Sandawe's ID/LP Format

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0. The aim

The aim of this paper is to propose an informal sketch of the ID/LP format of an African language, Sandawe in the framework of the generalized phrase structure grammar(=GPSG) which has been developed in Gazdar(1981, 1982), Gazdar and Pullum(1981), Gazdar et al.(=GKPS) and related papers. Sandawe belongs to the Khoisan phylum which is famous for its click sounds. This language is spoken near Kondoa in Tanzania, East Africa. The number of the speaker of the language is reported to be less than twenty-eight thousand[1].

This paper is organized as follows. In the first chapter, the problem of Sandawe word order is introduced. In this chapter, the descriptive framework is outlined in accordance with GKPS. Ojeda's extension of the framework is also introduced. In chapter two, the issue of syntactic constituency is discussed in conformity with Stucky (1983). In the third chapter, Sandawe which is classified according to the types of sentences is observed. There, all sample data are cited from Kagatani(1989) and Dalgish(1979) with slight modification to their annotations partially in line with Dalgish(1979). In this chapter, possible or impossible ID rules and LP statements are introduced especially in conformity with Ojeda(1989). In chapter four, the ID/LP format for Sandawe is proposed. There, the role of the features in the word order specification is focused upon with respect to the agreement relation between sister constituents. Our conclusion is given in the last chapter.

1. The Problem and the descriptive framework

1.1 the problem

Sandawe seems to have 'dual syntax' in the sense that the constituents of the language are ordered in one fixed set of constructions and unordered in the other fixed set of constructions. For instance, it has free word order in its non-future affirmative sentence constructions and fixed word order in its future and/or negative sentence constructions. Compare sets of sentences in (1), (2) and (3)[2]:

(1) a. ǂachu hlaa-a wak'a-wa. [Kagatani:130]
lion goat-SM[3sgN] kill-OM[pl]
'The lion killed goats.'

b. ≠achu wak'a-wa hlaa-a
c. hlaa-a ≠achu wak'a-wa.
d. hlaa-a wak'a-wa ≠achu.
e. wak'a-wa ≠achu hlaa-a.
f. wak'a-wa hlaa-a ≠achu.

(2) a. thamechu hlaa khese-chu. [Kagatani:130]
woman goat look after-SM[Neg,3sgF]
'The woman does not look after the goat.'
b. *thamechu khese-chu hlaa .
c. *hlaa thamechu khese-chu.
d. *hlaa khese-chu thamechu.
e. *khese-chu thamechu hlaa.
f. *khese-chu hlaa thamechu.

(3) a. /nomese ≠achu wak'a-i. [Kagatani:131]
man lion kill-SM[Fut,3sgM]
'The man will kill the lion.'
b. */nomese wak'a-i ≠achu.
c. *≠achu /nomese wak'a-i.
d. *≠achu wak'a-i /nomese.
e. *wak'a-i /nomese ≠achu.
f. *wak'a-i ≠achu /nomese.

Here , in (1) which is a set of non-future sentence constructions, any permutation of constituents is permitted. In contrast, in (2) and (3) which are negative and future sentence constructions in order, only SOV word order is permissible[3]. In this paper we will examine whether Sandawe is dual-syntactic.

1.2 the descriptive framework

1.2.1 ID/LP format

In GPSG, the issues which relate constituent orders are explained in terms of the ID/LP format, i.e. the grammar which consists of a set of ID (=immediate dominance) rules and LP(=linear precedence) statements. The former specifies the immediate dominance relation between a mother node and its daughter nodes and the latter the linear precedence relation among sister nodes, respectively[4].

The grammar with ID/LP format is claimed to be strongly equivalent to the Context Free Phrase Structure Grammar(=CF-PSG)[5]. For instance, the set of local trees admitted by the three CF-PSG rules in (4a) is the same as those admitted by the ID rule in (4b) and the LP

statement in (4c).

(4) a. A->BCD
A->BDC
A->DBC
b. A->B, C, D
c. B<C[6]

(4c), however, successfully expresses the generalization that 'B must precede C', which is not captured in (4a). Consequently, the grammars with ID/LP format are claimed to be more generalised than the traditional CF-PSG with respect to the order of constituents[7].

GKPS(49) claims that a CF-PSG can be put into ID/LP format if and only if it has the ECPO property which is shown in (5)[8]:

(5) the ECPO property
the set of expansions of any category observes a partial ordering that is also observed by the expansions of all other categories.

In the preceding section, we have learned that the constituents of Sandawe are ordered in one fixed set of constructions and unordered in the other fixed set of constructions. Then, it seems to be inappropriate to formulate the LP statement which imposes some ordering constraint on Sandawe ID rules to generate only those sentences whose constituent orders are fixed, because it makes the grammar of the language lose the ECPO property.

1.2.2 Ojeda's ILP statement

To maintain the claim that grammars of natural languages observe the ECPO property, Ojeda(1988) introduces the notion, the immediate linear precedence (=ILP) and extends the ID/LP format in line with Zwicky and Nevis(1986). The definition of ILP is roughly as summerized in (6)[9].

(6) A node A immediately precedes B(A<<B) if and only if the node A linearly precedes a node B, where A and B are sisters, and there is no node C which both linearly precedes B and is linearly preceded by A. (cf. Ojeda, 1988:463)

2. Syntactic constituency of Sandawe

2.0

When we describe the constituent order of a natural language with relatively free word order, in addition to the descriptive framework we

must provide the evidence for the syntactic constituency[10].

2.1 NP constituency

For noun phrase constituency, Stucky(1983:76-77) demonstrates that the non-separability of noun and its modifiers, the distribution of demonstratives and the islandhood facts are the keys to provide sound evidence of syntactic noun phrase[11].

First, in Sandawe, the relative order of nouns and their modifiers is relatively fixed: the head noun is followed by the adjective. For instance, in (7), the adjective [hlaa-s(u)] is located right after the noun [thamechu]. See the sample phrase in (7).

(7) thamechu hlass-s(u) [Kagatani, 129]
woman good

Secondly, relative clause can either immediately precede or follow the head noun, thus relative clause and the head noun are non-separable[12]. For instance, in (8a), the head noun [/omese] precedes the relative clause [?ie gari dlomo-seng], and in (8b), the head noun [//o-n-ts'i-s] follows the relative clause [hap-a tl'ape-ts'-sen--ts'i-s]. See the sample sentences in (8).

(8) a. /omese [?iẽ gari dlomo-seng] ta-a ?iẽ [Dalgish:291]
man PROG car buy-Rel[M] run-SM[3sgM] PROG
'The man who is buying a car is running.'
b. [hap-a tl'ape-ts'-sen- -ts'i-s] //o-n-ts'i-s /iwaka
you-NOM beat-ACC-Rel[M] -ACC-[1sg] child-DEF-ACC-[1sg] bring
'I bring the child whom you are beating.' [Dalgish:293]

Thirdly, in Sandawe, the demonstratives always precede the nouns and they require the nouns to be suffixed with the definitive affixes in accordance with their gender and number. For instance, in (9) the demonstrative [haa-su] requires the definitive affix [-ngsu] right after the noun [thamechu][13]. See the sample sentnce (9).

(9) haa-su thamechu-ngsu-na hlaa khese-waa -ni -sa.
DEM-[sgF] woman-DA[sgF]-TOP goat look after-OM[pl]-Q -SM[3F]
'Did that woman look after the goats?'
[Kagatani:131]

These three facts motivate us to assume NP to be a sound syntactic constituent.

2.2 VP constituency

At one view, there seems to be no theory independent reason to support VP constituency with respect to the relation between the head verb and its NP complements, since in Sandawe it is hard to find an endocentric construction between the head verb and the higher constituent which is composed of the verb and its object complement.

However, the head verb can constitute a sentence with or without the progressive auxiliary, and the verb with or without the auxiliary can constitute a sentence with or without a subject noun phrase. This means the head verb itself or the combination of the progressive auxiliary and the head verb can constitute verb phrase in the theoretical framework in which sentence is construed as the maximal projection of V. Compare sentences in (10).

(10) a. (hesu) ta-sa. [Dalgish, 1979:273 with
she run-SM[3sgF] 'She runs.' minor change]
b. ci-a ta ?iẽ.
I run PROG 'I'm running.' [Dalgish, 1979:274]

These observations apply to the sentence with object NP's as well, since the suject NP and the progressive auxiliary are optional for Sandawe sentence constructions. Thus, we can easily expect the sentences composed only of the object NP and the head verb. Therefore, VP constituency is attested and we can formulate ID rules like (11)[14].

(11) a. V^2[+SUBJ] -> (N^2), V^2[-SUBJ]
b. V^2[-SUBJ] -> (PROG), H
c. V^2[-SUBJ] -> (PROG), N^2, H

3. Sandawe

3.0 Introduction

As we have seen in the first chapter, in Sandawe, constituents are unordered in non-future affirmative sentence constructions and ordered in its future and/or negative sentence constructions. In addition to that, in subordinate clause constructions such as wh-question sentence constructions, cleft sentence constructions or relative clause constructions, constituent orders are partially fixed. Thus, in what follows, we will observe Sandawe sentences which are classified according to the types of sentences: non-future affirmative sentence constructions, negative sentence constructions, future sentence constructions, negative future sentence constructions, wh-question sentence construc-

tions, cleft sentence constructions and relative clause constructions.

3.1 Non-future affirmative sentence constructions

Here, we will look at the characteristics of Sandawe's non-future affirmative sentence constructions. In these constructions, Subject marking affixes(=SM) are not affixed to the subjective nominals but to the objective nominals[15]. And the object affix(=OA) is not affixed to the objective nominals but to the verbs. This means that the noun phrase with a subject marking affix does not coincide with the nominative noun phrase and that the constituent with the object affix is not equal to the objective noun phrase. For instance, in (12a) and (12b), the objective nominal [hlaa] is marked with the subject marking affixes, [-a] and [-sa], respectively. In the same way, in (12c), [≠achu] is suffixed with [-i]. In (12a) and (12b), the object affix which carries the information of plurality, [-wa], is affixed to the verbs, [wak'a] and [khese], respectively. Observe sentences in (12)[16].

(12) a(=1a). ≠achu hlaa-a wak'a-wa.
-SM[3sgN] -OA[pl]

b. thamechu hlaa-sa khese-wa. [Kagatani:130]
woman goat-SM[3sgF] look after-OA[pl]
'The woman looks after the goats.'

c. hapu-a ≠achu-i /ang. [Kagatani:130]
you-NOM lion-SM[2sg] see
'You saw the lion.'

These facts motivate us to claim that the ID rules in (13) do the wrong prediction regarding the specification of the nominative or accusative noun phrase. See the ID rules in (13)[17].

(13) a. V^2[+SUBJ] -> (N^2[+NOM]), V^2[-SUBJ]
b. V^2[-SUBJ] -> (PROG), N^2[+ACC], H

Here, we have noticed syntactic agreement seems to play important roles in the specification of NP's. In other words, without the help of agreement, it is not possible to select the nominative NP or accusative NP out of NP's in Sandawe sentences.

3.2 Negative and/or Future sentence constructions

3.2.0

In this section, we will observe three constructions, namely, negative sentence constructions, future sentence constructions and future negative sentence constructions whose word orders are fixed.

3.2.1 Negative sentence constructions

In negative sentence constructions, the subject marking affixes are suffixed to the verbs. And negativity is realized in the affixes. Thus, for instance, in (14), in addition to the nominative properties, negativity is embodied in the affixes, [-chu] and [-po][18]. See the sentences in (14).

(14) a(=2a). thamechu hlaa khese-chu.
-SM[Neg,3sgF]

b. hapu ≠achu /ang-po. [Kagatani:130]
-SM[Neg,2sg]
'You didn't see the lion.'

3.2.2 Future sentence constructions

In future sentence constructions, the subject marking affixes are suffixed to the verbs. And futurity is realized in the affixes. Thus, for instance, in (15), in addition to the nominative properties, futurity is realized in the particle [-i]. See the sentence in (15).

(15)(=3a) /nomese ≠achu wak'a-i. [Kagatani:131]
-SM[Fut,3sgM]

3.2.3 Negative future sentence constructions

Negative-future sentence constructions are expressed by adjoining the negative affix to the verb right after the subject marking affixes. Thus, for instance, in (16) the negative affix [-ts'e] is suffixed to the verb directly after the subject marking affix [-i]. See the sentence (16).

(16) /nomese ≠achu wak'a-i -ts'e [Kagatani:131]
-SM[Fut,3sgM] -NEG[Neg]
'The man will not kill the lion.'

However, all we can capture from the observation in section 3.2 concerning the constituent order is that the head verbs come at the end of the sentences. Thus, we can formulate an LP statement with syntactic feature specification like (17) in line with Ojeda's extension of LP statement which tells that nothing comes between the head verb with either [+Fut] or [+Neg] and the end of the sentence marked by the sentence boundary(= ##). See the statement in (17).

(17) H[+Neg|+Fut][19] << ##

3.3 Wh-question sentence constructions

In Dalgish(1979:284-288), it is observed that wh-question sentence constructions, the questioned NP must appear sentence-initially and after that, various permutations among constituents are permitted. For instance, in (18), wh-pronoun [ho] comes sentence-initially, and after the NP, any permutation is attested.

(18) a. ho-a ta ?iẽ. [Dalgish:284]
WH-NOM run PROG
'Who is running?'
b. ho-a ?iẽ ta.
WH-NOM PROG run
'Who is running?'

Here, from these observations, we can propose a tentative LP statement like (19). See the statement in (19).

(19) ## << N^2[+Wh]

(19) says that NP which is wh-pronoun and has the feature [+Wh] in itself must come at the initial position of a sentence which is marked by sentence boundary.

3.4 Cleft sentence constructions

Dalgish(1979:288-290) observes that in a cleft sentence construction for subjects, the verb in the subordinate clause must be clause-final and the clefted noun phrase must appear clause-initially. For instance, in (20a), the verb [ta-sis-su-n-su] and the noun phrase [tha-

mechu-ga] occur clause finally and initially, respectively. In (20b), the second person pronoun [hapu] appears clause-initially and immediately takes the copula verb [ga] which functions just like the clefting affix [-ga][20].

(20) a. thamechu-ga? ?iẽ ta-si-su-n-su [Dalgish:289]
woman-CLEFT PROG run-REL-SM[3sgF]-REL-SM[sgF]
'it's the woman who is running.'
b. hapu ga? ?iẽ gari Boba ?i?-wa-si-po-m-po [Dalgish:289]
you be PROG cars Boba give-OA[pl]-REL-SM[2sg]-REL-SM[2sg]
'it's you who are giving Boba cars.'

Here, from these observations, we can propose tentative LP statements like (21) for (20).

(21) a. ## << N^2[+Cleft]
b. H[+Rel] << #

(21a) says that NP which is specified with the feature [+Cleft] realized in the clefting affix [-ga] comes at the initial position of a sentence. In the same way, (21b) says that the head verb H which is specified with the feature [+Rel] realized in the relative affix comes at the end of the clause marked by clause boundary(=#).

3.5 Relative clause constructions

In Dalgish(1979:291), it is observed that the verb in the relative clause must be in the clause final-position.

(22) a. /omese [?iẽ gari dlomo-seng] ta-a ?iẽ [Dalgish:291]
man PROG car buy-Rel[M] run-SM[3sgM] PROG
'The man who is buying a car is running.'
b. [hap-a tl'ape-ts'-sen- -ts'i-s] //o-n-ts'i-s /iwaka
you-NOM beat-ACC-Rel[M] -ACC-[1sg] child-DEF-ACC-[1sg] bring
'I bring the child whom you are beating.' [Dalgish:293]

The ILP statement proposed in (21b) is applicable to the generation of the tree for (22).

3.6 Summary

In this chapter, we have noticed that in Sandawe constituents do not always carry their own syntactic information but carry their neighbours' one and that syntactic agreement seems to play important roles

in the specification of NP's in non-future affirmative sentence constructions. These are also true with other constructions. Therefore, we have to revise the ID rules in such a way that they can reflect the syntactic information connected with agreement. As for the LP statements, the following points are captured:(i) the head verbs must come at the end of the sentence in future and/or negative sentence constructions, (ii) the wh-pronoun and the clefted-NP must appear sentence-initially and (iii) the head verb with relative affix must come sentence-finally. See the rules and statements we have formulated.

(23)(=11) a. V^2[+SUBJ] -> (N^2), V^2[-SUBJ]
b. V^2[-SUBJ] -> (PROG), H
c. V^2[-SUBJ] -> (PROG), N^2, H

(24) a(=17). H[+Fut|+Neg] << ##
b(=19). ## << N^2[+Wh]
c(=21a). ## << N^2[+Cleft]
d(=21b). H[+Rel] << #

ILP statements in (24) can be merged; (b) and (c) can be merged into a statement like (25b). In the same way, (a) and (d) can be merged into (25a), since (26a) is a particular case of (26b).

(25) a. H[+Fut|+Neg;+Rel] << ##
b. ## << N^2[+Wh;+Cleft]

(26) a. V[] << #
b. V[] << ##

For convenience, I will duplicate the rules for Sandawe ID/LP format to be revised in the next chapter.

(27) a. V^2[+SUBJ] -> (N^2), V^2[-SUBJ]
b. V^2[-SUBJ] -> (PROG), H
c. V^2[-SUBJ] -> (PROG), N^2, H
d. H[+Fut|+Neg;+Rel] << ##
e. ## << N^2[+Wh;+Cleft]

4. Sandawe ID/LP format

Based upon the discussions in the preceding chapters, we will expand the ID/LP format in such a way that the constituent order of Sandawe sentences can be predicted by means of the agreement relation among the syntactic features carried in sister constituents.

4.1. Features

In this section, we will introduce three kinds of features which gurantee the agreement relation among the syntactic features carried in sister constituents. For the sake of exposition, let me recall some sentences observed in the preceding chapters. Observe the sentences in (28).

(28) a(=1a). ≠achu hlaa-a wak'a-wa.
-SM[3sgN] -OA[pl]
b(=13). hapu-a ≠achu-i /ang.
NOM SM[2sg]
c(=2a). thamechu hlaa khese-chu.
-SM[Neg, 3sgF]

In (28), two relations between constituents in sister relation can be captured. One is the agreement relation between the first NP and the second NP, and the other is the assignment relation between the second NP and the verb[21]. Here, we will focus on the first relation and assume that there are three kinds of syntactic features:(i) the features for the head nouns which are either overtly realized in the affixes suffixed to the noun or the features for the nouns whose values are not realized in the affixes but are given in the lexicon, (ii) the features for the nominal constituents which are overtly realized in the affixes suffixed to the other constituents and (iii) the features for the types of the sentences which are either overtly realized in the affixes or covertly realized in the head. They are named OWN, SIS and TYPE, respectively.

Let us look at examples of these features. First, NOM is a typical OWN realized in the nominative case marking affix [-a]. [2sg] is another OWN which is not morphemically realized in the noun phrase [hapu] but described in the lexicon (i.e. hapu, [2sg]). Next, the complex feature [3sgN] realized overtly in the subject marking affix [-a] is a SIS. Then, [Neg] in the composit feature [Neg, 3sgF] is a TYPE.

In general, each syntactic category is a composite of syntactic features in GPSG(cf. GKPS, chapt.2). And, this is also true with OWN, SIS and TYPE. The possible combinations of these features are as follows[22].

(29) featured categories:	examples:	expressions:
a. Cat[OWN:<>]	N^2[OWN:[3sgN]]	≠achu
b. Cat[SIS:<>]	Not found in Sandawe(cf. English 'do')	
c. Cat[TYPE:<>]	BE[TYPE:[+Cleft]]	ga?

d. Cat[OWN:<>, TYPE:<>] N^2[OWN:[+Nom], TYPE:[+Wh]] ho

e. Cat[OWN:<>, SIS:<>] N^2[OWN:[3sgN], SIS:[+Nom, 3sgN]] hlaa-a

f. Cat[TYPE:<>, SIS:<>] V[TYPE:[+Fut, -Neg], SIS:[+Nom, 3sgM]] khese-chu

g. Cat[OWN:<>, TYPE:<>, SIS:<>] Not found in Sandawe

4.2 Features and ID/LP statement

Once these features are incorporated into the ID/LP format, the rules in (27) are replaced by the rules like (30).

(30)

a. V^2[+SUBJ] -> (N^2[OWN:[α]]), V^2:[-SUBJ]

b. V^2[-SUBJ] -> (PROG), H[TYPE:[γ], SIS:[α]]

c. V^2[-SUBJ] -> (PROG), N^2[OWN:[β], SIS:[α]], H[TYPE:[γ], SIS:[α, β]]

d. H[TYPE:[+Fut|+Neg;+Rel], SIS:[α, (β)]] << ##

e. ## << N^2[OWN[α], TYPE[+Wh;+Cleft]]

In addition to these rules, we need two LP statements which specify the order of noun phrases with respect to feature specfication like (31)[23].

(31) a. N^2[OWN:α] < N^2[OWN:β] < H[TYPE:[+Fut|+Neg;Rel], SIS:[α, β]]

b. N^2[OWN:[+Nom]] < N^2[OWN:[-Nom]] < H[TYPE:[+Fut|+Neg;+Rel], SIS:<>]]

Then, first, given the ID rule stated in (30) based on the fearure specification, Sandawe's non-future affirmative sentence constructions in (32) are correctly generated as shown in (33)[24].

(32) a(=1a). ≠achu hlaa-a wak'a-wa.
-SM[3sgN] -OM[pl]

b(=1b). ≠achu wak'a-wa hlaa-a.

c(=1c). hlaa-a ≠achu wak'a-wa.

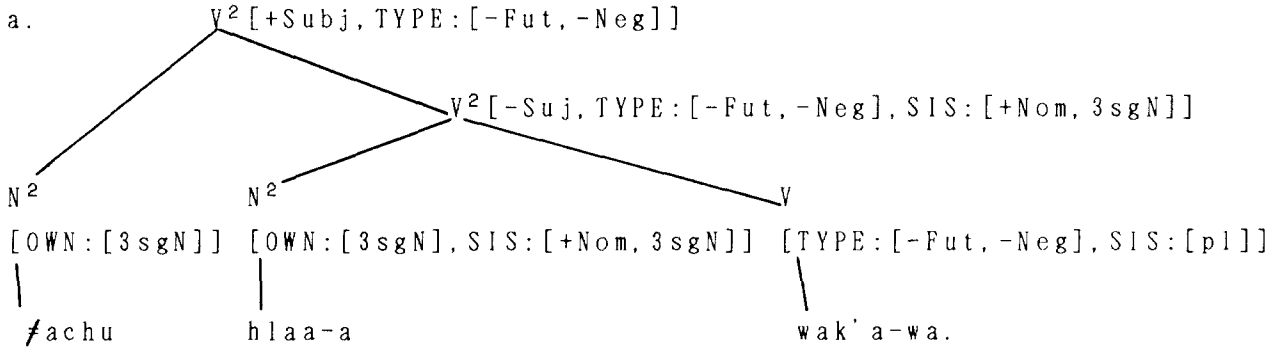
d(=1d). hlaa-a wak'a-wa ≠achu.

e(=1e). wak'a-wa ≠achu hlaa-a.

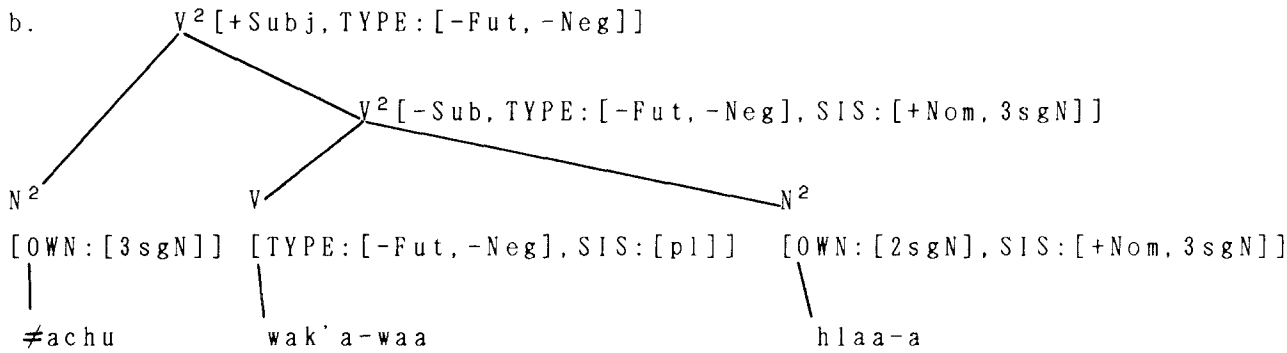
f(=1f). wak'a-wa hlaa-a ≠achu.

(33)

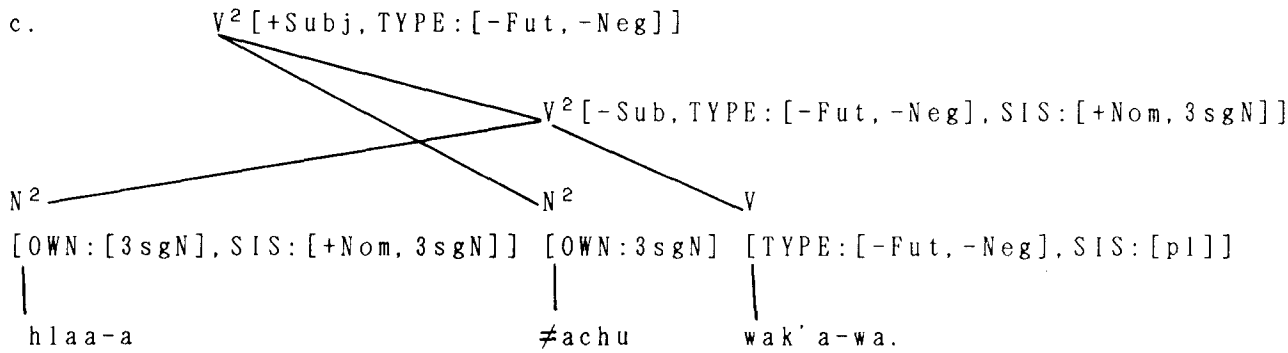
a.


V2[+Subj, TYPE:[-Fut, -Neg]]
V2[-Suj, TYPE:[-Fut, -Neg], SIS:[+Nom, 3sgN]]
N2
N2
V
[OWN:[3sgN]]
[OWN:[3sgN], SIS:[+Nom, 3sgN]]
[TYPE:[-Fut, -Neg], SIS:[pl]]
≠achu
hlaa-a
wak'a-wa.

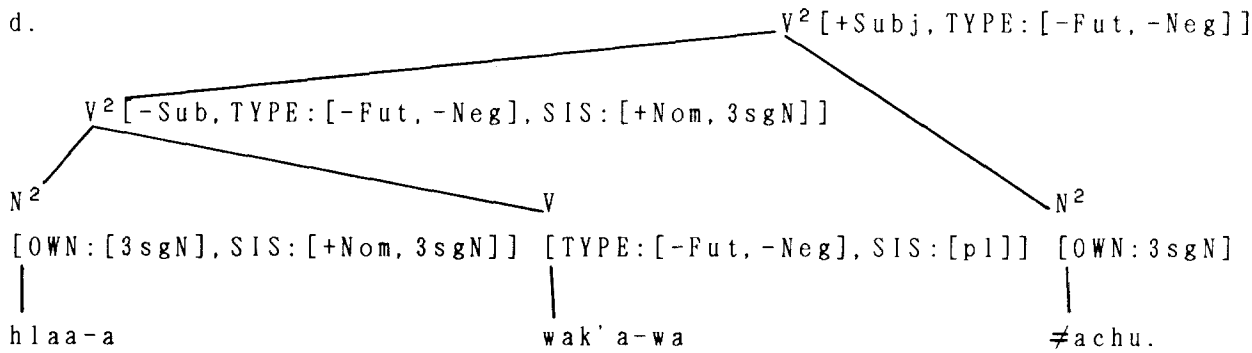
b.


V2[+Subj, TYPE:[-Fut, -Neg]]
V2[-Sub, TYPE:[-Fut, -Neg], SIS:[+Nom, 3sgN]]
N2
V
N2
[OWN:[3sgN]]
[TYPE:[-Fut, -Neg], SIS:[pl]]
[OWN:[2sgN], SIS:[+Nom, 3sgN]]
≠achu
wak'a-waa
hlaa-a

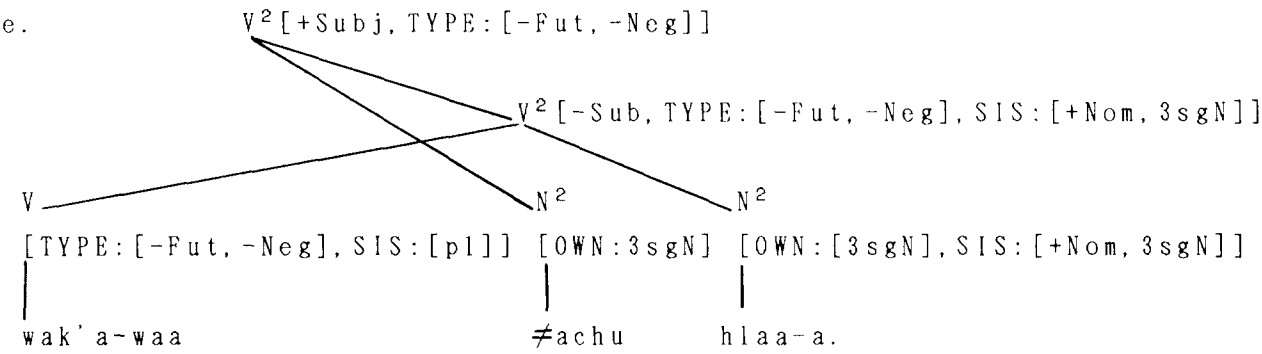
c.


V2[+Subj, TYPE:[-Fut, -Neg]]
V2[-Sub, TYPE:[-Fut, -Neg], SIS:[+Nom, 3sgN]]
N2
N2
V
[OWN:[3sgN], SIS:[+Nom, 3sgN]]
[OWN:3sgN]
[TYPE:[-Fut, -Neg], SIS:[pl]]
hlaa-a
≠achu
wak'a-wa.

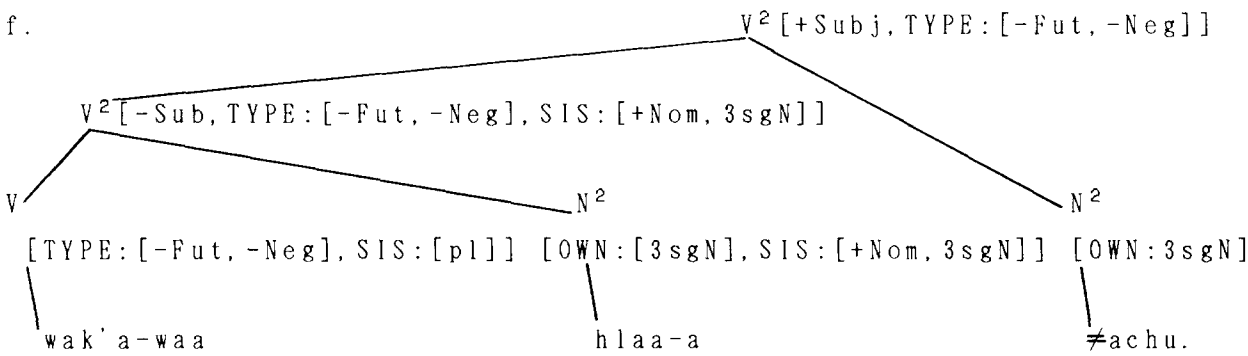
d.


V2[+Subj, TYPE:[-Fut, -Neg]]
V2[-Sub, TYPE:[-Fut, -Neg], SIS:[+Nom, 3sgN]]
N2
V
N2
[OWN:[3sgN], SIS:[+Nom, 3sgN]]
[TYPE:[-Fut, -Neg], SIS:[pl]]
[OWN:3sgN]
hlaa-a
wak'a-wa
≠achu.

e.



f.



In the same way, Sandawe's other sentence constructions in (34) are correctly predicted based upon the rules in (30) and (31) as shown in the trees from (35) to (37)[25].

(34) a(=2a). thamechu hlaa khese-chu.
-SM[Neg, 3sgF]

b(=3a). /nomese ≠achu wak'a-i.
-SM[Fut, 3sgM]

c(=16). /nomese ≠achu wak'a-i -ts'e
-SM[Fut, 3sgM] NEG[Neg]

d(=18a). ho-a ta ʔiɛ̃.
WH-NOM

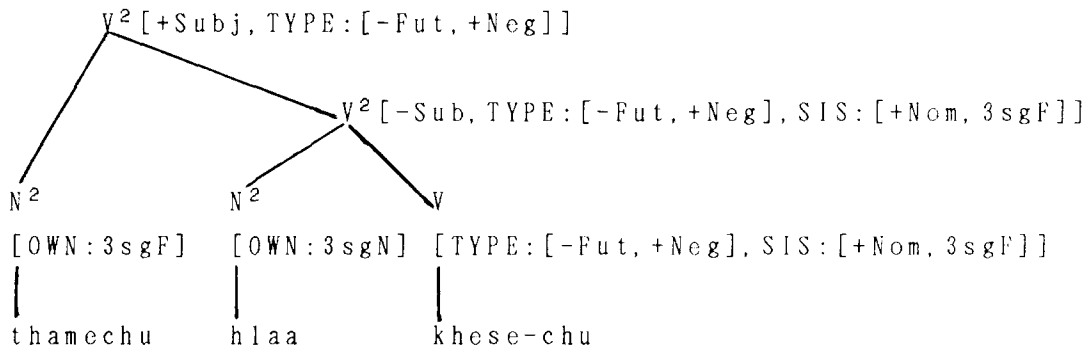
e(=18b). ho-a ʔiɛ̃ ta.
WH-NOM

f(=20a). thamechu-ga? ʔiɛ̃ ta-si-su-n-su
-CLEFT -REL-SM[3sgF]-REL-SM[sgF]

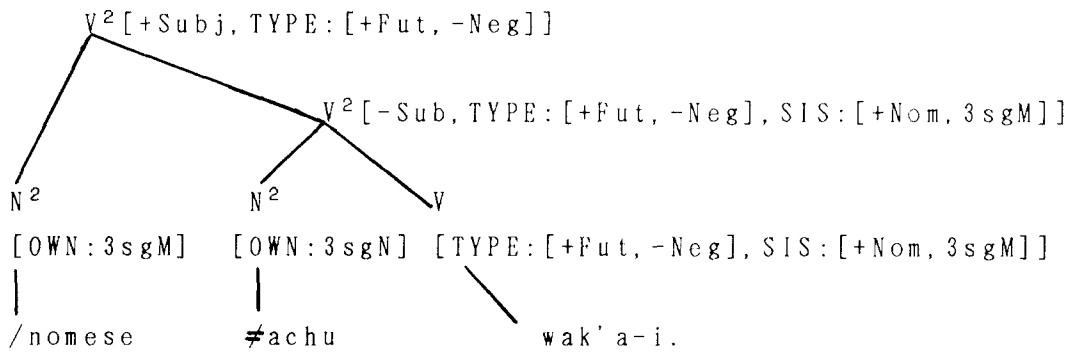
g(=20b). hapu ga? ʔiɛ̃ gari Boba ʔi?-wa-si-po-m-po
-OA[pl]-REL-SM[2sg]-REL
-SM[2sg]

(35)

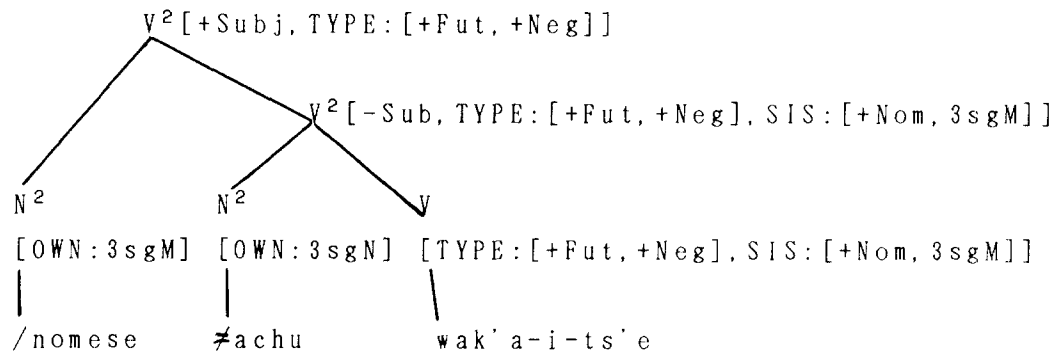
a. Negative sentence construction



b. Future sentence construction

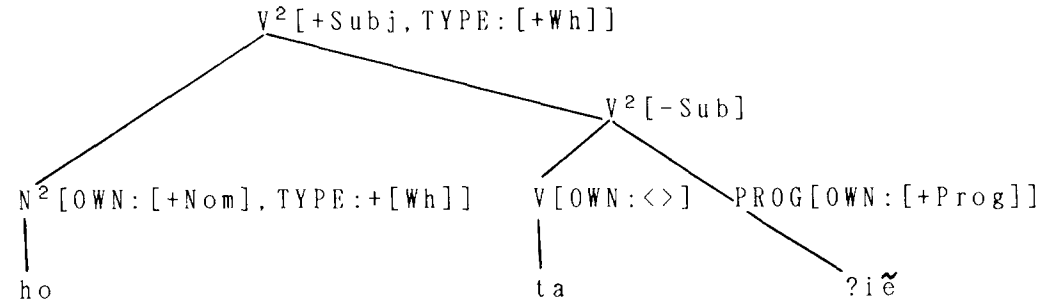


c. Negative Future sentence construction

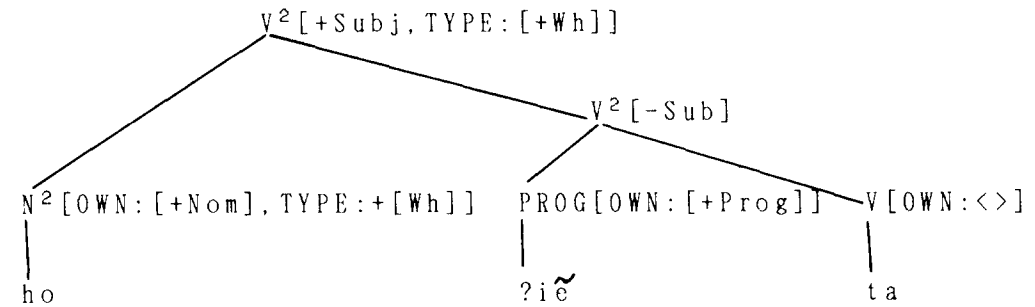


(36) Wh-question sentence construction

a.

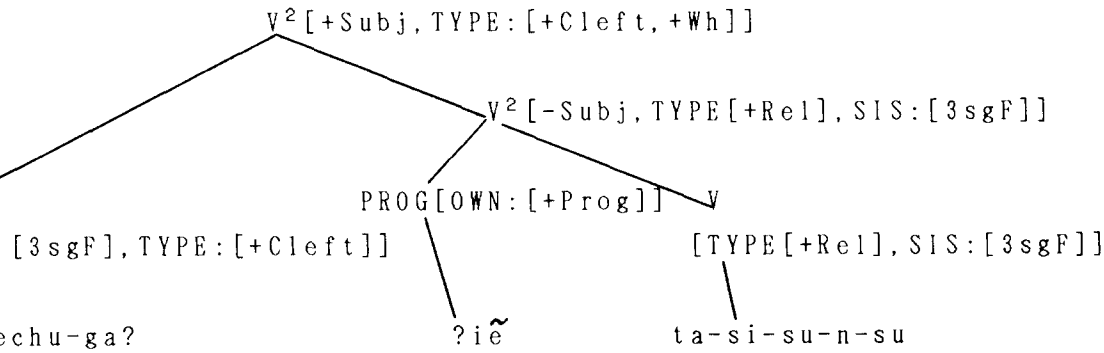


b.

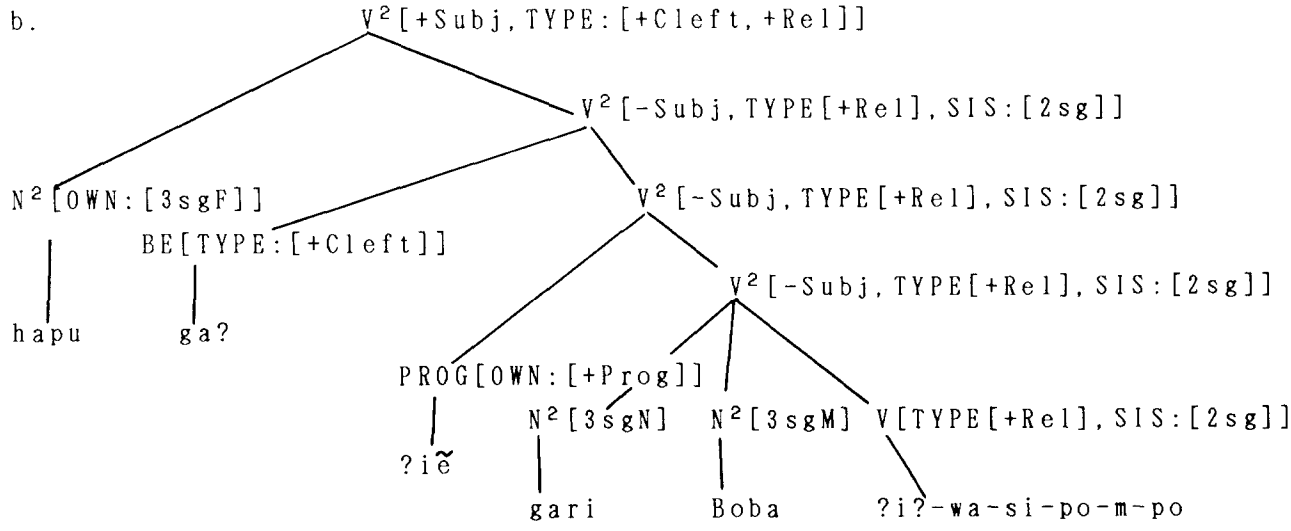


(37) Cleft-sentence construction

a.



b.



5. Concluding remarks

In this paper we have questioned whether Sandawe has 'dual syntax' as it seems to have at first sight. Through the observation of several Sandawe sentence constructions, we have noticed that it has NP and VP as its constituents and that when we formulate the ID/LP format for Sandawe, we have to take the agreement relation between constituents into account. To fulfill the requirement, we have proposed three syntactic features OWN, SIS and TYPE and expanded the ID/LP format in such a way that the constituent order of Sandawe sentences can be predicted by means of the agreement relation among the syntactic features carried in sister constituents. The ID/LP format we have formulated can derive the free word order sentence constructions as well as the fixed word order sentence constructions. Therefore, we do not need to assume two different grammars for one language. This means that we have proved that Sandawe is not dual-syntactic but observes the ECPO property.

Sandawe does not have enough source of data to be analysed at present, so that this paper remains tentative and informal but is informative for the analysis of natural languages in the framework of generalized phrase structure grammar.

Notes:
*In finishing up this paper, I have benefited from the pioneering works by Dalgish and Kagatani. The discussion with Shichiro Tanaka was always helpfull and suggestive. But, needless to say, all errors including the interpretation of Sandawe are my own.

1. For further information, see Dalgish(1979:273), Kagatani(1989:129).
2. In this paper following symbols are used for clitics and other sounds: [/] = dental click, [=] =palatal click, [//] = lateral click, ['] = ejective sound, [～](tilda) = for nasalization (see, Dalgish(1979,275)).
3. For further information, see Kagatani(1989:130-131).
4. Gazdar et al., pp.44-47.
5. Ibid., p.43.
6. 'B<C' is read as 'B preceeds C'.
7. Gazdar et al., p.47.
8. Ibid.,p.49.
9. The ECPO property has been questioned in several papers including Jacobson(1987). Arguments against the ECPO property are summerized in Ojeda(1988:461-463) and Sag(1988:306-308).
10. Stucky(1983), p.75.
11. Ibid., pp.76-77.
12. For further information, see Dalgish(1979:291-229).

13. For the detailed information, see Kagatani(1989:130).
14. Here, V^2 stands for {<N,->,<V,+>,<BAR,2>}. Thus, V^2[+SUBJ] and V^2[-SUBJ] mean {<N,->,<V,+>,<BAR,2>,<SUBJ,+>} and {<N,->,<V,+>,<BAR,2>,<SUBJ,->}, respectively. We sometimes use S for the former and VP for the latter. See Gazdar et al., pp.22-23. And H stands for the head of a phrase, thus the verb is the head of a verb phrase.
15. For the paradigms of the subject marking affixes, see Kagatani(1989:130-131).
16. (i) In Sandawe, past tense is realized in inflection forms of verbs, but the distinction between present and past tense is not always explicit and missing quite often(See Dalgish, 1979; Kagatani, 1989), (ii) Subject nouns are sometimes suffixed with the nominative affixes(=NOM).
17. A relevant argument is found in Sag(1988,306-307).
18. (i)Here, nominativeness is identified with the feature triple, PER(=person), NUM(=number) and GEN(=gender). For instance, in SM[Neg, 3sgF], [3sgF] specifies the person, the number and the gender of the nominative noun phrase, (ii)Negativity is realized either in the subject marking affix in negative sentences or in the negative affix in future negative sentences. See 3.2.2.
19. [α|β], [α;β] and [α,β] mean 'α and/or β','α or β' and 'α and β', respectively.
20. The cleft sentence construction for subjects utilizes relative clause markers or relative affixes on verbs. As for the morphological variation of the relative affixes, see Dalgish(1979:291).
21. The feature [pl] is an example of a feature for the assignment relation. It is realized in the object affix [-wa] suffixed to the verb and understood as the feature for the objective nominals. Thus, it can be classified as a SIS, but does not have any couterpart for agreement relation in the objective nominals either overtly, covertly or lexically. In this paper, we just classify it as SIS and leave it there. I understand the issue of the feature assignment relation is beyond the scope of the present discussion.
22. (i) 'Cat' stands for category,(ii)'<>' is used to mean unspecified, but not a "saturated constituent" in Sag(1988),(iii) A composit feature [a,b] means the unification of its elements: [a] U [b]. The process of the unification is in line with GKPS.
23. It is not appropriate to assume ILP statements in stead of (31) like the following, since in Sandawe adverbs can appear rather freely at any place in a sentence and be placed between NP's or NP and H (see, Kagatani:131):

a. N^2[OWN:α] << N^2[OWN:β] << H[TYPE:[+Fut|+Neg;+Rel],SIS:[α,β]]
b. N^2[OWN:+Nom] << N^2[OWN:-Nom] << H[TYPE:[+Fut|+Neg;+Rel],SIS:<>]

24. In these tree diagrams, only relevant features are specified.

25. Because of the shortage of space, other relevant subordinate structures including relatives can not be treated. For the analyses of those strucrures see Kubo(in preparation). The tree diagrams (36) and (37) can not be derived without other ID rules such as the rule which combines V or V^2 with PROG to derive V^2 and the rule which connects a dative verb with two object NP to derive V^2. Thus, these examples are only for reference.

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APPENDIX

#Abbreviation and Symbols#

Lexical items:

DEM=demonstrative,

PROG=progressive,

BE=copula verb,

Affixes:

SM=Subject Marking affix,

OA=Object Affix,

NOM=nominative case marking affix,

ACC=accusative case marking affix,

DAT=dative case marking affix,

CLEFT=Clefting Affix,

NEG=Negative affix,

Rel=relative affix,

DEF=definite affix,

DA=definitive affix,

TOP=topic affix,

Q=question affix,

PAST=past tense affix,

Features:

[sg]=singular,

[pl]=plural,

[M]=Masculine,

[F]=Feminine,

[N]=neuter,

[1]=1st person,

[2]=2nd person,

[3]=3rd person,

[Fut]=Futurity,

[Neg]=Negativity,

[Rel]=Relativity,

[Cleft]=Cleft-ness

[Nom]=Nominative

[Subj]=Subject

OWN=own

SIS=sister

TYPE=type

Symbols:

##=sentence boundary,

#=clause boundary

[,]= and

[;]= or

[|]= and/or

[:]= evaluation

Phonetic Symbols:

[/] = dental click

[//] = lateral click

[=] = palatal click

[ˈ] = ejective sound

[~] = for nasalization