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RESUMPTIVE PRONOUNS IN TUKI*

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This paper argues that in Tuki, gaps construed with WH- or topicalized phrases are null resumptive pronouns rather than WH-traces. Gaps alternate with overt resumptive pronouns. Structures with a gap parallel analogous structures with overt resumptive pronouns with regard to subjacency violations and violations of the Condition on Extraction Domains of Huang [1982], coordination tests, and weak crossover phenomena: gaps and overt pronominals fail to produce weak crossover violations, unlike structures with quantified NP's. Moreover, both the gaps and the overt resumptive pronouns license parasitic gaps, further strengthening the analogy.

1. Introduction

This paper reveals that gaps in Tuki WH-constructions should be analyzed as null resumptive pronouns which do not involve movement rather than variables left

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f1 = future tense one marker
Neg = negation marker
OM = object marker
p1 = past tense one marker
p2 = past tense two marker
SM = subject marker

by "Move Alpha". In Tuki, a Bantu language of Central Cameroon (West Africa), the head of the WH-phrase can be associated with a gap or a resumptive pronoun. Generative Grammar analyzes the gapped examples as instances of "Move Alpha", a general rule that prohibits movement from island environments. The fact that the resumptive pronoun strategy in Tuki violates Bounding Theory is expected under current assumptions in the field whereas such a violation is unexpected under a movement analysis of the gapped constructions. However, Tuki consistently appears to violate island conditions such as the Complex Noun Phrase Constraint, the WH-island, the Constraint on Extraction Domain, and the Sentential Subject Constraint. Moreover, coordination of a clause containing an overt resumptive pronoun and a clause containing a gap is possible. Furthermore, while resumptive pronouns fail to exhibit weak crossover effects, gapped sentences also fail to exhibit weak crossover effects, suggesting once again that these gaps are pronominals and not WH-traces.

In the next section, we introduce the reader to Tuki and claim that Tuki is a pro-drop language. In §3, we establish the parallelism between gaps and resumptive pronouns in Tuki WH-constructions. In §4, we provide evidence that the behavior of the gapped sentences is similar to the behavior of the sentences containing resumptive pronouns with respect to island constraints. §5 shows that overt resumptive pronouns as well as gaps do not exhibit weak crossover effects (at S-structure). The analysis of anaphoric binding in §6 strengthens the idea that resumptive pronouns are syntactically bound. §7 examines two cases of coordination, one of which appears to violate the Coordinate Structure Constraint (CSC) but in fact does not. In §8 we show that Tuki exhibits weak crossover effects at LF, providing thereby further support that gaps in Tuki WH-constructions are non-overt resumptive pronouns, which explains the non-existence of weak crossover effects at S-structure.

2. Tuki as a Pro-drop Language

Tuki is a language of the Niger Kordofan (Niger-Congo) linguistic family; subfamily: Benue Congo; branch: Bantoid; division: Bantu; group: Sanaga A60. It is spoken by 26,000 speakers who live in Central Cameroon (West Africa). Tuki is verb initial in VP; basic word order is SVO:

(1) a. *Mbara a nobam vadzu* 'Mbara beats children'
Mbara SM beats children

b. *vadzu va nobam Mbara* 'children beat Mbara'
children SM beat Mbara

Tuki is also a null subject language since it allows the subject position of finite clauses to be empty [Chomsky 1981, 1982; Jaeggli 1982; Rizzi 1982]. Like many

Bantu languages, Tuki is a noun-class language. Every noun in Tuki belongs to a noun-class which determines the agreement-prefix markers that the noun will control on verbs and modifiers including the subject marker (SM). Consider (2) and (3) below:

(2) a. *vakutu va nyam mbungu* 'women eat cassava'
class 1
women SM eat cassava

b. *ndone i nyam mbungu* 'cows eat cassava'
class 10
cows SM eat cassava

(3) a. **vakutu i nyam mbungu*

b. **ndone va nyam mbungu*

In (2), the subject markers *va* and *i*, which represent AGR in INFL, agree in noun class with the NP's *vakutu* and *ndone* respectively. Any random assignment of subject markers to inappropriate NP's will result in ungrammaticality (cf (3)). In case the two NP's *vakutu* and *ndone* are absent in the sentence, but are recoverable metasyntactically, we will have well-formed empty categories in subject position:

(4) a. $[e]_i$ va_i *nyam mbungu* 'they eat cassava'
SM eat cassava

b. $[e]_i$ i_i *nyam mbungu* 'they eat cassava'
SM eat cassava

Riemsdijk and Williams [1986], following Chomsky [1981], have suggested that the agreement relation between AGR and the subject should be sanctionned by coindexation:

(5) NP_i $[_{INFL}$ [+tns] AGR_i $]_{INFL}$ VP

It is assumed that in (5) either AGR_i c-commands NP_i and can govern it or that INFL "inherits" the subscript from AGR_i and acts as a proper governor whenever NP_i is not phonologically present. Whatever the assumption adopted, the empty category in subject position in Tuki is properly governed. Consequently, it does not violate the Empty Category Principle (ECP). The distribution of the class of

phonologically empty arguments, of which pro (the empty pronoun) is a member, is constrained by the ECP:

The Empty Category Principle (ECP): $[_{NP}$ e] must be properly governed.

Government: X governs Y if and only if

(a) X c-commands Y, and

(b) X is an X^0, i.e. X is a member of the class {N, V, P, A, INFL}, and

(c) every maximal projection dominating Y dominates X.

Proper Government: X properly governs Y if and only if

(a) X governs Y and X is lexical (N, V, A, or P), or

(b) X locally A'-binds Y.

Rizzi [1982] assumes that in a null subject language, the INFL node containing AGR can function as a lexical proper governor , thereby licensing the occurrence of empty categories in subject position. This assumption seems to be born out in Tuki as evidenced by the grammaticality of the following sentence:

(6) *andzu*$_i$ $[_{IP}$ *o* *bunganam* $[_{CP}$ x_i ee $[_{IP}$ x_i *a* *ma gwa*]]]
who you think that SM p2 die

"who do you think that died?"

In (6), the WH-element *andzu* 'who' has been extracted from subject position over the lexical complementizer *ee* 'that'. The fact that the construction is not ruled out by the ECP suggests that INFL properly governs the trace left in subject position. In a subsequent section, we will come back to the problem of the empty category in subject position in Tuki.

3. Resumptive Pronouns

Following Sells [1984a, 1984b, 1987], we will assume that resumptive pronouns are pronouns which appear in WH-movement constructions and which are directly bound by the operator in such constructions, as in the following Tuki sentences:[1]

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[1]In Tuki empty pros referring to [+human] NP's are ungrammatical when they are not resumptive. For instance, the following sentence is illicit:

(7) a. *mutu odzu*$_i$ *ngu mu*$_i$ *dingam*
man who I him love
'the man who I love him'

b. *okutu odzu*$_i$ *ngu mu bina na a*$_j$
woman who I pl dance with her
'the woman who I danced with her'

c. *mangadzu odzu*$_i$ *nosi waa*$_i$ *a dingam Puta*
child who mother his SM loves Puta
'the child who his mother loves Puta'

In Tuki, resumptive pronouns are morphologically identical to object pronouns. There are eight object pronouns in the language which can refer only to NP's bearing the feature [+human]. In other words, there are no object pronouns for [-human] NP's.[2] There are also no overt subject resumptive pronouns.

(8) **Tuki Object Pronouns**

Singular		**Plural**	
n	'me'	*su*	'us'
o	'you'	*nu*	'you'
mu	'him/her'	*va*	'them'
a	'him/her' (after preposition)	*abu*	'them' (after preposition)

(i) **o* *mu* *dinga* Pro 'you loved him'
you pl love him

It seems to be the case that A'-binding licenses the occurrence of resumptive pronouns. The other tests in the paper clearly indicate that the empty categories bound by WH-elements are pro. It might be argued that they are pronominal variables. The existence of such pronominal variables has been suggested by Marc Authier [1988]. Ken Safir [personal communication] suggests that since sentences like 'John killed' cannot be understood as 'John killed him', these gaps might be argued to be unruly traces rather than true pronouns. Empty pronominals referring to [-human] NPs are allowed in Tuki. This is hardly surprising given the unavailability of overt pronouns for [-human] NP's.

[2]We have no explanation as to why there are no object pronouns for [-human] NP's. Larry M. Hyman [personal communication] informs me that it is usual in many African languages to have object pronouns for [+human] NP's only.

3.1. WH-questions. Syntactic WH-movement in Tuki is optional. We are primarily concerned with WH-elements that are apparently moved from object position to A'-bar positions.

Consider the following questions:

(9) a. *andzu*$_i$ [*imgbeme y unam* x_i]
who lion SM kills
'who does the lion kill?'

b. *andzu*$_i$ [*imgbeme i mu*$_i$ *nam*]
who lion SM him kills
'who does the lion kill him?'

In (9) the WH-word *andzu* 'who' which is [+human] can be associated either with a gap or a resumptive pronoun. In contrast, the WH-word *ate* 'what' which is [-human] can only be associated with a variable :

(10) *ate*$_i$ [*okutu a Mbara a nambam* x_i]
what woman of Mbara SM cooks
'what does Mbara's wife cook?'

We will assume throughout this paper (cf. also note 1) that *mu* in (9b) is a pronominal object clitic which identifies a pro in argument position and that the gap (x_i) in (9a) and (10) is an instance of A'-bound pro. Notice that the resumptive (object) pronoun *mu* in (9b) occurs to the left of the verb. Thus, the object gap and the overt resumptive pronoun occupy distinct syntactic positions. This situation will have no bearing on our analysis. In this particular respect, Tuki is much like French (*j'ai vu Marie* 'I saw Marie'; *je l'ai vue* 'I saw her') and unlike English. *Mu* is therefore a pronominal clitic that stands for a direct object NP, and that gets incorporated into the verb à la Baker [1988].

The contrast in behavior between *andzu* 'who' and *ate* 'what' with respect to the generation of resumptive pronouns will become crucial when we look at island phenomena in Tuki in a subsequent section.

3.2. Relativization

3.2.1. Headed Relative Clauses. In Tuki headed relative clauses, the head of the relative clause can be associated either with a resumptive pronoun or a variable:

(11) a. [*okutu*] *odzu*$_i$ *Mbara a ma mu*$_i$ *bana*
woman whom Mbara SM p2 her marry
'the woman whom Mbara married her'

b. [*okutu*] *odzu*$_i$ *Mbara a ma bana* x$_i$
woman whom Mbara SM p2 marry
'the woman whom Mbara married'

Relative clauses in Tuki are characterized by their lack of pied piping:

(12) [*okutu*] *odzu*$_i$ *Mbara a m enda na a*$_i$ *na Purasi*
woman whom Mbara SM p2 go with her to Paris
'the woman with whom Mbara went to Paris'

However, it is possible to relativize into an embedded relative clause (13) and an embedded question (14). This constitutes palpable evidence that apparent Complex Noun Phrase Constraint violations (involving or not involving gaps) can be analyzed as resumptive pronoun binding cases and therefore avoid being true island violations.

(13) a. [*okutu odzu*] [$_{CP}$ *odzu*$_i$ [$_{IP}$ *Mbara i dzimam* [$_{NP}$ *mutu* [$_{CP}$ *odzu*
woman this whom Mbara SM knows man who
[$_{IP}$ *a ma mu*$_i$ *noba*]]]]]]
SM p2 her beat
'the woman that Mbara knows the man who beat her'

b. [*okutu odzu*] [$_{CP}$ *odzu*$_i$ [$_{IP}$ *Mbara i dzimam* [$_{NP}$ *mutu* [$_{CP}$ *odzu*
woman this whom Mbara SM knows man who
[$_{IP}$ *a ma noba* x$_i$]]]]]]
SM p2 beat
'the woman whom Mbara knows the man who beat'

(14) a. [*okutu odzu*] [$_{CP}$ *odzu*$_i$ [$_{IP}$ *Mbara a kambim* [$_{CP}$ *andzu* [$_{IP}$ *a ma*
woman this whom Mbara SM wonders who SM p2
mu$_i$ *berana*]]]]]
her call
'the woman that Mbara wonders who called her'

b. [*okutu odzu*] [$_{CP}$ *odzu*$_i$ [$_{IP}$ *Mbara a kambim* [$_{CP}$ *andzu* [$_{IP}$ *a ma*
woman this who Mbara SM wonders who SM p2
berana x$_i$]]]]]
call
'the woman that Mbara wonders who called'

Assuming that the derivation of relative clauses is an instantiation of the rule Move Alpha, Tuki relative clauses avoid being Subjacency violations because they are cases of resumptive pronoun binding:

(15) a. *mutu* [$_{CP}$ *odzu*$_i$ [$_{IP}$ *Mbara a m udza* [$_{NP}$ *maru ama* [$_{CP}$ *ee*
man whom Mbara SM p2 tell story this that
[$_{IP}$ *Puta a m una* x$_i$]]]]]
Puta SM p2 kill
'the man who Mbara told the story that Puta killed'

b. *tevere* [$_{CP}$ *odzu*$_i$ [$_{IP}$ *Mbara a m udza* [$_{NP}$ *maru ama* [$_{CP}$ *ee*
table which Mbara SM p2 tell story this that
[$_{IP}$ *Puta a m(u) ofa* x$_i$]]]]]
Puta SM p1 throw
'the table that Mbara told the story that Puta threw away'

So the Complex Noun Phrase Constraint violations are avoided irrespective of whether the position relativized can be associated with a resumptive pronoun or a variable. In (14b) for instance, since *tevere* 'table' is [-human], the position it has vacated cannot be filled with a resumptive pronoun. Nevertheless, the position violates the CNPC without any ungrammaticality resulting. We will come back to the problem of island violations in the next section. Furthermore, we will assume that Tuki relative clauses have the following structure:

(16) $[NP_i\ [_{CP}\ [_{IP} \ldots$ resumptive pronoun$_i$ or $[e]_i \ldots]]]$

The relation between the head (NP) and the operator in COMP (CP) is one of coindexing [Chomsky 1982].

3.2.2. Free Relatives. In free relatives as well as in other Tuki WH-constructions, the resumptive pronoun may appear only when the position associated with it carries the feature [+human]. Thus, if the relativized position is [-human], the resumptive pronoun may not appear:

(17) a. *ate*$_i$ *Mbara a dingam ee* $[e]_i$ *a kusa i diyam*
what Mbara SM loves that he SM buys SM is expensive
'what Mbara wants to buy is expensive'

b. *Puta a m(u) ena ate*$_i$ *Mbara a dingam ee* $[e]_i$ *a kusa*
Puta SM p1 see what Mbara SM loves that he SM buys
'Puta saw what Mbara wants to buy'

(18) *Puta a m(u) ena andzu*$_i$ *Mbara a dingam ee* $[e]_i$ *a (mu) bana*
Puta SM p1 see who Mbara SM loves that he SM her marries
'Puta saw who Mbara wants to marry (her)'

3.3. Summary of Section 3. In this section we have seen that topic NP or the head of the relative clause, when it is [+human], can be associated either with a resumptive pronoun or a gap. The resumptive pronoun may not appear if the head of the relative clause is [-human]. However, irrespective of the presence/absence of the resumptive pronoun, relativization in Tuki seems to constitute a case of resumptive pronoun binding. Following most current generative analyses stemming from the work of Chomsky [1977, 1981, 1982], the gapped examples introduced above would be analyzed as instances of "Move Alpha" leaving a variable (the trace left by WH-movement). Such an analysis disallows movement form island environments. While it is not surprising to find that the resumptive pronoun strategy illustrated above violates island constraints [Chomsky 1982; Georgopoulos 1985], the same result is unexpected under a variable analysis of the gapped examples. Nevertheless, Tuki allows such apparent violations, as is illustrated in the next section again for the Complex Noun Phrase Constraint, the WH-Island Constraint, the Constraint on Extraction Domain (CED), and the Sentential Subject Constraint.

4. Island Environments

In this section, we consider the island environments in Tuki. Chomsky [1977] has subsumed Ross's [1967] island constraints under the Subjacency Condition. Subjacency prohibits movement from island configurations.

Consider the following sentences:

(19) a. *i mu [karate odzu] odzu*$_i$ [$_{IP}$ *ngi idziman* [$_{NP}$ *mutu* [$_{CP}$ *odzu*
it is book this that I know man who

[$_{IP}$ *a ma tomena* x$_i$ *iya ame*]]]]
SM p2 send mother my

'it is this book that I know the man who sends—to my mother'

b. *i mu [iya ame] odzu*$_i$ [$_{IP}$ *nga ti idzima* [$_{CP}$ *ate*
it is mother my whom I neg know what

[$_{IP}$ x$_i$ *a nu nambam anenga aye*]]]
SM f1 cook evening this

'it is my mother whom I don't know what (she) will cook this evening'

In (19a), the focused NP *karate odzu* 'this book' is associated with a variable inside a relative clause. In (19b), the focused NP *iya ame* 'my mother' is extracted over the WH-element *ate* 'what'.

In the following sentence, extraction has taken place over an adverbial clause:

(20) *i mu [manya ama] ama*$_i$ *avan dze o timbita* x$_i$, *o yanam*
it is food this before that you touch you must

o suwa amboo roo
inf. marker wash hands your

'it is this food that before you touch—, you must wash your hands'

Example (20) violates the Condition on Extraction Domain [Huang 1982], and the data introduced so far appears to indicate that Tuki allows island violations. Tuki also seems to differ from other languages that violate certain island constraints. Rizzi [1982] shows that in Italian it is possible to extract from embedded questions while extraction from relative clauses is strictly prohibited; Rizzi then claims that the bounding node in Italian is S' (CP) rather than S (IP). Huang [1982] indicates that extraction from adjuncts is disallowed since they are not properly governed.

Having just seen that Tuki allows extraction from relative clauses, embedded questions (cf. 14b), and adjuncts, it seems appropriate to suggest that gaps in Tuki should not be analyzed as variables left by Move Alpha, but rather as null resumptive pronouns which do not involve movement, on analogy with the full resumptive pronoun strategy illustrated in the examples above. Further evidence for a parellelism between gaps and full resumptive pronouns is provided by the fact that it is possible to conjoin a clause containing a full resumptive pronoun and a clause containing a gap:

(21) [$_{IP}$ *Mbara a sesam* [$_{CP}$ *andzu*$_i$ [$_{IP}$ *Puta a dingam* x_i *ka*
Mbara SM asks who Puta SM loves then
[$_{IP}$ *Tsimi a mu*$_i$ *benam*]]]]
Tsimi SM him hates

'Mbara asks who Puta loves and Tsimi hates him'

We assume that in the above sentence, the gap (x_i) and the clitic *mu* are A'-bound pronominals. We will come back to coordination in Section 7.

Assuming that apparent violations of Subjacency in Tuki do not involve trace-binding, it seems appropriate to elaborate on what a non-movement analysis of the constructions illustrated above would mean for the grammar. If indeed these constructions are not derived by WH-Movement, how did the WH-phrases reach their surface structure positions. It is plausible to posit that WH-phrases are base-generated in COMP in Tuki constructions involving resumptive pronoun binding. The possibility that WH-phrases can be generated in COMP position is raised in Chomsky [1982]. If WH-items could move to COMP in Tuki and leave traces that could optionally be spelled out as overt resumptive pronouns (as in Egyptian Arabic), we would expect the language to obey Bounding Theory. However, this is not the case. We conclude that WH-constructions examined so far involve resumptive pronoun binding and WH-phrases are base-generated in COMP position.

5. Weak Crossover at S-Structure

Overt resumptive pronouns do not exhibit weak crossover effects in Tuki:

(22) a. *andzu*$_i$ [*nosi waa*$_i$] [*a* mu$_i$ d*ingam* x_i]
who mother his SM him loves

'who does his mother love him?'

b. *andzu*$_i$ [*okutu* [*odzu*$_j$ *a* *dingam* x_j]] *a* *mu*$_i$ *benam*
who woman whom SM loves SM him hates

'who does the woman whom he loves hate him?'

Likewise, sentences containing gaps fail to exhibit weak crossover effects, providing further evidence that these gaps are pronominals, not variables:

(23) a. *andzu*$_i$ [*nosi* *waa*$_i$] [*a* *dingam* x_i]
who mother his SM loves

'who does his mother love?'

b. *andzu*$_i$ [*okutu* [*odzu*$_j$ *a* *dingam* x_j]] *a* *benam* x_i
who woman whom SM loves SM hates

'who does the woman whom he loves hate?'

On analogy with their English counterparts, the sentences in (23) should be ruled out by the Bijection Principle [Koopman & Sportiche 1982] or the Leftness Condition [Chomsky 1976; Higginbotham 1980]:

The Bijection Principle (BP)

a. Weak half: A quantifier can bind only one variable. (Violation results in semigrammaticality)

b. Strong half: A quantifier must bind a variable. (Violation results in ungrammaticality)

The Leftness Condition states that a pronoun cannot be coindexed with a variable to its right. The fact that the constructions in (23) are licit seems to imply that the gaps are non-overt pronouns which may be phonetically realized when the position they are associated with is [+human]. Sentences such as (23) have important consequences for Safir's [1984, 1986] Parallelism Constraint on Operator Binding (PCOB):

(24) Parallelism Constraint on Operator Binding (PCOB)

If one local A'-bindee of O is [α lexical] and [β pronominal], then all local bindees of O must be [α lexical] or [β pronominal].

Safir's constraint rules out constructions in which a single operator binds two variables, one of which is a trace and the other a pronominal. Since we have argued that gaps in the above weak crossover configurations are non-overt

resumptive pronouns, it is plausible to suggest that all local A'-bindees of the operator *andzu* 'who' are [+pronominal]. If this argumentation proves to be accurate, both types of Tuki bindee would bear the feature [+pronominal], although one is overt and the other may be phonetically unrealized. If we compare how the PCOB and the BP fare with regard to the Tuki facts discussed, it seems quite evident that the PCOB is more successful in handling them. We will show in §8 the correlation between the absence of resumptive pronouns at LF and the occurrence of weak crossover effects at that level of representation. Since the PCOB, unlike the BP, is sensitive to the pronominal nature of the empty category corresponding to the WH-item in an A' position at S-structure, it is better equipped to handle the Weak Crossover facts in Tuki.

The "mixed" coordinations and weak crossover violations found in Tuki obtain in other languages. Sells [1984b] observes that the "mixed" coordinations and weak crossover violations are possible with resumptive pronouns even in languages which have EC gaps, like Swedish and Hebrew. Consider for instance the following Hebrew conjoined structures:

(25) a. *ha' iš* $še_i$ *Rina* $[_{VP}$ *roca--*] *ve* $[_{VP}$ *ohevet oto*$_i$ *yoter mi kulam*
the man who Rina wants and loves him more than anyone

b. *kol professor* $še_i$ *Dani* $[_{VP}$ *roce lehazmin--*] *aval* $[_{VP}$ *lo*
every professor who Dani wants to-invite but not
maarix oto$_i$ *maspik*]
esteems him enough

The above Hebrew constructions are similar to the Tuki empirical material in that there is an empty category in one conjunct and a resumptive pronoun in the other. Similar phenomena are observed in Palauan (see Georgopoulos [1983, 1984, 1985] for details). It seems to be the case then that the basic resumptive pronoun facts of Tuki do not constitute an isolated case in linguistic theory.

6. Anaphoric Binding

The claim that resumptive pronouns are syntactically bound is further supported by the analysis of anaphoric binding in the language. In Tuki, a lexical anaphor cannot precede and c-command the NP with which it is coindexed, as illustrated by the ungrammaticality of the sentence in (26):

(26) *[*okutu waamate*$_i]_j$ *udzam ee* [e]$_i$/*Isomo*$_i$ *a ta mu*$_j$/Ø *dinga*
woman his own says that he/Isomo SM neg her/Ø love
'his own wife says that he/Isomo does not love her/Ø'

In (26) the clause containing the antecedents [e]/*Isomo* is embedded within the clause containing the lexical anaphor *waamate* 'his own'. Irrespective of whether the antecedent is an NP or an empty pronominal, the sentence is illicit.

(27) **vatu va kutu dzara maru m(a) Isomo*$_i$
men SM prog. talk story of Isomo

[*Okutu waamate*$_i$]$_j$ *udzam ee* [e]$_i$ *a mu ombee wa onumutu*
woman his own says that he SM is bad of husband

'People were talking about Isomo's problem. His own wife says that he is a bad husband.'

In (27) a possible antecedent in the immediately preceding discourse cannot bind a reflexive in the immediately following discourse. However, WH-fronted constituents can contain lexical anaphors bound by a following antecedent, as evidenced by the following construction:

(28) [$_{CP}$ *okutu waamate*$_i$ *ate*]$_j$ [$_{IP}$ o *bunganam* [$_{CP}$ *ee* [$_{IP}$ *Isomo*$_i$ *a*
woman his own what you think that Isomo SM

ta dzu mu$_j$ *dinga*?
neg still her love

'which of his own wives do you think that Isomo no longer loves her?'

It is commonly assumed within the standard transformational tradition that binding in (28) is done before WH-movement. Now if we question the subject of the clause containing the lexical anaphor *waamate* in (26), we obtain a grammatical sentence:

(29) [*okutu waamate*$_i$ *ate*]$_j$ *udzam ee Isomo*$_i$ *a ta mu*$_j$ *dinga*
woman his own what says that Isomo SM neg her/Ø love

'which of his own wives says that Isomo does not love her/Ø?'

It is worth comparing the ungrammatical (26) to the grammatical (29). In (29) the resumptive pronoun *mu* or the gap is bound by an anaphor in an A-bar position, which is not the case for (26). Notice that (29) and (28) enjoy the same status of grammaticality, showing that both the resumptive pronoun and the gap can be bound by an item in a non-theta position and suggesting that the binding relationship between the WH-phrase and the resumptive pronoun/gap has taken place in the syntax. Thus, in Tuki, since resumptive pronouns and gaps can be

coindexed with a lexical anaphor located in a fronted WH-phrase, one can reach the conclusion that Tuki resumptive pronouns are syntactically bound at S-structure.

7. Coordination

In a preceding section, we argued that it was possible to conjoin a clause with a gap and a clause with a resumptive pronoun in Tuki (cf. (21) above), thereby showing that there exists a parallelism between gaps and resumptive pronouns in the language. Coordination is constrained crosslinguistically, and we did not mean to imply that Tuki violates the Coordinate Structure Constraint (CSC). Ross [1967] defines conjuncts of coordinate structures as islands:

(30) **Coordinate Structure Constraint (CSC):** In a coordinate structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct. (Ross's §4.84).

In this section, we will see that although Tuki allows across-the-board extraction, it does not violate the Coordinate Structure Constraint. We will see also problematic cases of coordination that apparently show trespassing of the CSC.

Tuki uses different elements for coordination depending on the nature of the conjuncts. For instance, NP's are conjoined with *na* 'and' which can also function as a preposition and can mean 'at, in, on, to, with', whereas clauses are conjoined with *ka* 'then'. First, we consider what we term clausal coordination.

7.1. Clausal Coordination. As predicted by the CSC, it is impossible to extract one constituent of a conjoined structure in Tuki:

(31) **ngi idzimam* [$_{NP}$ *mutu* [$_{CP}$ *odzu*$_i$ [$_{IP}$ *Puta a dingam* x_i *ka*
I know man who Puta SM loves then
[$_{IP}$ *Mbara a benam Dima*]]]]
Mbara SM hates Dima

'I know the man whom Puta loves and Mbara hates Dima'

However, across-the-board extraction allows extraction from both conjuncts, provided that the affected elements in each conjunct be "identical" in syntactic category (see Williams [1978:36, (31)]). Consider in this respect (32b):

(32) a. *ngi idzimam* [$_{NP}$ *mutu* [$_{CP}$ *odzu*$_i$ [$_{IP}$ *Puta a dingam* x$_i$ *ka* [$_{IP}$ *Mbara a benam* x$_i$]]]]

'I know the man whom Puta loves and Mbara hates'

b. *ngi idzimam* [$_{NP}$ *mutu* [$_{CP}$ *odzu*$_i$ [$_{IP}$ *Puta a mu*$_i$/Ø *dingam ka* [$_{IP}$ *Mbara a mu*$_i$/Ø *benam*]]]]

'I know the man whom Puta loves him/Ø and Mbara hates him/Ø'

Sentence (32a) is grammatical because the same extraction rule has applied in both conjuncts. Notice that in (32b), the two conjuncts are the two VP's and that in each case the trace left by the extracted element can be replaced by a resumptive pronoun. Assuming Williams's requirement that WH-movement must apply across-the-board to an identical item in both conjuncts, then we have to conclude that WH-movement has affected both conjuncts in (32) and that the trace that is left behind is optionally spelled out as a resumptive pronoun. Given that the phonological realization of the trace cannot change its syntactic category in compliance with Williams's condition, both gaps and resumptive pronouns must be of the same syntactic category. That is they are both bound by the WH-word at S-structure.

We conclude here that Tuki does not violate the CSC, although it seems to violate consistently other island constraints in constructions containing resumptive pronouns. Georgopoulos [1985] observes the same behavior in Palauan and concludes that the CSC is a constraint different in kind from other constraints subsuming Subjacency. Scandinavian languages, too, observe the CSC, while many island constraints are violated [Engdahl and Ejerhed 1982].

7.2. NP Coordination. We will refer to coordination of two NP's in Tuki as NP coordination. As pointed above, Tuki uses for coordination of NP's *na* which sometimes functions as a comitative marker meaning 'with':

(33) *Mbara endam na Puta na waspita*
Mbara goes with Puta to hospital

'Mbara goes with Puta to the hospital'

The facts that we are going to present will appear at first as violations of the Coordinate Structure Constraint, but in the end it will be shown that the CSC is not violated in Tuki. Consider the following paradigm:

(34) a. *Mbara a m -una [Puta na Dima]*
Mbara SM p1 kill Puta and Dima
'Mbara killed Puta and Dima'

b. *andzu*$_i$ *Mbara a m una* x$_i$ *na Dima*
who Mbara SM p1 kill and Dima
'who did Mbara kill and Dima?'

c. *andzu*$_i$ *Mbara a mu mu*$_i$ *una* x$_i$ *na Dima*
who Mbara SM p1 her kill and Dima
'who did Mbara kill her and Dima?'

d. *andzu*$_i$ *Mbara a mu una Puta na a*$_i$
who Mbara SM p1 kill Puta and he
'who did Mbara kill Puta and him?'

e. **andzu*$_i$ *Mbara a mu una Puta na* x$_i$ (P-stranding is disallowed)
who Mbara SM p1 kill Puta and
'who did Mbara kill Puta and?'

Above, an element may be extracted out of a conjoined structure. But only the first conjunct may leave an empty category when it is extracted. When the second conjunct is extracted out of the conjoined NP, it must leave a phonologically realized proform which is incidentally the Subject Marker [*a*]. The sentence (34d) is accounted for below (cf. 39a,b).

On the other hand, a resumptive pronominal chain, (i.e. cl$_i$ ... e$_i$) can stand for the first conjunct when it is questioned, as illustrated in (34c). The same facts obtain with regard to the behavior of coordinate structures in relativization and focus constructions: one of the conjuncts of a conjoined structure can be relativized or focused. In each case, a resumptive pronoun can replace the first conjunct, while a subject marker can replace the second conjunct.

(35) **Relativization**

a. [*okutu odzu*] *odzu*$_i$ *Mbara a ma mu*$_i$ *una* x$_i$ *na Puta*
woman this whom Mbara SM p2 her kill and Puta
'this is the woman that Mbara killed her and Puta'

b. [*okutu odzu*] $odzu_i$ *Mbara a m una* x_i *na Puta*
woman this whom Mbara SM p2 kill and Puta
'this is the woman that Mbara killed and Puta'

c. [*okutu odzu*] $odzu_i$ *Mbara a m una Dima na* a_i/*Ø
woman this whom Mbara SM p2 kill Dima and her
'this is the woman that Mbara killed Dima and her'

(36) **Focus Constructions**

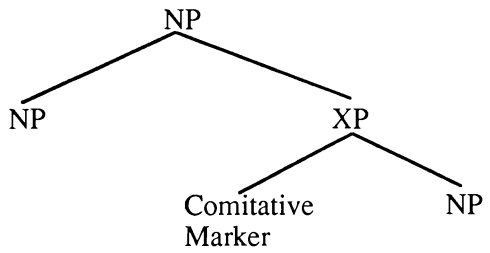
a. *i mu* [*okutu odzu*] $odzu_i$ *Mbara a mu* mu_i *una* x_i *na Puta*
it is woman this whom Mbara SM p1 her kill and Puta
'it is this woman whom Mbara killed her and Puta'

b. *i mu* [*okutu odzu*]$_i$ $odzu_i$ *Mbara a mu una* x_i *na Puta*
it is woman this whom Mbara SM p1 kill and Puta
'it is this woman whom Mbara killed and Puta'

c. *i mu* [*okutu odzu*] $odzu_i$ *Mbara a mu una Dima na* a_i/*Ø
it is woman this whom Mbara SM p1 kill Dima and she
'it is this woman whom Mbara killed Dima and her'

It may appear that the first conjunct may be extracted freely in any of the constructions exhibited above, thereby violating the CSC. This fact may be very surprising in view of the absence of reported cases of CSC transgressions, even in languages that apparently violate Subjacency. It seems to be the case that coordination in Tuki, in particular coordination of NP's, functions differently from the one found in languages like English or French. Recall that the element used for coordination of NP's in Tuki is also a comitative marker. Suppose that the "connector" for Tuki NP's is in fact a comitative marker. Then an analysis of the above data would follow under the suggestions made by Schwarz [1987]. She reveals that to serve the semantic function of Coordination, many languages (such as Russian, Polish, Bulgarian, Latvian and Tagalog) have a Comitative Coordination Structure for NP coordination as illustrated below:

(37)



In (37), XP can be PP or NP, depending on whether the Comitative Marker is a lexical preposition or a case-marker. XP in (37) is sometimes extraposable, or can be argued to be an independent constituent. If we adopt the structure in (37), then the empirical material in (34) can be accounted for. Examples (34c, d) point to the fact that the second conjunct with the connector *na* can be separated from the first conjunct. If that proves to be true, the connector and the second conjunct are a simple case of extraposition. This reasoning is corroborated by the fact that *na* and the second conjunct can be preposed in (34a) as illustrated below in (38):

(38) *na Dima [Mbara a m -una [Puta* [$_{XP}$ ...]]
and Dima Mbara SM pl kill Puta
'and Dima, Mbara killed Puta'

It appears that the connector *na* is a Comitative marker which functions as a preposition (cf. 33). The view that the comitative marker *na* is a preposition would explain why it is only the first conjunct of a coordinate structure which can be moved and leave behind a trace (cf 34). Since the comitative marker *na* seems to be a preposition, movement of a second element of a coordinate structure is an instance of Preposition Stranding, a phenomenon which is strictly disallowed in Tuki. It appears that prepositions are not proper governors in Tuki. Consider (33) (repeated here for convenience) and (39):

(33) *Mbara endam na Puta na waspita*
Mbara goes with Puta to hospital
'Mbara goes with Puta to the hospital'

(39) a. **andzu*$_i$ *Mbara endam na* x_i *na waspita*
who Mbara goes with to hospital
'who does Mbara go with to the hospital?'

b. *andzu Mbara endam na a na waspita*
who Mbara goes with her to hospital

'who does Mbara go with her to the hospital?'

Example (39a), as expected, becomes grammatical if a resumptive pronoun occupies the position (after the preposition) vacated by S-structure movement of *andzu* 'who' (cf. 39b).

Thus, NP coordination in Tuki is simply a case of Comitative Coordination Structure which is very common among languages, rather than a violation of the Coordinate Structure Constraint. The connector *na* is a preposition-comitative marker which does not allow Preposition Stranding.

8. Formal versus Semantic Variables

So far, we have argued that gaps in Tuki WH-constructions should be analyzed as null resumptive pronouns. Optionally these gaps are realized phonologically when their A'-binders are [+human]. We also said that resumptive pronouns, null or overt, are "linked" to their A' antecedents at S-structure. It is generally assumed in generative grammar that A'-bound pronominals are variables. More precisely, A'-bound pronominals are semantic variables (cf. Higginbotham [1983:409] as well as Koopman & Sportiche [1982/83:fn. 1]; Hoji [1985:44]) as opposed to formal variables which are generally defined as follows:

(40) **Variable:** A variable is an EC bound by an operator in an A' position ("a variable is an A'-bound EC") (adapted from Riemsdijk and Williams [1986]).

For illustration, consider the following English sentence:

(41) Everyone$_i$ loves his$_i$ mother.

The schematic S-structure and LF representations of (41) are given in (42):

(42) a. **S-structure:** [$_{NP}$ everyone$_i$] loves his$_i$ mother

b. **LF:** [$_{IP}$ [$_{NP}$ everyone] [$_{IP}$ t_i loves x_i mother]]

According to (40), *t* being an empty category is a variable, which is bound to *everyone* in (42b). *His* in (42a) is also bound to *everyone*, i.e., it is construed as a variable bound to *everyone*, but it is not a variable since it is not linked to *everyone* nor is it an empty category.

Adopting here the distinction between formal and semantic variable (see Hoji [1985] for details), we can say that resumptive pronouns (null or overt) in Tuki WH-constructions are semantic variables different in nature from formal variables. Recall that we argued above that resumptive pronouns do not exhibit weak crossover effects in Tuki; and gaps were also shown to fail to exhibit such effects, suggesting that gaps and overt resumptive pronouns are of the same kind. Since syntactically bound resumptive pronouns are semantic variables, we conclude that semantic variables do not exhibit weak crossover effects in Tuki at S-structure as illustrated once again in the following sentence:

(43) *andzu*$_i$ *isa* *waa*$_i$ a *mu*$_i$/x$_i$ *dingam*
who father his SM him/x loves
'who does his father love him/x?'

Below we will present evidence that the distinction between semantic and formal variables is empirically motivated with regard to the weak crossover phenomena. In effect, we will show that formal variables exhibit weak crossover effects at LF in Tuki. Consider a WH-in-situ construction:

(44) **karate ate* *udzam ee* *nosi* *waa*$_i$ *a* *dingam* [*mwana ate*]$_i$
book what says that mother his SM loves child what
'which book says that his mother loves which child?'

Example (44) is ungrammatical, which suggests that coindexing is not possible between pronouns and unmoved WH-words to their right. Consider the LF representation of (44):

(45) [*karate ate*]$_j$ [*mwana ate*]$_i$ [x$_j$ *udzam ee nosi waa*$_i$ *a dingam* x$_i$]]

In (45), the variable x$_i$ is to the right of waa$_i$ 'his', and the sentence is ruled out by the Leftness Condition (or the Bijection Principle). As opposed to the previous cases where the weak crossover effects were nonexistent, in (45) WH-movement has taken place at LF. Since the variable left by movement of *mwana ate* cannot be spelled out as a resumptive pronoun, x$_i$ is a formal variable. The latter being bound by a pronoun to its left disqualifies the construction. So, up to now, we have encountered two cases to which the Leftness Condition has reacted differently: on the one hand, the interpretation of structures involving semantic variables bound at S-structure does not show weak crossover effects; on the other hand, the interpretation of structures involving formal variables bound at LF obeys the Leftness Condition.

Now what about the interpretation of quantifiers? Consider the following sentences with respect to the Leftness Condition:

(46) a. **ee* $[e]_i$ *a mu yedza i saseyam [mutu ongima]*$_i$
that he SM is mad SM annoys man every
'that he is mad annoys everyone'

b. **iyere waa*$_i$ *a dingam [mangadzu a sukuru ongima]*$_i$
teacher his SM loves child of school every
'his teacher loves every student'

In both sentences above, a bound variable reading between the pronoun and the quantifier phrase is impossible. The LF representations for both sentences are:

(47) a. [*mutu ongima*]$_i$ *ee* $[e]_i$ *a mu yedza] i saseyam* x_i
man every that he SM is mad SM annoys

b. [*mangadzu a sukuru ongima*]$_i$ [*iyere waa*$_i$ *a dingam* x_i]
child of school every teacher his SM loves

In the above structures, pronouns are coindexed with formal variables to their right; the Leftness Condition consequently disqualifies them. This is again prima facie evidence that Tuki exhibits weak crossover effects only at LF.[3]

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[3]The Tuki weak crossover effects at LF may also be accounted for by what Reinhart [1987] calls the S-Structure Restriction on Binding. Assuming the GB framework of Chomsky [1981, 1982], Reinhart notices in substance (irrelevant details omitted) that all NP's are indexed freely, and the binding principles filter out inappropriate cases of coindexing. The theory distinguishes two types of coindexing relations, however, bound and unbound: a node α binds a coindexed node β iff α c-commands β at S-Structure. Unbound nodes are "free", which means that a free node is not necessarily uncoindexed—it may be coindexed with an NP that does not c-command it. Reinhart [1987] gives the following sentences in which the pronoun may be coindexed with the full NP:

(i) a. Each gardener$_i$ talks to his$_i$ plants
b. Max$_i$ talks to his$_i$ plants

(ii) a. *His$_i$ friends voted for each candidate$_i$
b. His$_i$ friends voted for Max$_i$

Reinhart indicates that in (i) the coindexed pronoun is defined as bound, whereas in (ii) the coindexing is unbound. Reinhart [1983, 1985] had already argued that the above distinction between bound and unbound coindexing is sufficient to capture the distribution of bound variable anaphora. She argued that a pronoun may be interpreted as a bound variable iff it is syntactically bound at S-Structure. Therefore pronouns that are not bound at S-Structure may not corefer with a quantified NP, although pragmatic coreference with a referential NP is allowed (cf. the contrast

In sum, we have seen in this section a contrast between variables created at S-structure and variables created at LF. We have argued that resumptive pronouns, null or overt, are semantic variables bound at S-structure by elements in A' position; whereas formal variables are those created by LF-movement of WH-elements in situ and quantifiers. Notice that there seems to be a correlation between the presence of resumptive pronouns and the non-occurrence of weak crossover effects. The absence of resumptive pronouns at LF after the raising of quantified NP's and the movement of WH-items in situ inevitably triggers weak crossover effects. It is the above noted discrepancy between S-structure and LF which suggests that gaps in Tuki WH-constructions are pro. That suggestion is supported by our previous claim that parasitic gaps are licensed by resumptive pronouns (overt or non-overt) at S-structure in Tuki, since pronouns are coindexed at S-structure.

9. Conclusion

In this paper, we have shown that in Tuki, topic NP or the head of the relative clause can be associated either with a resumptive pronoun or a gap. Since Tuki allows violations of island constraints, we have claimed that gaps in Tuki should be analyzed as null resumptive pronouns which do not involve movement, on analogy with the full resumptive pronoun strategy available in the language. Further evidence for a parallelism between gaps and full resumptive pronouns was provided by the fact that it is possible to conjoin a clause containing a gap and a clause containing a resumptive pronoun. Full resumptive pronouns as well as gaps do not exhibit weak crossover effects in Tuki. This constitutes further evidence that these gaps are pronominals.

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between (iia) and (iib)). Notice that Reinhart's distinction between bound and unbound coindexing can adequately describe the Tuki weak crossover cases at LF. In each case the antecedent does not c-command the pronoun at S-Structure.

Carol Georgopoulos (in a recent unpublished paper, "The ECP and Weak Crossover") analyzes the lack of WCO effects in Palauan at SS in ECP terms. She [personal communication] notes that her analysis would work in Tuki, too: since subject position is properly governed, sentences in which the antecedent precedes are OK but the ones waiting for LF movement are not. She assumes the conjunctive version of the ECP devised by Kayne [1984] and attempts to combine *pro* theory with the ECP. Moreover, she focuses on languages in which all argument positions are canonically governed. Tuki is not a case in point. It is not very evident, then, how her theory could accommodate the Tuki empirical material. Ken Safir [personal communication] informs me that the Tuki facts are in many ways similar to Hindi: WCO is only caused by LF-movement, not movement in Syntax.

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