y	49%	<b>77%</b>	<b>71%</b>	38%

Table 16: Persistence of A and O in Kutenai.

In both languages, the O of inverse clauses and the A of direct ones have a clear tendency to appear again in the text, which confirms the fact that these arguments are more topical. As with the RD, we can also compute the relative persistence of A and O:

	Inverse (Rgyalrong)	Direct (R)	Inverse (Kutenai)	Direct (K)
Persistence of A higher	0	41	21%	71%
Persistence of A and O equal	34 (69%)	46	13%	9%
Persistence of O higher	15 (31%)	1	66%	20%

Table 17: Relative persistence of A and O in Rgyalrong and Kutenai.

From this table, we can observe an important difference between Rgyalrong and Kutenai. Although the basic tendency is the same (O more persistent with inverse, A with direct), we see that persistence is more strongly correlated with the use of the inverse in Rgyalrong than in Kutenai: we only found one example out of 98 direct sentences where O has higher persistence than A, and no example of inverse where A has higher persistence than O.

Among all text measurements, persistence is the only one which seem to provide a robust prediction for the presence or absence of inverse marking in Japhug.

### D.2.4 Overt NP

Dryer (1994 :81) proposed a fourth measure of topicality: the use of overt NP as opposed to pronouns. In our database, we included the cases of zero anaphora with the pronouns.

	Inverse (Rgyalrong)	Direct (R)
A and O non-overt	36 (72%)	41
A overt, O non-overt	8 (16%)	6
O overt, A non-overt	4 (8%)	44
both overt	1 (2%)	7

Table 18: Overt vs. non-overt A and O in Rgyalrong.

In Rgyalrong, only 10% of inverse sentences have O as an overt NP, and 11% of direct sentences have A as an overt NP while half of all direct sentences have overt O. This is another piece of data confirming the fact that the O of an inverse clause is more topical than its A, and inversely, that the A of a direct clause tends to be more topical than its O.

## D.2.5 Conclusion

We have investigated in this section the topicality of A and O in direct and inverse sentences in our Japhug database, using four different criteria: frequency, RD, persistence and Overt/Zero anaphora. We found that the Rgyalrong inverse was considerably less frequent than in other languages where inverse marking has been reported such as Kutenai and Ojibwa. However, the three other variables show results remarkably similar to those obtained in Dryer’s study of Kutenai inverse. An interesting finding is that in Rgyalrong, unlike Kutenai, relative persistence of A and O is a good indicator to predict Direction marking on the verb.

The three variables of RD, persistence and overt vs. non-overt marking all converge to indicate that in Rgyalrong, as in Kutenai or Algonquian languages, the O of inverse verbs and the A of direct verbs tend to be more topical than the other argument.

## E. Conclusion

In Japhug, as in other languages with inverse marking, the inverse is primarily determined by semantics: when the A and the O are not equal on the EH, the presence or absence of the inverse marker can be easily predicted ; only when both arguments are on an equal rank can syntax and pragmatics play a significant role in Direction marking.

Next to semantics, pragmatics seems to be the next most relevant parameter determining the presence or absence of inverse: the relative pragmatic persistence of A and O, in particular, seems a very robust indicator to predict presence or absence of the inverse marker.

Syntax is the least informative domain to predict direction marking, because word order is often irrelevant (as most arguments are non-overt) and no strict syntactic pivot exists in zero anaphora constructions.  $S \rightarrow A$  and  $O \rightarrow A$  pivots are more commonly associated with direct verbal forms, whereas  $S \rightarrow O$  and  $A \rightarrow O$  pivots are found with inverse forms more often. However, this is just a mild tendency, and the inverse is definitely not a device to indicate a pivot where the subject (S/A) changes to the patient. Another indication that Direction marking is less sensitive to syntax in Rgyalrong than in other languages is the fact that unlike in Algonquian languages, possessed nouns are not automatically outranked by their possessor on the EH, as shown in C.3.

As we mentioned in section D.3.1, passive and antipassive constructions were not treated in this paper. The passive a- prefix and the antipassive  $r\chi$ -/ $s\chi$ - prefixes are argument-demoting

affixes, which suppress respectively the A or the O of the original transitive verb. The resulting intransitive verb ends up with an indefinite A or O argument, which cannot be overt.

These devices differ from the inverse not only by the fact that verbal valency is changed, but also because they belong to the domain of derivational, rather than flexional morphology. This can be shown simply when we witness the fact that the derived verbs sometimes have a meaning not related anymore to the verb from which it was derived. For instance, the transitive verb *pa* ‘to close’ (from proto-Rgyalrong ‘to do’) has a passive form which is not analyzable as such anymore in modern Japhug *a-pa* ‘to become’ (Jacques and Chen 2007::902). Inverse, on the contrary, belongs without doubt to the domain of flexional morphology, as no such discrepancy of meaning between direct and inverse form is observed with any verb. The most intriguing aspect of Rgyalrong inverse is perhaps its homonymy with the A-impersonal, a situation unfound in any other language with Direction marking on the verb.

## Appendix 1: Inverse verbal forms

Reference	Preceding clause	Semantic	RD,A	RD,O	Persistence,A	Persistence,O	overt,A	overt,B
flood.24	A-->O	inam>hum	3	1	0	3+	o	n
flood.67	O=	hum>hum	1	>3	3+	3+	o	n
flood.81	A-->O	hum>hum	3	1	0	3+	n	n
gesar.023	S-->O	hum>hum	3	1	3+	3+	n	n
gesar.234	S-->A	hum>hum	1	3	3+	3+	n	o
gesar.258	A-->O	hum>hum	>3	1	3+	3+	n	n
gesar.259	AO=	hum>hum	1	1	3+	3+	n	n
gesar.259b	AO=	hum>hum	1	1	3+	3+	o	o
gesar.267	A-->O	inam>hum	3	1	0	3+	o	n
gesar.269	AO=	inam>hum	1	1	0	3+	n	n
gesar.269b	O=	hum>hum	>3	1	3+	3+	n	n
gesar.387	S-->O	inam>hum	3	1	0	3+	o	n
gesar.388	S-->A	hum>hum	1	>3	3+	3+	n	n
lobzang.050		anim>hum	3	3	3+	3+	n	n
lobzang.072	S-->A	anim>hum	1	3	3	3+	n	n
lobzang.072b	AO=	anim>hum	1	1	0	3+	n	n
lwlu.079	AO=	anim>anim	1	1	0	0	n	n
nyima.079	S-->O	hum>hum	3	1	3+	3+	n	n
nyima.079b	AO=	hum>hum	1	1	3+	3+	n	n
nyima.079c	AO=	hum>hum	1	1	3+	3+	n	n
nyima.081	S-->O	hum>hum	3	1	3+	3+	o	n
fox.044	S-->A+S-->O	anim>hum	1	1	3+	3+	o	n
fox.058	S-->A	hum>hum	1	3	3+	3+	n	n
fox.089	S-->O	hum>hum	>3	1	3+	3+	n	n
fox.095	A-->O	hum>hum	>3	1	3+	3+	n	o
fox.116	A-->O	hum>hum	>3	1	0	3+	n	n
fox.116b	AO=	hum>hum	1	1	0	3+	n	n
fox.124		hum>hum	0	>3	3+	3+	n	n
fox.124b	AO=	hum>hum	1	1	0	3+	n	n
fox.124c	AO=	hum>hum	1	1	0	3+	n	n
fox.127	A=	hum>hum	3	>3	0	3+	n	n
fox.153	A=	anim>hum	1	>3	3+	3+	n	n
fox.181		hum>hum	1	3	0	0	n	n

fox.182	A=	hum>hum	1	1	0	0	n	o
fox.196	S-->O	anim>hum	3	1	0	0	o	n
raven.014	S-->O	hum>hum	0	3	0	3+	o	n
smanmi.066		anim>hum	3	3	3+	3+	n	n
smanmi.081	S-->O	hum>hum	>3	1	0	3+	n	n
smanmi.112	S-->O	hum>hum	>3	1	0	3+	n	n
smanmi.179		hum>hum	1	>3	3+	3+	n	n
bdud.023	A-->O	hum>hum	3	1	3+	3+	n	n
bdud.102	A-->O	anim>hum	3	1	3+	3+	n	n
bdud.103	A-->O	anim>hum	3	1	3+	3+	n	n
bdud.111	S-->O	anim>hum	3	1	3+	3+	n	n
bdud.121	A-->O	hum>hum	>3	1	3+	3+	n	n
bdud.128	S-->O	hum>hum	3	1	0	3+	n	o
sranchu.74	AO=	anim>hum	1	1	0	0	n	n
sranchu.74b	AO=	anim>hum	1	1	0	0	n	n
sranchu.76		anim>hum	1	1	0	0	n	n

Table 19: Inverse forms in the database.



## Appendix 2: Direct verbal forms

The following table includes all transitive direct sentences from three stories. In the first one, we found no example of inverse.

Reference	Preceding clause	Semantic	RD,A	RD,O	Persistence, A	Persistence, O	overt, A	overt, O
div003	S-->A	hum>in	1	0	3+	0	n	o
div004	S=	hum>in	1	0	3+	0	n	n
div036	S-->O	hum>in	3	1	3+	3+	o	n
div037	AO=	hum>in	1	1	3+	3+	n	n
div048	S-->A	hum>in	1	0	3+	0	n	o
div073	S-->A	hum>in	1	0	3+	0	n	o
div081	A=	hum>in	1	>3	3+	0	n	o
div082	O=	anim>in	3	1	3+	0	n	n
div085		hum>in	3	0	3+	0	o	o
div092	A=	hum>in	1	0	3+	0	n	o
div094	S-->O	hum>in	3	1	3+	3+	n	n
div100	A-->O	hum>in	3	1	3+	3+	o	n
div108		hum>in	>3	>3	3+	3+	o	n
div109	S-->O	hum>in	3	1	3+	3+	n	n
div116		hum>in	>3	>3	3+	0	o	o
div117	A=	hum>in	1	>3	3+	0	n	o
div118	A=	hum>in	1	>3	3+	0	n	o
div124		hum>hum	3	0	0	0	n	o
del011		hum>in	3	0	3+	0	o	o
del012a		hum>in	3	0	0	0	o	o
del012b	A=	hum>in	1	0	0	0	n	o
del013	A=	hum>in	1	0	0	0	n	o
del016		hum>in	>3	>3	3+	3+	n	n
del017	A=	hum>in	1	1	3+	3+	o	o
del018	S-->A	hum>in	1	>3	3+	3+	n	o
del023		hum>in	3	3	3+	3+	n	n
del027	S-->A	hum>in	1	3	3+	0	n	n
del031	S-->A	hum>in	1	>3	3+	0	n	n
del038	S-->A	anim>in	1	0	3+	3+	n	o
del047	S-->A	anim>in	1	>3	3+	3+	n	o
del053		hum>in	>3	>3	3+	3+	n	o
del054a	AO=	hum>in	1	1	3+	3+	n	n
del054b	S-->O	hum>in	>3	1	3+	3+	n	n
del063	A-->O	hum>hum	3	1	3+	3+	n	n

del064	AO=	hum>hum	1	1	3+	3+	n	n
del065	O-->A	hum>in	1	>3	3+	0	n	o
del067	S-->A	hum>hum	1	>3	0	3+	n	n
del068	A=	hum>hum	1	>3	3+	3+	n	n
del080	S-->A	hum>in	1	0	3+	3+	n	o
del082		hum>in	3	>3	3+	0	n	o
del085a	S-->A	hum>in	1	0	3+	0	n	o
del085b	A=	hum>in	1	>3	3+	3+	n	o
del086a	AO=	hum>in	1	1	3+	3+	n	n
del086b	AO=	hum>in	1	1	3+	3+	n	n
del087a	AO=	hum>in	1	1	3+	3+	n	n
del087b	AO=	hum>in	1	1	3+	3+	n	n
del091		hum>hum	3	0	3+	3+	n	o
del094	A=	hum>in	1	>3	3+	3+	n	o
del094	AO=	hum>in	1	1	0	0	n	n
del095	A=	hum>in	1	3	0	0	n	o
del096	A=	hum>in	1	3	0	0	n	o
bdud006	S-->A	hum>in	1	0	3+	0	o	o
bdud006b	AO=	hum>in	1	1	3+	0	n	n
bdud007	A=	hum>in	1	1	3+	0	n	n
bdud009	S-->A	hum>in	1	0	3+	3+	n	o
bdud011	A=	hum>in	1	3	3+	3+	n	n
bdud017		hum>in	3	3	3+	0	n	n
bdud025	A=	hum>in	1	0	3+	3+	n	o
bdud028		hum>in	1	1	3+	3+	n	n
bdud033a	A-->O	hum>hum	3	1	3+	3+	o	n
bdud033b	AO=	hum>hum	1	1	3+	3+	n	n
bdud041		hum>in	3	3	3+	0	n	n
bdud047		hum>in	3	0	3+	3+	o	o
bdud048		hum>in	1	1	3+	3+	n	n
bdud053	A=	hum>in	1	0	3+	3+	n	o
bdud055		hum>in	3	3	3+	3+	n	o
bdud056	AO=	hum>in	1	1	3+	3+	n	n
bdud058a		hum>in	3	0	3+	0	n	o
bdud058b	A=	hum>in	1	0	3+	0	n	n
bdud060		hum>in	3	3	3+	3+	n	n
bdud064	S-->AO	hum>hum	1	1	3+	3+	n	o
bdud068	A=	hum>hum	1	1	3+	3+	n	o
bdud069	S-->A	hum>in	0	3	3+	3+	n	o
bdud072		hum>in	3	3	3+	3+	n	o
bdud074	O-->A	hum>in	1	0	3+	0	n	o
bdud076	S-->O	hum>in	3	1	3+	3+	n	n
bdud080		hum>in	3	3	3+	0	n	n

bdud084		hum>in	1	0	3+	0	n	o
bdud085	AO=	hum>in	1	0	3+	0	n	n
bdud086	S-->A	hum>in	1	0	3+	3+	n	o
bdud087a	A=	hum>in	1	0	3+	0	n	n
bdud087b	AO=	hum>in	1	1	3+	0	n	n
bdud098		hum>in	3	0	3+	0	o	n
bdud099		hum>in	1	0	3+	0	n	o
bdud127		hum>in	1	0	3+	3+	n	n
bdud130		hum>in	1	>3	3+	0	n	o
bdud136		hum>in	3	>3	3+	3+	n	o
bdud137		hum>in	1	0	3+	0	n	o
bdud138a		hum>in	1	>3	3+	0	n	n
bdud138b		hum>in	1	0	3+	0	n	n
bdud144		hum>in	1	0	3+	0	n	o
bdud145	S-->AO	hum>hum	1	1	3+	3+	n	o
bdud147	S-->A	hum>in	1	0	3+	0	n	o
bdud149		hum>in	3	0	3+	0	n	n
bdud150		hum>in	1	>3	3+	0	n	o
bdud161		hum>hum	3	>3	3+	0	o	n
bdud163		hum>hum	1	>3	3+	3+	n	n
bdud164		hum>hum	3	>3	0	0	n	o

Table 20: Direct verbal forms.

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