Instrument Inversion in Zulu

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1. Introduction

A prominent feature of Bantu languages is the existence of so-called "inversion" constructions in which the logical subject (an agent or theme NP) appears post-verbally, while the pre-verbal grammatical subject position is occupied by an argument ranked lower on the thematic hierarchy. A well-known example is locative inversion, illustrated by the Chichewa sentence in (1b) (see e.g. Bresnan & Kanerva 1989; Demuth & Mmusi 1997; Harford 1990; Marten 2006, among many others):[1]

(1) a. A-lendô-wo a-na-bwér-á ku-mu-dzi.
2-visitor-2.those SM2-PAST-come-FV 17-3-village
'Those visitors came to the village.'
b. Ku-mu-dzi ku-na-bwér-á a-lendô-wo. [locative inversion]
17-3-village SM17-PAST-come-FV 2-visitor-2.those
'To the village came those visitors.'
[Chichewa; Bresnan & Kanerva 1989: 2]

The example in (1a) exhibits S-V-O word order, which is the canonical order in Bantu. The preverbal theme subject agrees with the verb in noun class; the locative follows the verb. In contrast, in the locative inversion example in (1b), the locative appears pre-verbally, and the verb shows locative noun class 17 agreement. The theme NP is postposed in (1b).

In this paper I introduce and discuss the properties of another type of inversion construction which is attested in the Bantu language Zulu (Nguni; Zone S 42) and which to the best of my knowledge has received little attention in the literature. In this construction, shown in (2b) and (3b), the pre-verbal NP refers to an *instrument* used in the event described by the remaining part of the sentence:

(2) a. U-John u-dl-a nge-sipunu.
1a-1a.John SM1a-eat-FV with-7.spoon
'John is eating with the spoon.'
b. I-sipunu si-dl-a u-John. [instrument inversion]
7-7.spoon SM7-eat-FV 1a-1a.John
'John is using the spoon to eat.'
(Lit. 'The spoon is eating John.')

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[1] The following glosses are used in the examples: APPL = applicative; BP = basic prefix; COP = copulative; DEM = demonstrative; DIS = disjoint verb form; EXPL = expletive; FV = final vowel; LOC = locative marker; NEG = negation; OM = object marker; PASS = passive; PAST = past tense; POSS = possessive; PRON = absolute pronoun; REL = relative marker; SG = singular; SM = subject marker; SUBJ = subjunctive suffix; TNS = tense.

(3) a. U-mfundi u-bhal-a nge-peni.
1-1.student SM1-write-FV with-5.pen
'The student is writing with a pen.'

b. I-peni li-bhal-a u-mfundi. [instrument inversion]
5-5.pen SM5-write-FV 1-1.student
'The student is using a pen to write.'
(Lit. 'A pen is writing the student.')

In the non-inverted constructions (2a) and (3a), the instrumental modifier is realised as a post-verbal PP headed by the preposition *nga-*, 'with'.[2] In these constructions, the preposition is obligatory; a bare NP-object cannot be interpreted as an instrument. In contrast, in (2b) and (3b), which show the inverted word order, the instrument is realised as an NP in pre-verbal position and triggers noun class agreement with the verb. The logical subject (the agent) appears post-verbally.

It is noteworthy that instrument inversion constructions such as those shown in (2b) and (3b) are restricted to certain varieties of Zulu (which some of my informants referred to as "deep" Zulu). Younger speakers from urban or township areas often do not accept sentences such as (2b) and (3b) with the "inverted" reading. However, those speakers for whom instrument inversion is possible have robust judgments about the properties of this construction, and it is those judgments that I present and discuss in this paper.

In section 2 I briefly demonstrate what other types of inversion exist in Zulu. Section 3 offers a discussion of the relevant properties of instrument inversion, and in section 4 I present my analysis of this construction. Section 5 concludes the paper with a few ideas about how my analysis can be extended to cover inversion constructions in Zulu in which the grammatical subject refers to a location.

2. Types of inversion in Zulu

The Zulu sentence in (4) resembles the Chichewa example in (1b):

(4) Ku-lezi zindlu ku-hlal-a a-bantu aba-dala.
at-10.these 10.house SM17-stay-FV 2-2.people ADJ2-old
'In these houses live old people.'

[Buell 2007: 108]

As in (1b), the pre-verbal constituent in (4) is marked as a locative; the verb is prefixed with the subject marker of class 17, and the logical theme-subject appears pre-verbally. However, despite these similarities between (1b) and (4), there are good reasons to believe that the underlying syntax of these two examples is different. One difference concerns the status of the fronted locative. Chichewa has a productive locative noun class system. The locative NP in (1b) is morphologically marked as belonging to locative noun class 17, and the verb agrees with the locative subject by showing class 17 morphology. In contrast, Zulu and its Nguni relatives no longer have proper locative noun classes. Class 16 and 18 have virtually disappeared, and the former class 17 locative marker *ku-* has undergone a process of de-grammaticalisation and has become reanalysed as a prepositional clitic (cf. Marten 2010 for Swati). The fact that *ku-* is not part of the nominal morphology is quite evident in (4), where *ku-* is not prefixed to the noun, but instead has cliticised to the demonstrative article. Furthermore, the subject marker *ku-* no longer has locative reference in Zulu, but is used as a default marker in a variety of non-locative contexts (see Buell 2007), such as e.g. in expletive constructions (compare examples (10) and (11) below). (4) therefore cannot be treated on a par with (1b), but rather should be analysed as an expletive construction with a topicalised PP (see Buell 2007 for further syntactic arguments in favour of this analysis).

Although Zulu does not have the type of "formal" locative inversion shown in (1b), it has what has been called "semantic" locative inversion (Buell 2007; Zeller 2011):

[2] In (2a) and (3a), the final *-a* of *nga-* has undergone vowel coalescence with the initial vowel *i-* of the following nouns.

(5) Lezi zindlu zi-hlal-a a-bantu aba-dala.
10.these 10.house SM10-stay-FV 2-2.people ADJ2-old
'Old people live in these houses.'
(Lit. 'These houses live old people.')

[Buell 2007: 111]

(6) Lesi sikole si-fund-el-a i-zingane ezi-khubazekile.
7.this 7.school SM7-study-APPL-FV 10-10.child ADJ10-handicapped
'Handicapped children study at this school.'
(Lit. 'This school studies handicapped children.')

[Buell 2007: 110]

The pre-verbal NPs in (5) and (6) are not formally marked as locatives, but express reference to locations mainly by virtue of their semantics. As in (1b), the verb agrees with the pre-verbal locatives in (5) and (6), but since there is no locative morphology, verbal agreement is with noun classes 10 and 7 respectively. The logical subjects again appear post-verbally. Notice that semantic locative inversion is possible with unergative (and for some speakers even with transitive) verbs in Zulu, in which case an applicative marker must be attached to the verb stem, (6). In contrast, the applicative is not required with unaccusative verbs, (5).

The inversion examples in (2b), (3b), (5) and (6) resemble so-called subject-object reversal constructions, which exist in Bantu languages such as Kinyarwanda and Kirundi. Subject-object reversal is a type of inversion in which the pre-verbal NP is the logical object, i.e. a theme or a patient (see Kimenyi 1976; Morimoto 2000; Ndayiragije 1999):

(7) Igitabo cyi-ra-som-a umuhuûngu.
7.book SM7-TNS-read-FV 1.boy
'The book is being read by the boy.'
(Lit. 'The book is reading the boy.')

[Kinyarwanda; Kimenyi 1976: 146]

In contrast to Kinyarwanda and Kirundi, Zulu is usually assumed not to license subject-object reversal (see e.g. Buell 2005), and example (8) was indeed rejected by all my informants (with the intended reading). Interestingly, however, some of the speakers for whom instrument inversion is possible in Zulu found the example in (9) (which is the equivalent of (7)) acceptable:

(8) *I-nyama i-dl-a u-John.
9-9.meat SM9-eat-FV 1a-1a.John
Intended: 'The meat is being eaten by John.'

(9) (?)I-ncwadi i-fund-a u-mfana.
9-9.book SM9-read-FV 1-1.boy
Intended: 'The book is being read by the boy.'

The acceptability of (9) may be an indication that some form of subject-object reversal, with limited productivity, may (still?) exist in certain Zulu varieties. However, note that the Zulu verb *ukufunda* in (9) means both 'to read' and 'to study'. It is therefore also possible that speakers simply interpreted (9) as an example of instrument inversion with the reading 'The boy studies by means of the book'.[3]

A final type of inversion is illustrated by (10) and (11):

(10) Ku-hlal-a a-bantu aba-ningi lapha.
SM17-live-FV 2-2.person ADJ2-many here
'There are many people living here.'

[3] I am grateful to Claire Halpert for making me aware of this latter possibility.

(11) %Ku-bhal-a a-bafundi i-zincwadi.
SM17-write-FV 2-2.student 10-10.letter
'The students are writing letters.'
(Lit. 'There write the students letters.')

(10) and (11) are expletive constructions. Although there is no referential subject in the pre-verbal position, (10) and (11) are similar to the inversion examples discussed above in that the logical subject appears post-verbally. The class 17 default subject marker *ku-* is attached to the verb in (10) and (11), which signals that the grammatical subject position is either filled by an unpronounced expletive pronoun (pro_{Expl}), or not filled at all. (10) shows that transitive expletive constructions (TECs) are acceptable for a significant proportion of Zulu speakers (as indicated by the %-symbol).

3. The properties of instrument inversion

3.1. The relation between the instrument and the event

Zulu speakers who accept instrument inversion prefer examples in which the pre-verbal NP is a *prototypical* instrument in the event described by the verb. For example, a spoon is characteristically used for eating, and a pen for writing, and consequently, the examples in (2b) and (3b) were straightforwardly judged as well-formed by my informants. In contrast, speakers generally found it more difficult to construct the intended interpretation for the example in (12), and the sentence was even rejected by one informant:

(12) ??U-mese u-sebenz-e le ndoda.
3-3.knife SM3-work-PAST 9.this 9.man
Intended: 'This man used a knife to work.'

Although it is of course possible to think of a situation in which a man works with a knife, working is not a prototypical event in which one imagines a knife to be used. It seems that instrument inversion is preferred in those contexts in which there is a strong semantic association between an activity and the instrument by means of which this activity is normally performed.

3.2. The instrument NP as a grammatical subject

The examples in (2b) and (3b) above have already shown that the instrument NP and the verb agree in noun class. This suggests that the pre-verbal instrument NP is a grammatical subject. This view is further supported by the fact that the instrument NP can also be pro-dropped, in which case the subject agreement marker produces a pronominal subject interpretation:

(13) "Usibonile isipunu sami?" – "Yebo. Sidla uJohn."

U-si-bon-il-e i-sipunu sa-mi – Yebo. Si-dl-a u-John.
2nd SG-OM7-see-DIS-PAST 7-7.spoon POSS7-mine yes SM7-eat-FV 1a-1a.John
'Have you seen my spoon?' – 'Yes, John is using it to eat.'

Next, consider subject questions in Zulu, which are typically formed by means of clefts in which the wh-phrase is followed by a relative clause, (14). The example in (15) is a subject question based on an instrument inversion construction, which shows that instrument subjects can be clefted and relativised:

(14) Y-i-siphi i-sipunu e-si-hlez-i e-tafule-ni?
COP-7-7.which 7-7.spoon REL-SM7-lie-FV LOC-table5-LOC
'Which spoon is lying on the table?'

(15) Y-i-siphi i-sipunu e-si-dl-a u-John?
COP-7-7.which 7-7.spoon REL-SM7-eat-FV 1a-1a.John
'Which spoon is John using to eat?'

It is also possible for the instrument-NP to undergo left and right dislocation. In (16), the instrument-NP has been extraposed and follows the logical subject, but it still agrees with the verb:

(16) Namhlanje li-lim-a a-madoda i-geja.
today SM5-plough-FV 6-6.man 5-5.hoe
'Today, the men use it to plough the field, the hoe.'

Finally, the instrument can undergo subject-to-subject raising:

(17) I-peni li-fanel-e li-bhal-e a-bafundi.
5-5.pen SM5-must-FV SM5-write-SUBJ 2-2.student
'The pen must be used by the students to write.'

The modal verb *fanele*, 'must, be necessary' in Zulu allows for raising of the subject NP from a finite subjunctive complement clause to the main clause subject position (Zeller 2006). In (17), instrument inversion has applied in the embedded subjunctive, and the instrument NP has undergone raising into the *fanele*-clause. Consequently, it triggers subject agreement with both the embedded and the main clause verb.

On the basis of the properties illustrated by (13)-(17), I conclude that the pre-verbal NP in instrument inversion constructions is the grammatical subject of the sentence.

3.3. The postverbal logical subject

There are at least two available analyses for post-verbal subjects in Bantu languages.[4] One possibility is that the subject is right-dislocated, in which case it is outside IP/TP and interpreted as a floating topic (cf. Bresnan & Mchombo 1987; Van der Spuy 1993). The alternative is that a post-verbal subject has remained in its base position inside the VP or vP.[5] In this section, I demonstrate that the post-verbal subject in instrument inversion is not dislocated, but has remained in a VP/vP-internal position.

The first argument is provided by the verbal morphology. In the affirmative present and the recent past tense, Zulu distinguishes between the so-called disjoint (long) and conjoint (short) form of the verb. As shown by Van der Spuy (1993) and Buell (2005, 2006), the conjoint form of the verb can be used only if the verb is followed by at least one other overt constituent within its phrase XP (where "X" is the final landing site of verb movement). This explains, among other things, why the verb *-dla*, 'eat', must be in the long form when it appears without its object in (18a), while the short form is only possible when the object is realised, (18b-c):

(18) a. U-mfana u-ya-dl-a.
1-1.boy SM1-DIS-eat-FV
'The boy is eating.'
b. *U-mfana u-dl-a.
1-1.boy SM1-eat-FV

[4] A third possible analysis of V-S word order in Bantu involves verb movement to C across a subject in [Spec, I] (see Demuth & Harford 1999; Diercks 2010). However, this possibility is typically correlated with overt agreement between the verb and the subject. Since the verb never agrees with the postverbal subject in instrument inversion constructions in Zulu, I do not discuss this option here.

[5] In the phrasal architecture of the Minimalist Program (Chomsky 2000, 2001), the agent-subject is introduced in the specifier of the light verb v, which selects the VP as its complement and projects a vP. Theme-subjects are introduced in [Spec, V].

c. U-mfana u-dl-a i-sinkwa.
1-1.boy SM1-eat-FV 7-7.bread
'The boy is eating bread.'

Importantly, if the only overt constituent that follows the verb in Zulu is a right-dislocated subject, the verb must still be in the long form. (19a) is based on (18a), but the subject *umfana*, 'boy', has been extraposed. Nevertheless, the disjoint verb form is required, and the conjoint form is impossible. This shows that right-dislocated subjects are outside the phrase headed by the highest copy of the verb:

(19) a. U-ya-dl-a u-mfana.
SM1-DIS-eat-FV 1-1.boy
'He's eating, the boy.'
b. *U-dl-a u-mfana.
SM1-eat-FV 1-1.boy
(ungrammatical with the intended reading: 'He's eating, the boy.')

However, as all of the previous examples illustrate, the verb in instrument inversion constructions is always in the conjoint verb form. The long verb form is not possible:

(20) *I-sipunu si-ya-dl-a u-John.
7-7.spoon SM7-DIS-eat-FV 1a-1a.John
'John is using the spoon to eat.'

The contrast between (20) and (2b) shows that the post-verbal subject in instrument inversion is not right-dislocated. Instead, the conjoint verb form in (2b) signals that the logical subject is inside the phrase headed by the verb, i.e. in its base position inside the vP.

This view is confirmed by the agreement properties of right dislocation constructions. As the example in (19a) illustrates, right-dislocated subjects show noun class agreement with the verb. In contrast, the post-verbal subject in instrument inversion cannot agree with the verb. Instead, agreement is always with the pre-verbal instrument NP.

A final argument for the claim that the logical subject in instrument inversion is inside the VP/vP is provided by negated sentences. In Zulu, NPs in the scope of negation may lose their augment (the initial vowel, or pre-prefix) and can function as NPIs:

(21) a. U-Thandi a-ka-bon-i muntu.
1a-1a.Thandi NEG-SM1a-see-NEG 1.person
'Thandi doesn't see anyone.'
b. A-ku-hlek-i muntu.
NEG-SM17-laugh-NEG 1.person
'No one is laughing.'

In (21), the NP *muntu* appears without the prevowel. This is possible because in both examples, the NP is c-commanded by negation: in (21a), it is the object of the verb; and in (21b), it is the vP-internal subject of a negated expletive construction. In contrast, right-dislocated subjects (which agree with the verb) cannot appear without the augment in negated sentences, since they are outside the scope of negation:

(22) a. A-ka-hlek-i u-muntu.
NEG-SM1-laugh-NEG 1-1.person
'The person is not laughing.'
b. *A-ka-hlek-i muntu.
NEG-SM1-laugh-NEG 1.person
Intended: 'No one is laughing.'

Importantly, the post-verbal subject in instrument inversion constructions appears without the augment when the sentence is negated:

(23) I-sipunu a-si-dl-i muntu.
7-7.spoon NEG-SM7-eat-NEG 1.person
'No one is using a spoon to eat.'

In light of the data in (19)-(23), it can be concluded that the post-verbal subject NP in instrument inversion is not right-dislocated, but has remained in its base position inside the VP/vP.

Although the logical subject in instrument inversion is an "internal" argument, it does not behave like a grammatical object. This is most clearly illustrated by the contrast between (24b) and (25b). Genuine object arguments in Zulu can be realised as pronominal object markers prefixed to the verb stem, (24b). However, this possibility is not available for the logical subject in instrument inversion, (25b):

(24) a. A-bantwana ba-thand-a u-John
2-2.child SM2-like-FV 1a-1a.John
'The children like John.'
b. A-bantwana ba-ya-m-thand-a.
2-2.child SM2-DIS-OM1a-like-FV
'The children like him.'

(25) a. I-sipunu si-dl-a u-John.
7-7.spoon SM7-eat-FV 1a-1a.John
'John is using the spoon to eat.'
b. *I-sipunu si-ya-mu-dl-a.
7-7.spoon SM7-DIS-OM1a-eat-FV
Intended: 'He is using the spoon to eat.'

Notice that it is object marking, and not pronominalisation, of the logical subject which is impossible in Zulu instrument inversion constructions. This is demonstrated by (26). In (26a), the agent is again realised as an object marker, and instrument inversion is not possible. In contrast, the agent argument in (26b) is a strong (so-called "absolute") pronoun. Instrument inversion in this example is perfectly acceptable:[6]

(26) a. *I-moto i-m-hamb-il-e.
9-9.car SM9-OM1-go-DIS-PAST
Intended: 'He travelled by car.'
b. I-moto i-hamb-e yena.
9-9.car SM9-go-PAST PRON1
'He travelled by car.'

(25b) and (26a) show that the post-verbal subject in instrument inversion, although VP/vP-internal, cannot be object-marked. This is perhaps not surprising, given that inverted subjects quite generally cannot be realised as prefixal object pronouns (cf. e.g. Bresnan & Kanerva (1989), Marten (2006) for locative inversion; Kimenyi (1976) for subject-object reversal). However, as I demonstrate in the next section, the ban on object marking in instrument inversion holds not only for logical subjects, but also applies to thematic object arguments.

[6] (26b) is ambiguous. It can also be construed as a non-inverted S-V-O construction in which *imoto*, 'car', is the subject, and *yena*, 'him', is the object. In this case, (26b) means something like 'The car ran him over.' (26a) is only ruled out with the intended instrument inversion reading; with the alternative interpretation just described, (26a) is grammatical.

3.4. Transitive verbs

An important feature of instrument inversion in Zulu is that this construction is also possible with transitive verbs:

(27) I-sipunu si-dl-a u-John i-sobho.
7-7.spoon SM7-eat-FV 1a-1a.John 5-5.soup
'John is using the spoon to eat soup.'

(28) I-peni li-bhal-a u-mfundi incwadi.
5-pen SM5-write-FV 1-1.student 9-9.letter
'The student is using a pen to write a letter.'

(27) and (28) differ from the examples in (2b) and (3b) above in that the logical objects (the theme/patient arguments) of the verbs *ukudla*, 'to eat', and *ukubhala*, 'to write' are realised as well. Consequently, there are two post-verbal arguments in (27) and (28). Surprisingly, however, the logical objects in these examples do not behave like ordinary object NPs in Zulu. First, consider again object marking. In (29) and (30), the object arguments have been replaced by prefixal object markers. The results are ungrammatical:

(29) *I-sipunu si-li-dl-a u-John.
7-7.spoon SM7-OM5-eat-FV 1a-1a.John
Intended: 'John is using the spoon to eat it (e.g. the soup).'

(30) *I-peni li-yi-bhal-a u-mfundi.
5-5.pen SM5-OM9-write-FV 1-1.student
Intended: 'The student is using the pen to write it (e.g. the letter).'

As was the case with post-verbal subjects in instrument inversion, pronominalisation of a logical object is possible if strong pronouns instead of object markers are used:

(31) Isipunu si-dl-a u-John lona.
7-7.spoon SM7-eat-FV 1a-1a.John PRON5
'John is using the spoon to eat it (e.g. the soup).'

(32) I-peni li-bhal-a u-mfundi yona.
5-5.pen SM5-write-FV 1-1.student PRON9
'The student is using the pen to write it (e.g. the letter).'

(31) and (32) demonstrate that it is not pronominalisation as such, but rather the operation of object marking, that is responsible for the ungrammaticality of (29) and (30).

Second, it is impossible to passivise the theme/patient argument of a transitive instrument inversion construction. Consider (33) and (34):

(33) *I-sobho li-dl-iw-a u-John y-i-sipunu.
5-5.soup SM5-eat-PASS-FV 1a-1a.John COP-7-7.spoon
Intended: 'The soup is eaten by John with the spoon.'

(34) *I-ncwadi i-bhal-w-a u-mfundi y-i-peni.
9-9.letter SM9-write-PASS-FV 1-1.student1 COP-5-5.pen
Intended: 'The letter is written by the student with a pen.'

In the passive constructions in (33) and (34), the logical objects of the instrument inversion constructions in (27) and (28) have been promoted to the pre-verbal subject position. The instrument NP is now realised as a *by*-phrase.[7] If the syntax of (27) and (28) was like that of regular transitive (or ditransitive) sentences, then it should be possible to passivise the object arguments, and (33) and (34) would be expected to be grammatical. However, the passives in (33) and (34) are completely unacceptable.

In seems that, although instrument inversion in Zulu is possible with transitive verbs, logical objects that appear in this construction are syntactically inert and inaccessible for grammatical operations such as object marking and passivisation. Crucially, what these two operations have in common is that they both involve *agreement* relations between a VP-internal NP and a functional head in the Infl-domain. According to the standard analysis of the passive in the Minimalist Program, movement of the internal argument to the subject position is contingent on an agreement relation between T (or Agr-S) and the respective NP. Similarly, many analyses of object marking in Bantu assume that this process involves an agreement relation between a functional head Agr-O and a vP-internal object (cf. Buell 2005; Woolford 2000). From a theoretical perspective, the question that arises from the data discussed in this section can therefore be formulated with respect to these agreement relations: why are VP/vP-internal arguments in instrument inversion constructions inaccessible for functional heads outside the VP/vP? The account I offer in the next section provides an answer to this question.

4. Analysis

4.1. Non-verbal predication and PrP

My analysis of instrument inversion in Zulu is based on the idea that the relation between the instrument subject and the residual part of the clause in this (and possibly other) inversion constructions is comparable to the relation between a non-verbal predicate and its subject. In order to make this idea more concrete, I briefly discuss non-verbal predication in this section. Consider the constructions in (35)-(37):

(35) A-maphela a-wa-ma-hle. [adjectival predicate]
6-6.cockroach NEG-SM6-BP6-pretty
'Cockroaches aren't pretty.'

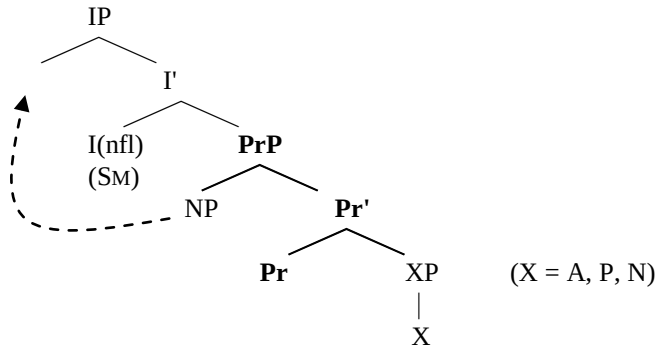
(36) A-bafana ba-ku-leli kamelo. [locative predicate]
2-2.boy SM2-at-5.this 5.bedroom
'The boys are in this bedroom.'

(37) U-Thandi u-ng-u-mfundi. [nominal predicate]
1a-1a.Thandi SM1a-COP-1-1.student
'Thandi is a student.'

The examples in (35)-(37) demonstrate that there are no copular verbs in non-verbal predicate constructions in Zulu. In adjectival constructions, the subject marker attaches directly to the adjectival stem (*-mahle* in (35)). The same holds for locative predicate constructions such as (36), in which the predicate is a PP (see section 2). Only nominal predicate constructions such as (37) include copula-like elements that intervene between the predicate and the subject marker. However, these segmental copulative prefixes (*ng-* in (37)) have no verbal properties, and there is no evidence that they should be analysed as verbs (see Van der Spuy 2001 for discussion). Therefore, I assume that the syntax of non-verbal predication in Zulu does not include a verb or a VP:

[7] The *by*-phrase in a Zulu passive is not headed by a preposition; instead, demoted agents are prefixed with a copulative prefix (*y-* in (33) and (34)).

(38)



I suggest, following Bowers (1993) and Hazout (2004), that the relation between a non-verbal predicate XP and its argument is established syntactically by means of the functional category Pr (for *predication*). PrP is essentially a small clause with a functional head – as shown in (38), Pr selects AP, PP or NP as its complement, and the argument of the non-verbal predicate is introduced in Pr's specifier. This argument-NP becomes the grammatical subject by moving to [Spec, I] where it triggers agreement with Infl (T or Agr-S). Infl's grammatical features are spelled out as the subject agreement marker. Crucially, while PrP would be selected by a copular verb in languages such as English, I assume that in Zulu, PrP is directly selected by Infl. In nominal predicate constructions such as (37), Pr is spelled-out as the copulative prefix; in adjectival and locative predicate constructions such as (35) and (36), Pr is phonetically null.

The interpretation of (38) can be captured in a Neo-Davidsonian semantics in which verbal and non-verbal predicates express properties of situations (or "eventualities", i.e. events or states). Kratzer (1996) uses this approach to argue that external arguments are added to the argument structure of a verbal complex by separate functional heads. According to Kratzer, the external argument of a stative VP such as *own the dog* is introduced by a HOLDER-predicate, which denotes a relation between a state and an individual of whom this state holds (see (39b)). Her analysis can be extended to stative non-verbal predicate constructions. I propose that a non-verbal predicate such as *-mahle* in (35) denotes a property of states, and that the functional head Pr in (38) denotes the HOLDER-predicate. When Pr merges with its complement, the semantics of the resulting node expresses that the argument introduced in [Spec, Pr] is the holder of the state denoted by Pr's complement. (39) illustrates the interpretation of (38) for the example in (35) (ignoring negation); α^* is the denotation of α (cf. Kratzer 1996):

(39) a. *-mahle** = λs[pretty(s)]
b. **Pr*** = λx λs[HOLDER(x)(s)]
c. **Pr'*** = λx λs[pretty(s) & HOLDER(x)(s)] (from (39a, b) by Event Identification)[8]
d. *amaphela** = cockroach
e. **PrP*** = λs[pretty(s) & HOLDER(cockroach)(s)] (from (39c, d) by Functional Application)

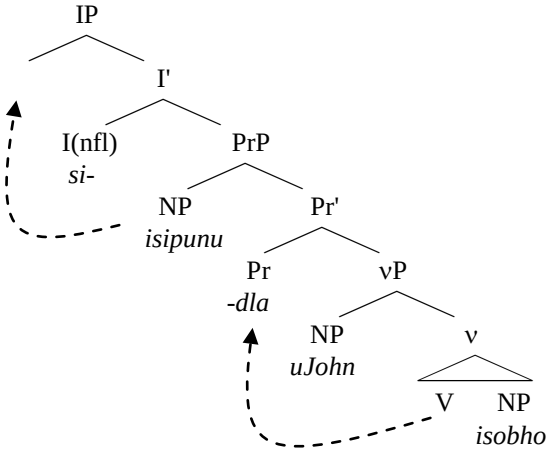
As (39) shows, the semantics of Pr establishes a HOLDER-relation between the state denoted by the AP-complement of Pr and the argument introduced in [Spec, Pr]. Similar semantic computations can be postulated for the interpretation of nominal and locative predicate constructions, although the semantics of Pr in these cases may differ slightly from the one provided in (39b) (for example, Pr may denote a BE_AT-relation in the case of locatives etc.). In fact, the precise thematic relation expressed by Pr may ultimately depend on the syntactic and/or semantic properties of its complement. I return to this point in the next section.

[8] Event Identification is a principle of semantic composition that allows two predicates expressing properties of eventualities to be merged into a complex predicate that specifies the individually specified properties as properties of one single eventuality. See Kratzer (1996) for details.

4.2. PrP and instrument inversion

I now suggest that the properties of instrument inversion are determined by the same structure and semantic principles that were introduced above for non-verbal predication. I argue that in instrument inversion constructions, the functional category Pr is also present, but crucially, the complement of Pr is a νP:

(40)



(40) represents the syntax of the transitive instrument inversion example in (27). The νP is merged as the complement of Pr. Since the verb moves to Pr, it precedes all its arguments, which remain in the νP. The verb therefore appears in the conjoint form, and both the subject and the object NP are in the scope of negation, which is located in the Infl-domain of the clause. Crucially, the instrument NP is base-generated in a position external to νP; i.e. in [Spec, Pr], the same position in which the argument of a non-verbal predicate is introduced. In this respect, my proposal differs from generative accounts of inversion which assume that the non-canonical (locative or instrument) subject originates in a VP-internal position and ends up in the pre-verbal position by moving across the logical subject. A problem with these accounts is that it is not clear why this movement is not blocked by the intervening logical subject, which is closer to Infl than VP-internal arguments. The proposal in (40) avoids this locality problem, because the instrument NP is base-generated outside the VP/νP. It is therefore closer to Infl than the logical subject, and consequently, it is the instrument NP that moves to [Spec, I] and becomes the grammatical subject, licensing subject-verb agreement.

The Pr-analysis in (40) can also explain the inability of VP/νP-internal NPs to undergo object marking and passivisation in instrument inversion constructions. This explanation is based on the theory of phases proposed in Chomsky (2000, 2001). According to Chomsky, syntactic derivations proceed in cycles, so-called "phases". When a derivational phase is completed, part of the syntactic structure that has been built up to this point in the derivation is transferred to the phonological and semantic interface. The part of the structure which is transferred once a phase XP is completed is X's complement YP. X and possible specifiers of X remain accessible for grammatical processes triggered by elements in the next cycle. However, YP and any material included in YP is no longer visible and cannot be accessed by elements outside the XP-phase. This situation is captured by the so-called Phase-Impenetrability Condition:

(41) *Phase-Impenetrability Condition* PIC (Chomsky 2000: 108):

> In phase α with head H, the domain of H [= everything c-commanded by H] is not accessible to operations outside α, only H and its edge [= H's specifier] are accessible to such operations.

Chomsky (2000: 106) defines the syntactic object corresponding to a phase as "the closest syntactic counterpart to a proposition"; which means that XPs in which all theta roles are assigned count as phases. Given that the category Pr introduces a new thematic argument in [Spec, Pr], the propositional

definition of phases entails that PrP constitutes a phase (see also Den Dikken (2006) for Small Clauses). But if PrP is a phase, then the complement of its head Pr – the VP/νP – is transferred to the phonology and the semantics as soon as PrP is completed. The PIC therefore implies that VP/νP-internal material is no longer accessible by the time PrP merges with the first functional head from the Infl-domain.

This explains why it is impossible for post-verbal arguments in instrument inversion constructions to be targeted by syntactic operations such as object marking or passivisation. As was noted in section 3.4, these operations involve agreement relations between functional heads in the Infl-domain (such as T, Agr-S and Agr-O) and νP-internal NPs. In non-inverted sentences, Pr is not part of the structure, and therefore, these NPs are accessible to, and can agree with, higher functional heads.[9] However, in instrument inversion, Pr combines with VP/νP before these heads are added. Merging the instrument argument in [Spec, Pr] completes the PrP-phase, at which stage the complement of its head – the νP – is transferred. Therefore, by the time functional heads such as Agr-O or Agr-S are introduced in the next phase, the VP/νP is "forgotten", and VP/νP-internal NPs cannot participate in the agreement relations necessary for object marking or passivisation.

Finally, the semantics of instrument inversion can be captured by assuming that Pr in (40) denotes a predicate that expresses a relation between an event and an instrument (see (42b)). Combining the semantics of Pr with the denotation of the νP yields a complex predicate which expresses an instrument-relation between the argument in [Spec, Pr] and the event described by the νP, (42c):

(42) a. *uJohn -dla isobho** = λe[eat(e) & AGENT(John)(e) & THEME(soup)(e)]
b. **Pr*** = λx λe[INSTRUMENT(x)(e)]
c. **Pr'*** = λx λe[eat(e) & AGENT(John)(e) & THEME(soup)(e) & INSTRUMENT(x)(e)]
(from (42a, b) by Event Identification)
d. *isipuno** = spoon
e. **PrP*** = λe[eat(e) & AGENT(John)(e) & THEME(soup)(e) & INSTRUMENT(spoon)(e)]
(from (42c, d) by Functional Application)

(42) illustrates the semantic parallels between non-verbal predication and instrument inversion. In both construction types, the functional category Pr introduces a new "external" argument. Pr's complement is a (verbal or non-verbal) predicate that denotes a property of eventualities, and the semantics of Pr establishes that a particular thematic relation holds between this predicate and the newly introduced subject.

According to (42), one major difference between non-verbal predication and instrument inversion lies in the semantics of Pr. Pr denotes a HOLDER-relation between individual-type entities and *states* in (39b), but an INSTRUMENT-relation between individual-type entities and *events* in (42b). It is of course possible, and perhaps even necessary, to postulate that there are different instances of Pr-predicates, with different interpretations and different selectional properties. However, it may also be possible to extend the semantic parallels between the different types of predication a bit further. For example, one could assume that what projects in (38) and (40) is in fact the same Pr-head, which in both constructions denotes a kind of abstract meta-predicate whose semantics leaves the thematic relation between its individual-type and its eventuality-type argument underspecified. The specific interpretation of this thematic relation is only determined by the semantics of Pr's complement. When the complement is an AP and denotes a property of states, the Pr-predicate must be interpreted as expressing a relation between an entity and a state, and the HOLDER-interpretation is the most natural

[9] Since νP is also a phase, object agreement in non-inverted transitive constructions can only be established if the object DP undergoes object shift and moves to the edge of ν (a second specifier above the subject), an operation triggered by an optional EPP-feature of ν (Chomsky 2000). As a result of object shift, the subject DP and the object DP in ν's specifiers are equidistant, and both can enter agreement relations with higher functional categories. The fact that the Pr-phase head in (40) completely blocks these agreement relations suggests that the Pr-phase head does not have an EPP-feature, and that using (a second) [Spec, Pr] as an escape hatch for νP-internal NPs is never possible. I suspect that this difference between Pr and the canonical phase heads ν and C is somehow related to the fact that Pr is not a "core functional category" and, in contrast to ν and C, not part of the syntactic representation of every sentence.

way in which this relation can be construed as meaningful. In contrast, when Pr's complement is a νP, the Pr-predicate is interpreted as denoting a relation between an individual-type entity and an event. Construing the argument NP in Pr's specifier as an instrument is one possible way in which a coherent interpretation can be achieved, but only if the instrument reading is supported by the specific semantics of both the NP and the eventive predicate.

An advantage of this latter approach is that it can explain why ideal examples of instrument inversion are those in which the subject is a prototypical instrument in the event expressed by the verb (see section 3.1). This semantic restriction does not follow from a theory in which the instrument relation is explicitly encoded in the semantics of the Pr-predicate. However, a potential weakness of the underspecification-approach is that it is not clear why the individual-type argument of an eventive predicate can only be interpreted as an instrument or a locative in Zulu, and not, say, as a theme or patient (recall that subject-object reversal is generally not possible in Zulu). Given that each approach has its own advantages and problems, I leave it open at this stage whether the instrument reading of the subject in instrument inversion constructions must be stipulated as part of the semantics of Pr, or whether it results from the semantic process of interpreting an inanimate entity in relation to a particular kind of event.

5. Conclusion and extensions

In this article, I have discussed the empirical properties of instrument inversion in Zulu, and I have put forward an analysis that explains these properties. The main hypothesis underlying this analysis is that instrument inversion is syntactically, and in crucial respects also semantically, similar to non-verbal predication in Zulu. Both types of construction involve the projection of the functional category Pr which establishes a thematic relation between the event or state expressed by its complement and a newly introduced argument in its specifier. The specific characteristics of instrument inversion follow from the fact that in this construction, the complement of Pr is a νP.

I believe that my analysis can also be extended to other types of inversion in Zulu, and perhaps in Bantu more generally. For example, consider semantic locative inversion, which was briefly discussed in section 2. This inversion construction is possible with stative unaccusative verbs ((43) repeats example (5) from section 2):

(43) Lezi zindlu zi-hlal-a a-bantu aba-dala.
10.these 10.house SM10-stay-FV 2-2.people ADJ2.old
'Old people live in these houses.'

I now suggest that in (43), the same Pr-head that combines with an *adjectival* stative predicate in examples such as (35) merges with an unaccusative VP expressing a *verbal* stative predicate. The semantics of (43) is given in (44):

(44) a. *abantu abadala -hlala** = λs[old-people-live(s)]
b. **Pr*** = λx λs[HOLDER(x)(s)]
c. **Pr'*** = λx λs[old-people-live(s) & HOLDER(x)(s)]
(from (44a, b) by Event Identification)
d. *lezi zindlu** = these houses
e. **PrP*** = λs[old-people-live(s) & HOLDER(these houses)(s)]
(from (44c, d) by Functional Application)

According to (44), a sentence such as (43) is construed as expressing that the state of "old people living" (= the denotation of the VP) holds of "these houses" (= the denotation of the NP in [Spec, Pr]), which is another way of saying that "these houses" are the location where the state expressed by the VP holds. If (44) is on the right track, then the main (perhaps the only) difference between adjectival predicate constructions and semantic locative inversion with unaccusative verbs is the syntactic category of Pr's complement.

As was noted in section 2, semantic locative inversion is also possible with (eventive) unergative and transitive predicates, and here a semantic composition based on the HOLDER-predicate obviously would not work. However, recall that unergative and transitive verbs, in contrast to unaccusatives, require an applicative marker to license semantic locative inversion (see example (6) in section 2 above). It seems likely that in these cases, the locative subject is semantically introduced by the applicative morpheme. A straightforward way to incorporate this assumption into the analysis proposed here would be to assume that the applicative marker in these constructions spells out a Pr-head with the denotation λx λe[LOCATION(x)(e)] that selects the νP.[10] This Pr-head introduces the locative argument in [Spec, Pr] and combines with the semantics of the νP via Event Identification, yielding the interpretation that the place denoted by the NP in [Spec, Pr] is the location of the event expressed by the νP.

I am confident that similar Neo-Davidsonian analyses can also be developed for other types of inversion, including subject-object reversal and expletive constructions. Strong support for the idea of a unified analysis based on the category Pr comes from the observation that the grammatical properties of other inversion constructions are in important respects similar to those of instrument inversion. For example, none of the constructions discussed in section 2 allows object marking of post-verbal arguments (see Zeller 2011 for some discussion). My analysis suggests that this fact derives from the presence of the Pr-category, which in turn implies that locative, theme/patient subjects, and even non-referential expletives, are also introduced as specifiers of the predicate head Pr (cf. Hazout 2004 on the semantic role of expletives in predication constructions). The precise predictions that follow from this proposal remain to be established, and then tested, in future research.

References

Bowers, John. 1993. The syntax of predication. *Linguistic Inquiry* 24. 591-656.

Bresnan, Joan & Sam A. Mchombo. 1987. Topic, pronoun, and agreement in Chicheŵa. *Language* 63. 741-782.

Bresnan, Joan & Kanerva, Jonni M. 1989. Locative inversion in Chichewa: A case study of factorization of grammar. *Linguistic Inquiry* 20. 1-50.

Buell, Leston. 2005. *Issues in Zulu verbal morphosyntax*. Los Angeles, CA: UCLA PhD dissertation.

Buell, Leston. 2006. The Zulu conjoint/disjoint verb alternation: focus or constituency? In Laura Downing, Lutz Marten & Sabine Zerbian (eds.), *Papers in Bantu grammar and description* (ZAS Papers in Linguistics 43), 9-30. Berlin: ZAS.

Buell, Leston. 2007. Semantic and formal locatives: Implications for the Bantu locative inversion typology. *Bantu in Bloomsbury: Special Issue on Bantu Linguistics* (SOAS Working Papers in Linguistics 15), 105-120. London: SOAS.

Chomsky, Noam. 2000. Minimalist inquiries: the framework. In Roger Martin, David Michaels & Juan Uriagereka (eds.), *Step by step*, 89-155. Cambridge: MIT Press.

Chomsky, Noam. 2001. Derivation by phase. In Michael Kenstowicz (ed.), *Ken Hale. A life in language*, 1-52. Cambridge: MIT Press.

Demuth, Katherine & Sheila Mmusi. 1997. Presentational focus and thematic structure in comparative Bantu. *Journal of African Languages and Linguistics* 18. 1-19.

Demuth, Katherine & Carolyn Harford. 1999. Verb raising and subject inversion in Bantu relatives. *Journal of African Languages and Linguistics* 20. 41-61.

Diercks, Michael. 2010. *Agreement with subjects in Lubukusu*. Washington, DC: Georgetown University PhD dissertation.

Dikken, Marcel den. 2006. *Relators and linkers. The syntax of predication, predicate inversion, and copulas.* Cambridge: MIT Press.

Harford, Carolyn. 1990. Locative inversion of Chishona. In Ivan R. Dihoff, John Hutchison & Victor Manfredi (eds.), *Current approaches to African linguistics* 7, 137-144. Dordrecht: Foris.

Hazout, Ilan. 2004. The syntax of existential constructions. *Linguistic Inquiry* 35. 393-430.

Kimenyi, Alexandre. 1976. *A relational grammar of Kinyarwanda*. Los Angeles, CA: UCLA PhD dissertation.

[10] An analysis very similar to this is in fact proposed in Buell (2005). Buell argues that in semantic locative inversion constructions with unergative verbs, an applicative phrase ApplP, headed by the locative applicative morpheme, projects above νP and introduces the locative argument in its specifier.

Kratzer, Angelika. 1996. Severing the external argument from its verb. In Johan Rooryck & Laurie Zaring (eds.), *Phrase structure and the lexicon*, 109-137. Dordrecht: Kluwer.

Machobane, Malillo.1995. The Sesotho locative constructions. *Journal of African Languages and Linguistics* 16. 115-136.

Marten, Lutz. 2006. Locative inversion in Otjiherero: More on morpho-syntactic variation in Bantu. In Laura Downing, Lutz Marten & Sabine Zerbian (eds.), *Papers in Bantu grammar and description* (ZAS Papers in Linguistics 43), 97-122. Berlin: ZAS.

Marten, Lutz. 2010. The great SiSwati locative shift. In Anne Breitbarth et al. (eds.), *Continuity and change in grammar*, 249-267. Amsterdam: John Benjamins.

Morimoto, Yukiko. 2000. *Discourse configurationality in Bantu morphosyntax*. Stanford, CA: Stanford University PhD dissertation.

Ndayiragije, Juvénal. 1999. Checking economy. *Linguistic Inquiry* 30. 399-444.

Van der Spuy, Andrew. 1993. Dislocated noun phrases in Nguni. *Lingua* 90. 335-355.

Van der Spuy, Andrew. 2001. *Grammatical structure and Zulu morphology*. Johannesburg, South Africa: University of the Witwatersrand PhD dissertation.

Woolford, Ellen. 2000. Agreement in disguise. In Vicki Carstens & Frederick Parkinson (eds.), *Trends in African Linguistics* 4, 103-117. Trenton, NJ: Africa World Press.

Zeller, Jochen. 2006. Raising out of finite clauses in Nguni: the case of *fanele*. *Southern African Linguistics and Applied Language Studies* 24. 255-275.

Zeller, Jochen. 2011. Semantic locative inversion and predication in Zulu. http://www.jzeller.de/pdf/SLI.pdf (25 January 2012.)