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## Anaphora and subordination in Karitiana

### Anáfora e subordinação em Karitiana

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**Abstract:** This paper describes the behavior of the anaphoric element **ta-** in Karitiana (Arikém branch, Tupian family) showing that it is a third person anaphor which must be bound (c-commanded and coindexed) by an antecedent in the same sentence. **ta-** may occur as a possessor clitic attached to a nominal, or as a subject or object clitic attached to a verb. We show with elicited and spontaneous data that the Karitiana anaphor is subject oriented when occurring in embedded environments, being able to refer to the subject of the matrix clause or to the subject of an embedded clause in cases of multiple embedding. We analyze this lexical item as a medium-distance anaphor, following the definition of Reuland and Koster (1991). Logophoric uses of the **ta-** anaphor are also exemplified and briefly discussed.

**Keywords:** Karitiana. Anaphora. Subordination. Binding theory.

**Resumo:** Este artigo descreve o comportamento do elemento anafórico **ta-** em Karitiana (ramo Arikém, família Tupi), mostrando que ele é uma anáfora de terceira pessoa que deve ser ligada (c-comandada e coindexada) a um antecedente na mesma sentença. **ta-** pode ocorrer como um clítico possessivo dependente fonologicamente de um nominal, ou como um clítico de sujeito ou objeto dependente fonologicamente de um verbo. Mostramos, com dados elicitados e naturais, que a anáfora do Karitiana se refere sempre a um sujeito quando ocorre em ambientes encaixados, sendo capaz de referir ao sujeito da oração matriz ou ao sujeito da subordinada. Analisamos esse item lexical como uma anáfora de média-distância, seguindo a definição de Reuland e Koster (1991). Usos logofóricos da anáfora **ta-** também são exemplificados e discutidos brevemente.

**Palavras-chave:** Karitiana. Anáfora. Subordinação. Teoria da ligação.

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## INTRODUCTION

In this paper, we describe the properties and distribution of the anaphor **ta-** in Karitiana, a Tupian language of the Arikém family<sup>1</sup>. Specifically, we draw on Storto (2007) unpublished research on **ta-** to show new data on binding and embedding.

**ta-** is a clitic attaching to verbs and nouns to indicate co-reference to another noun phrase (henceforth called the ‘antecedent’) within the same sentence:<sup>2</sup>

- (1) **Ta<sub>i</sub>-pyry-mĩ-n**                      **Okorokot<sub>i</sub>**  
       3<sub>ANAPH</sub>-ASSERT-hit-NFUT    Okorokot  
       ‘Okorokot<sub>i</sub> hit himself<sub>i</sub>.’
- (2) **Taso<sub>i</sub>**    **Ø-na-amang-Ø**    **ta<sub>i</sub>-gok**  
       man    3-DECL-plant-NFUT    3<sub>ANAPH</sub>-manioc  
       ‘The man<sub>i</sub> planted his<sub>i</sub> own manioc.’

(Storto, 2007)

Studies in formal linguistics have attempted to explain how certain noun phrases which do not have reference on their own end up acquiring it within a sentence. This is the case of pronouns (such as ‘he’, ‘she’, or ‘it’) and anaphors (reflexives such as ‘himself’, ‘herself’, ‘themselves’ or reciprocals), which inherit their reference from other elements under certain syntactic configurations. **ta-** in examples (1-2) is an ‘anaphor’, because it does not have a reference on its own and depends on other noun phrases to be interpreted.

Following studies in generative linguistics (e.g. Chomsky, 1988), we assume that the reference of anaphors across the world’s languages is dictated by a set of syntactic mechanisms. In their absence, these elements seem to be uninterpretable. In the ungrammatical sentence below (marked by \* to indicate ungrammaticality), for instance, it is impossible to know the reference of the anaphora ‘herself’ due to the absence of a proper (feminine) antecedent within the same clause (notice that the presence in the preceding sentence of the salient feminine referent ‘Maria’ does not suffice: the antecedent must be within the same clause):

- (3)    There was this baby girl named Maria in our village. \*Everyday her father washed herself in the river.

Therefore, one has to investigate the syntactic mechanisms controlling the phenomena of anaphora. In this paper, we investigate the syntactic constraints on **ta-** — namely, the syntactic functions its antecedent is allowed to have and the syntactic domain in which this co-reference relation is established. It is shown that **ta-** only allows subject antecedents (Storto, 2007) and that the co-reference domain amounts to the first (closest to the anaphor) tensed clause containing the anaphor. The latter is seen more clearly in cases of embedding, where the antecedent of an embedded **ta-** is in the matrix clause. We discuss how this can or cannot be explained by the theory of anaphora. Finally, these syntactic requirements seem to be completely overridden in texts, and we suggest how this behavior can be understood as an instance of a phenomenon known as logophoricity.

<sup>1</sup> Rocha (2018) has conducted a sociolinguistic census in which the number of the population was found to be 396. Rocha (2018) also reports that 60% of the Karitiana children who have been born in the city no longer speak the language.

<sup>2</sup> Following the tradition in formal linguistics, co-reference is indicated by the use of subscript indexes such as <sub>i</sub>, <sub>j</sub> etc.

The paper is divided in five sections. Section “Anaphora in Karitiana” briefly describes the phenomenon of anaphora in Karitiana. Section “Anaphora inside Binding Theory” discusses Binding Theory in generative grammar and shows how the Karitiana anaphor seems to follow the principles of c-command and coindexation, considered necessary between itself and its antecedent. It also shows a complementary distribution between the anaphor *ta-* and the third person pronoun *i* in Karitiana. In section “Binding and embedding in Karitiana”, embedded and multiple embedded clauses in which the anaphor is present are examined and discussed, and an analysis of *ta-* as a medium distance anaphor is argued for. Section “Discourse and logophoricity” presents cases in which the Karitiana anaphor has no antecedent mentioned in the immediate discourse, but in which its referent is simply salient in discourse: the so-called logophoric use of an anaphor. Section “Final remarks” concludes the paper, with final remarks on the subject, mentioning the importance of our findings for Tupian languages.

Data was gathered from texts such as Storto et al. (2019), and Storto (2019, n.d.), which are transcriptions of traditional stories told by elderly speakers. Additionally, elicitation was also used as a source of data. The authors found that it was necessary to create questionnaires to elicit the use of anaphoric and pronominal third person elements inside embedded clauses, in particular in sentences with multiple embedding (Storto et al., 2018), which are hard to find in naturalistic uses of the language. Storto (2007) used exclusively elicited data, but we have tried to illustrate the same phenomena with examples from texts here, as well as recently elicited data on multiple embedding.

ANAPHORA IN KARITIANA

KARITIANA MORPHOSYNTAX

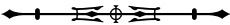
Karitiana was first described as an ergative language by Landin (1984), who identified a set of personal markers (considered pronouns by the author) that co-existed with another set of free pronouns and that was distributed in an ergative-absolutive alignment. Storto (1999) reanalyzed this set of personal markers as agreement prefixes and observed that they represent agreement with the absolutive arguments (intransitive subjects and direct objects):

- (4) Y-ta-opiso-t yn.  
1-DECL-hear-NFUT I  
'I heard.' (Storto, 1999)

The system of pronouns and agreement markers is depicted in the Table 1 below:

Table 1. Pronouns and agreement markers in Karitiana. Source: Müller et al. (2006, p. 205).

Person	Pronoun	Agreement
1s	yn	y-
2s	an	a-
3	l	i-/Ø-
1PL (inclusive)	yjxa	yj-
1PL (exclusive)	yta	yta-
2PL	ajxa	aj-



These agreement markers in verbs are homophonous with possessor prefixes in nouns; third person verb agreement prefixes, however, have an additional allophone, morphologically conditioned: it is *i-* in imperatives, citatives, deontic and negated sentences, and null in declaratives, assertives and conditionals (Storto, 2002, 2018):

- (5) Yjxa Ø-naka-'y-j yj-pikom pisyp  
 We 3-DECL-eat-FUT 1PL-monkey meat/flesh  
 'We will eat our monkey meat.' (adapted from Landin, 1984)

Arguments in Karitiana can be omitted if they are old information, and this situation is frequently found in texts:

- (6) Masong Ø-naka-kat-Ø  
 Then 3-DECL-sleep-NFUT  
 'Then (he) slept.' (Storto et al., 2019) "Gokyp"

Verbs in embedded clauses lack inflectional morphemes such as tense or mood; also, they do not allow agreement, as can be seen in (7)<sup>3</sup>.

- (7) \*[Yn y-opiso] a-taka-kārã-t an  
 [1s 1-listen] 2-DECL-think-NFUT you  
 (Intended) 'You thought that I listened.' (Storto, 1999)

Embedded clauses, however, are able to display aspectual morphology in the form of aspectual auxiliaries, and for that reason we consider them Aspectual Phrases (Storto, 1999). In this paper, we refer to embedded clauses as defective Inflectional Phrases (IPdef), and show them in square brackets in the examples and inside boxes in our syntactic trees.

## KARITIANA *ta-*

In Karitiana, the 3rd person anaphor is *ta-*, and the first comprehensive description of its behavior was given in Storto (2007). This section reviews her major findings.

As mentioned in the Introduction, *ta-* is used to signal co-reference to an element within the same sentence. In the examples below, one can see that *ta-* is the object, and has the same referent of the subject '*Okorokot*' and '*õwa*':

<sup>3</sup> If a person marking is present on the embedded verb, it is a cliticized pronoun that is in complementary distribution with free pronouns as in the examples below:

- (i) [Y-opiso] a-taka-kārã-t an  
 [1-listen] 2-DECL-think-NFUT you  
 'You thought that I listened.' (Storto, 1999)
- (ii) [Yn opiso] a-taka-kārã-t an  
 [1s listen] 2-DECL-think-NFUT you  
 'You thought that I listened.' (Storto, 1999)

- (8) **Ta<sub>i</sub>-pyry-mĩ-n**                      **Okorokot<sub>i</sub>**  
 3ANAPH-ASSERT-hit-NFUT      Okorokot  
 'Okorokot<sub>i</sub> hit himself<sub>i</sub>.'

- (9) **Ta<sub>i</sub>-pyry-m-horon-yn**                      **õwa<sub>i</sub>**  
 3ANAPH-ASSERT-CAUS-wash-NFUT      child  
 'The child<sub>i</sub> washed himself/herself<sub>i</sub>.'

Despite its position within the verbal complex, **ta-** cannot be regarded as a kind of agreement prefix with the co-referent noun phrases, because it occurs in positions where agreement is impossible, such as embedded clauses: In (10-11), **ta-** appears on the embedded verbs **mĩ** ('hit') and **ambo** ('go up'):<sup>4</sup>

- (10) **[Ta<sub>i</sub>-mĩ      tykiri]      Ø-naka-hyryp-Ø      õwã<sub>i</sub>**  
 3ANAPH-hit      PERF.ASP      3-DECL-cry-NFUT      child  
 'The child<sub>i</sub> cried when they hit him/her<sub>i</sub>.'                      (Storto, 2007)

- (11) **Masong      Ø-naka-'a      saryt-Ø      Gokyp<sub>i</sub>      [ta<sub>i</sub>-ambo      tyki'oot]**  
 then              3-DECL-say      IND.EVID-NFUT      sun              3ANAPH-go.up      ASP.IMPF  
 'Then said the sun<sub>i</sub> when he<sub>i</sub> was going up.'                      (Storto et al., 2019) "Gokyp"

Another evidence that **ta-** is not an agreement marker is the second environment in which it occurs: as an anaphoric possessive 'pronoun' (traditional grammar treats anaphors as co-referential or reflexive pronouns) cliticized to nouns:

- (12) **Taso<sub>i</sub>      Ø-na-amang-Ø      ta<sub>i</sub>-gok**  
 man      3-DECL-plant-NFUT      3ANAPH-manioc  
 'The man<sub>i</sub> planted his<sub>i</sub> own manioc.'                      (Storto, 2007)

- (13) **Masong      Ø-naka-tat-Ø      ta<sub>i</sub>-ambi-p      Boty<sub>i</sub>**  
 then              3-DECL-go-NFUT      3ANAPH-house-LOC      Boty<sub>i</sub>  
 'Then Boty<sub>i</sub> went to his<sub>i</sub> house.'                      (Storto & Ferreira, n.d.) "Boty<sub>i</sub> Pynhadna"

- (14) **Masong      ta<sub>i</sub>-pan'in      a-ta-so'y                      saryt-Ø      Oti<sub>i</sub>**  
 then              3ANAPH-sister      INV-DECL-have.intercourse      IND.EVID-NFUT      Moon  
 'Then the Moon<sub>i</sub> had intercourse with his<sub>i</sub> sister, they say.'                      (Storto, n.d.) "Oti"

<sup>4</sup> These examples also show that **ta-** seems to behave as a cliticized pronoun similar to the one seen in footnote 3.

**ta-** can also be co-referent to a non-overt argument: In (15-17), the pronoun *i* (referring to an implicit ‘he’ or ‘she’) is non-overt, but still capable of binding **ta-**:<sup>5</sup>

- (15) Masong Ø-naka-hadna-’om andyk saryt-Ø ta-ti tyyt  
 then 3-DECL-say-DUB ASP IND.EVID-NFUT 3ANAPH-mother with  
 ‘Then (he)<sub>i</sub> spoke to his<sub>i</sub> mother, they say.’ (Storto, n.d.) “Oti”

- (16) Masong ta-ojombakap aka-t Ø-ta-kārā-t  
 then 3ANAPH-boyfriend COP-OBL 3-DECL-think-NFUT  
 ‘Then (she)<sub>i</sub> thought that (he) was her<sub>i</sub> boyfriend.’ (Storto, n.d.) “Oti”

- (17) “I-oky-ki pitat aj-’a hỹ?”, Ø-naka-’a oko ta’āt ta-man-ty  
 3-kill-NEG really you.PL-do INT 3-DECL-do ITER DIR.EVID 3ANAPH-husband-OBL  
 “‘You really didn’t kill it?’ She<sub>i</sub> said again to her<sub>i</sub> husband.’ (Storto, n.d.) “Encontro de dois grupos locais”

So far, we have seen that **ta-** refers to subjects. The example in (16) shows that this subject may even be one clause away, what will be discussed in section “Binding and embedding in Karitiana”. This pattern proves that there is some kind of syntactic restriction controlling what the possible antecedents may be for **ta-**. In the next section, we show that this is a well-known behavior in the literature on anaphora.

## ANAPHORA INSIDE BINDING THEORY

### BINDING THEORY

Generative grammar has found out that the distribution of anaphors is highly restricted. In general terms, they only appear in positions where they are ‘below’ the antecedent in a tree of syntactic structure. This is the reason why anaphors are typically comfortable in object positions and forbidden as subjects:

- (18) \*Herself<sub>i</sub> washed the woman<sub>i</sub>.

This property is captured through the structural notion of c-command. Nonetheless, there is more in this co-referential relation than c-command. It is formalized as the Principle A of Binding Theory, which states that an anaphor must be c-commanded by its antecedent and co-indexed with it — and as a result, being ‘bound’ by it (Chomsky, 1988).

<sup>5</sup> Given that the use of non-overt pronouns is prevalent in narratives, this situation is frequently found in texts. Sometimes the anaphora seems to be free at first sight, but a careful examination shows that it is probably bound by an implicit argument:

- (iii) “A-’a-dĵa, õě?”, iri-→a-j ta-ota-ty  
 you-do-standing dear CIT-do/say-FUT 3ANAPH-friend-OBL  
 “Is it you, dear?”, (he)<sub>i</sub> said to his<sub>i</sub> friend.  
 (Storto, n.d.) “Encontro de dois grupos locais”

Given that the c-command<sup>6</sup> requirement is not met in subject positions as in (18), binding is impossible and the anaphor is ruled out in this configuration. Additionally, this binding relation must be established within a certain syntactic domain called 'governing category' (which may be the sentence, the clause, the tensed clause etc., depending on the language).

Anaphors are frequently in complementary distribution with pronouns in the world's languages. Regulated by Principle B of the Binding Theory, pronouns cannot be bound (*i.e.*, must be free) within their governing category, and this means that pronouns are allowed in exactly those positions where anaphors are forbidden and 'vice-versa' (see Reinhart & Reuland, 1991):

(19) \*The woman<sub>i</sub> washed her<sub>i</sub>.

(20) She<sub>i</sub> washed the woman<sub>j</sub>.<sup>7</sup>

The binding principles discussed above can be stated in the following terms:

- (21) Binding Theory  
 (A) Principle A  
 An anaphor is bound within its governing category  
 (B) Principle B  
 A pronoun is free (not bound) within its governing category  
 (Chomsky, 1988)

- (22) Binding  
 a binds b iff a and b are coindexed and a c-commands b  
 (Reuland & Koster, 1991)

A governing category is some kind of minimal domain in which the binding relation can hold. As stated by Reuland and Koster (1991) certain elements work as an opacity factor, preventing the binding relation to be established:

- (23) Governing category  
 $\beta$  is a governing category for  $\alpha$  if and only if  $\beta$  is the minimal category containing  $\alpha$ , a governor of  $\alpha$ , and F (F an opacity factor)  
 (adapted from Reuland & Koster, 1991)

These opacity factors are usually an (accessible) Subject or the first finite Inflection (the complex inflectional head, which may have agreement, tense and mood in Karitiana). In the latter case, it amounts to saying that the domain in which an anaphor can be bound is equal to the first finite clause containing the anaphor.

<sup>6</sup> X c-commands Y if and only if: (1) X does not dominate Y; (2) Y does not dominate X; (3) the first (the lowest) branching node which dominates X also dominates Y. Intuitively, X c-commands Y if a sister of X dominates Y; and if a node does not have a sister, it c-commands what its mother c-commands.

<sup>7</sup> The fact that 'she' and 'the woman' cannot co-refer is due to the Principle C of Binding Theory, which prevents referential expressions such as the latter from being bound.



Establishing the governing category of anaphors in each language has been the task of much research on binding, since it could allow linguists to predict what the possible antecedents are in the world's languages. The next sections address this issue in Karitiana, and specifically show that the governing category of **ta-** can be quite large.

### THE BINDING DOMAIN OF **ta-**

**ta-**, as other anaphoric elements in many languages, complies with Principle A of Binding Theory, described in (21). Therefore, it has to be bound by an antecedent within the same clause; in the absence of such an element (overt or non-overt), **ta-** cannot have an external referent. This can be seen in the example below, in which **ta-** cannot refer to an element outside its clause.

- (24) **Taso**<sub>i</sub> **Ø-na-amang-Ø** **ta**<sub>i/\*j</sub>-**gok**  
 man 3-DECL-plant-NFUT 3ANAPH-manioc  
 "The man<sub>i</sub> planted his<sub>i/\*j</sub> manioc." (Storto, 2007)

One important thing is that, although **ta-** has to be c-commanded by its antecedent, it can later move to another position. Therefore, **ta-** may superficially appear in a position not c-commanded by its antecedent, but this relation can be reconstructed to its original position (*i.e.*, the position before movement to the left edge of the clause or sentence). In (25) and (26) below, '**ta'it**' and '**takyry**' are generated in positions c-commanded by '**i**' and '**yj'it**', respectively, and later move to the pre-verbal position:

- (25) **Ta**<sub>i</sub>-**'it** **okoot** **naka-ǰa-t** **i**<sub>i</sub>  
 3ANAPH-son bite DECL-be.in.MOVT-NFUT he  
 '[His/her/their<sub>i</sub> child]<sub>i</sub>, he/she/they<sub>i</sub> made (him/her)<sub>j</sub> bite him/her/them<sub>i</sub>.'  
 (adapted from Storto, 2007)

- (26) **Ta**<sub>i</sub>-**kyry-p** **yj-ta-atot** **yj**<sub>i</sub>-**'it**<sub>i</sub>  
 3ANAPH-chest-LOC 1PL-DECL-take 1PL-father  
 "In their chests, our fathers take us."  
 (Storto, n.d.) "Osijp"

Frequently, it is the case that **ta-** is found in the first position of the sentence, because as claimed by Storto (1999), the pre-verbal position in declarative clauses (verb-initial position) is used in Karitiana for focused phrases or clauses.

In Karitiana, a complementary distribution between anaphors and pronouns can also be found. The pronominal prefix **i-** cannot be used to convey the co-referential meaning, and whenever present, it has to be free (compare with 24):<sup>8</sup>

- (27) **Taso**<sub>i</sub> **Ø-na-amang-Ø** **i**<sub>j/\*i</sub>-**gok**  
 man 3-DECL-plant-NFUT 3-manioc  
 'The man<sub>i</sub> planted his<sub>j/\*i</sub> manioc.' (Storto, 2007)

<sup>8</sup> The pronominal element **i** does not convey the meanings of gender or number, so its translations in English can be 'he', 'she', 'it', and 'they'. The same holds for the meanings of the anaphoric **ta-**.

In other words, *i-* cannot be bound within the same clause in compliance with Principle B of the Binding Theory, and this prohibition explains why *i-* picks up its referent outside the clause. *ta-* and *i-* are then in complementary distribution, showing that the Binding Principles are highly operative in Karitiana as they are in English.<sup>9</sup>

## BINDING AND EMBEDDING IN KARITIANA

According to Storto (2007), the Karitiana anaphor *ta-* is allowed in embedded clauses as well, and there are two possible scenarios for binding in such environments. First, *ta-* can be bound by a noun phrase in the same embedded clause as in (28-29). In (28), *ta-* can be bound by the embedded subject *Ora*. It is worth mentioning that *ta-* and the matrix subject *Botyĩ* can also be bound, as we will see in the remaining of this section. In (29), *ta-gooj* is fronted from its original object position inside the relative clause (see Storto, 1999; Vivanco, 2018), but still able to be bound by the embedded subject *João*:

- (28) [Ora<sub>i</sub> ta<sub>i</sub>-‘it by-hot tykiri] Ø-naka-hyryp-Ø Botyĩ<sub>j</sub>  
 Ora 3ANAPH-SON CAUS-transform PERF.ASP 3-DECL-cry-NFUT Botyĩ<sub>j</sub>  
 ‘When Ora<sub>i</sub> transformed his<sub>i</sub> son, Botyĩ<sub>j</sub> cried.’ (Storto, 2007)
- (29) Yn Ø-naka-kot-Ø [ta<sub>i</sub>-gooj João<sub>i</sub> ti-hãrajxa]  
 I 3-DECL-shatter-NFUT 3ANAPH-canoe João INV-fix  
 ‘I smashed his<sub>i</sub> own canoe that João<sub>i</sub> fixed.’ (Vivanco, 2018)

*ta-* can also be bound by an antecedent in the matrix clause. In this case, the embedded clause can be a relative clause as in (30-31) or adverbial clauses as in (32-34). Moreover, there are two possibilities: either *ta-* is prefixed on the embedded verb to signal that the embedded subject is bound by the matrix subject (examples 30, 32 and 34) or it is a possessive marker co-referent to an antecedent in the matrix clause (examples 31 and 33):

- (30) Maria<sub>i</sub> Ø-naka-‘y-t [syke ta<sub>i</sub>-ti-m-‘a]  
 Maria 3-DECL-eat-NFUT porridge 3ANAPH-INV-CAUS-make/do  
 ‘Maria<sub>i</sub> ate the porridge that she<sub>i</sub> made.’
- (31) [Ta<sub>i</sub>-ti pop-ot]-oty Ø-na-so‘oot-Ø Maria<sub>i</sub>  
 3ANAPH-mother die-NMLZR-OBL 3-DECL-see-NFUT Maria  
 ‘Maria<sub>i</sub> saw (the place) where her<sub>i</sub> mother died.’

<sup>9</sup> Principle C, which regulates the meaning of referential expressions, is also operative, since referential expressions, as well, cannot be bound:

- (iv) I<sub>i/j</sub> Ø-naka-kot-Ø João<sub>i</sub> taĩ<sub>j</sub>  
 he 3-DECL-shatter-NFUT João knife  
 ‘He<sub>i/j</sub> shattered João<sub>i</sub>’s knife.’ (Vivanco, 2018)

- (32) [Ta<sub>i</sub>-hỹryĩ tykiri] Ø-na-terekteregng-Ø i<sub>i</sub>  
 3ANAPH-sing PERF.ASP Ø-DECL-dance-NFUT he  
 'When he<sub>i</sub> sang, he<sub>i</sub> danced.' (Storto, 2007)
- (33) J̃onso<sub>i</sub> Ø-na-aka-t i-pyki-t song-ty [ta<sub>i</sub>-ti haadn byyk]  
 woman 3-DECL-COP-NFUT PART-get-ADVR wood-OBL 3ANAPH-mother say after  
 'The woman<sub>i</sub> caught wood after her<sub>i</sub> mother asked.'
- (34) Masong Ø-naka-hỹryja [ta<sub>i</sub>-tat tysypy-'oot] Gokyp<sub>i</sub>  
 then 3-DECL-sing 3ANAPH-go ASP.IMPF sun  
 'Then the sun<sub>i</sub> sang before he<sub>i</sub> left.' (Storto et al., 2019) "Gokyp"

That **ta-** in embedded clauses is truly an anaphor is shown by the fact that it cannot be free of binding in any environment in which it occurs (except in its logophoric use, to be treated in section "Discourse and logophoricity"). This is shown in the pair of examples below. When **ta-** is used in the embedded clause as in (35), it picks up the referent of either the matrix or embedded subject (*João* and *Marcelo*, respectively). It is, therefore, bound by an antecedent. Nonetheless, when no co-reference is involved as in (36), the pronoun *i-* has to be used instead to refer to a third party's food:

- (35) [Ta<sub>i/j</sub>-ti'y Marcelo<sub>j</sub> 'y tykiri], Ø-na-pa'ira-t João<sub>i</sub>  
 3ANAPH-food Marcelo eat PERF.ASP 3-DECL-get.angry-NFUT João  
 'João<sub>i</sub> got angry because Marcelo<sub>j</sub> ate his<sub>i/j</sub> food.' (Storto, 2007)
- (36) [i<sub>k</sub>-ti'y Marcelo<sub>j</sub> 'y tykiri], Ø-na-pa'ira-t João<sub>i</sub>  
 3-food Marcelo eat PERF.ASP 3-DECL-get.angry-NFUT João  
 'João<sub>i</sub> got angry because Marcelo<sub>j</sub> ate his<sub>k</sub> food.' (Storto, 2007)

This is Principle A operating in the same way as seen in non-embedded environments such as the example (27).

In the world's languages, there is a category of anaphors that may shed light on Karitiana **ta-**. Anaphors in subordinate environments bound from outside the embedded clause are called 'long-distance anaphors' (see Maling, 1984; Reuland & Koster, 1991; Thráinsson, 1991) among others. Icelandic is a language that has long-distance anaphors (the reflexive element *sig* in the example below):

- (37) Jón<sub>i</sub> segir að María elski sig<sub>i</sub>  
 John says that Maria loves(subj.) reflexive  
 'John<sub>i</sub> said that Maria loves him<sub>i</sub>.' (Thráinsson, 1976 quoted in Maling, 1984)

As it is the case in many languages with long-distance anaphors, **ta-** is subject-oriented in embedded clauses as well (Storto, 2007). In (38), **ta-** picks up the reference of the matrix subject, *tasó* ('man').

- (38) [Ta<sub>i/\*j</sub>-’ ot takit] taso<sub>i</sub> Ø-na-oky-t sojxa<sub>j</sub>  
 3ANAPH-fall before man 3-DECL-kill-NFUT pig  
 ‘The man<sub>i</sub> killed the pig<sub>j</sub> before he<sub>i/\*j</sub> fell.’  
 (Storto, 2007)

Crucially, the long-distance anaphor cannot be bound by a matrix object *sojxa* (‘pig’), so the only possible interpretation for this sentence is ‘The man killed the pig before he (the man) fell’. In this example, if the intended reading were that the pig had fallen after the killing took place, the pronoun *i-* would have to be used instead, as in (39). Notice that in (39) this pronoun may also refer to someone else in the context (as indicated by ‘he<sub>k</sub>’ in the translation):

- (39) [I<sub>j/k/\*i</sub>-’ot takit] taso<sub>i</sub> Ø-na-oky-t sojxa<sub>j</sub>  
 he-go before man 3-DECL-kill-NFUT pig  
 ‘The man<sub>i</sub> killed the pig<sub>j</sub> before it<sub>j/k</sub>/\*he<sub>i</sub> fell.’  
 (Storto, 2007)

In fact, long-distance reference with a matrix object as in (39) actually does not involve binding at all, because the embedded subject *i* is not bound, but free to refer to any third person referent (marked by the co-indexation letter ‘k’) in the universe of discourse besides the matrix subject.

The fact that embedded *ta-* must be subject-bound is possibly due to the c-command requirement of Principle A: In order to be bound, anaphors must be c-commanded by their antecedent. A matrix object does not c-command an element within a subordinate clause, but a subject can. In (40), which has the syntactic structure given in Figure 1, the adverbial embedded clause is a VP (verbal phrase) adjunct of the main clause, and the subject of the VP is able to serve as an antecedent for the anaphor in subject position of the embedded clause (the defective Inflectional Phrase, represented in a box). Their relationship in such a configuration is not strictly one of c-command (because *V’* is the lowest branching node that dominates the main object and it does not dominate the anaphor), but the VP node that dominates the object of the main clause is a segment of the node that dominates the anaphor; in Karitiana, the fact that they both are dominated by segments of the same VP node is enough for binding.

- (40) [<sub>CP</sub>[Ta<sub>i/\*j</sub>-tat takit] taso<sub>i</sub> Ø-na-oky-t sojxa<sub>j</sub>]<sup>10</sup>  
 3ANAPH-go before man 3-DECL-kill-NFUT pig  
 ‘The man<sub>i</sub> killed the pig<sub>j</sub> before he<sub>i/\*j</sub> left.’

That c-command is involved in binding *ta-* in such environments is shown by the fact that an anaphor in the matrix clause cannot be bound by a subject in the embedded clause. In (41), *ta-* in the matrix object cannot be bound by *jonso* (‘woman’) in the embedded clause. To refer to the embedded subject, the cliticized pronoun *i-* has to be used as in (42):

<sup>10</sup> Note that adverbial embedded clauses may always move to sentence-initial position in Karitiana, although the pre-movement order, represented in (40) and (46) is also grammatical.

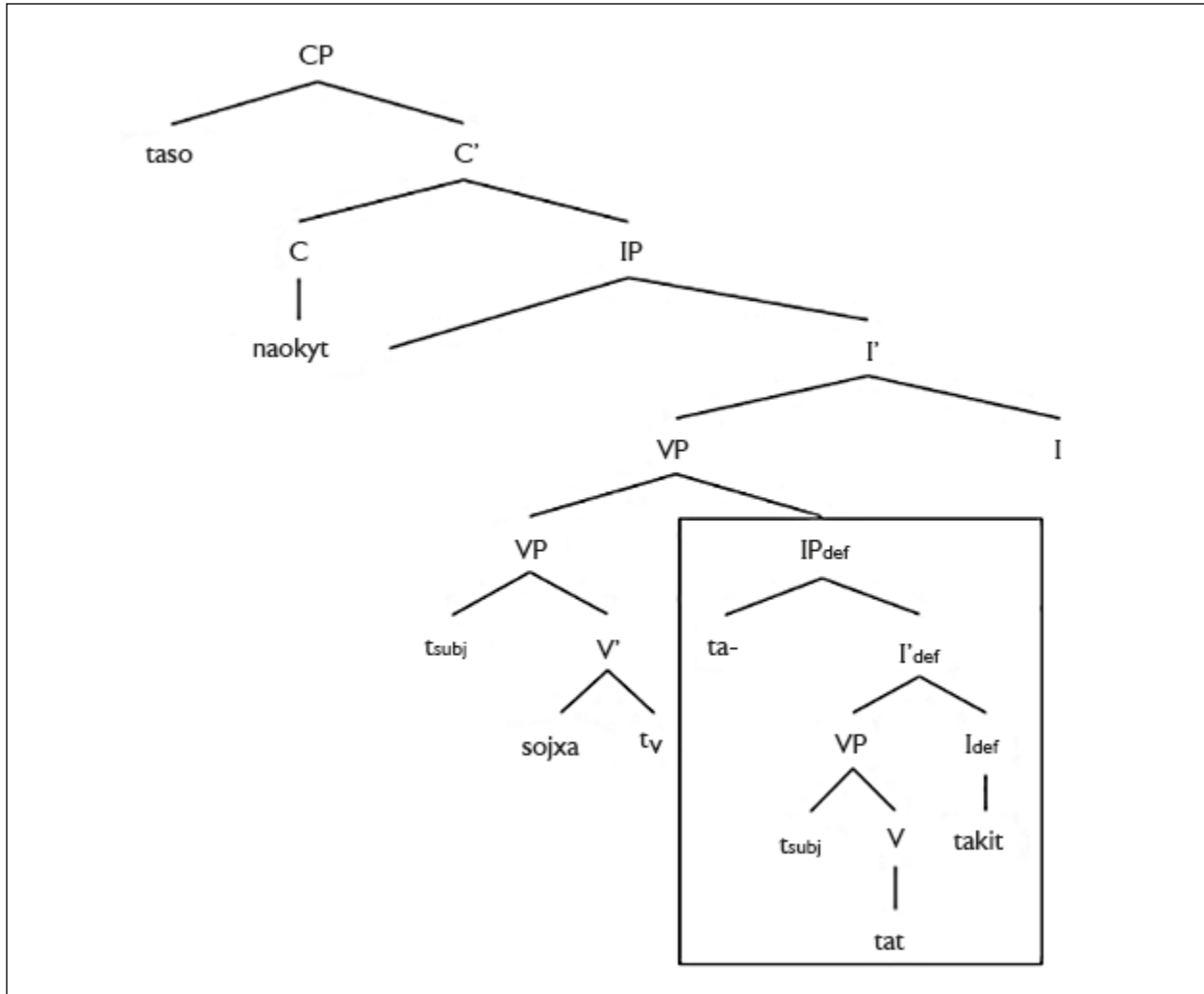


Figure 1. Syntactic structure of sentence (40).

- (41) [gok    ðonso<sub>j</sub>    amang    tyki'oot]    Ø-na-mb-oty-t    ta<sub>i/\*j</sub>-'et    taso<sub>i</sub>  
 manioc   woman   plant   ASP   3-DECL-CAUS-bath-NFUT   3ANAPH-son   man  
 'While the woman<sub>j</sub> was out to plant manioc, the man<sub>i</sub> bathed his<sub>j</sub> /\*her<sub>j</sub> son.' (Storto, 2007)

- (42) [gok    ðonso<sub>i</sub>    amang    tyki'oot]    Ø-na-mb-oty-t    i<sub>i</sub>-'et    taso  
 manioc   woman   plant   ASP.IMPF   3-DECL-CAUS-bath-NFUT   3-son   man  
 'While the woman<sub>i</sub> was out to plant manioc, the man bathed her<sub>i</sub> son.' (Storto, 2007)

The long-distance property of **ta-** has another important feature: Binding is possible across embedded clauses. **ta-** is inside an adverbial clause modifying (adjoining to) the verb phrase (VP) of a relative clause in (43-44) and adjoining

to the VP of a complement clause in (45). Crucially, its antecedent is not a constituent of the adjoined embedded clause (the adverbial clause), but of the larger embedded clause (a relative clause):

- (43) Yn Ø-na-aka-t i-so'oot [[ep ōwă ti-amanga]-ty [ta-ti otam byyk]]  
 I 3-DECL-COP-NFUT PART-see [tree child INV-plant]-OBL 3ANAPH-mother arrive after  
 'I saw the tree that the child<sub>i</sub> planted after his/her<sub>i</sub> mother arrived.'

Here, the c-command requirement is met because it is a case of multiple-embedding. For instance, the adverbial clause 'his/her<sub>i</sub> mother arrived' in (43) is contained by a larger relative clause and **ta-** is c-commanded by **ōwă**.

- (44) Yn Ø-naka-'y-t [gok [ta-ti haadn byyk] Maria<sub>i</sub> ti-amangă]  
 I 3-DECL-eat-NFUT manioc 3ANAPH-mother say after Maria INV-plant  
 'I ate the manioc that Maria<sub>i</sub> planted after her<sub>i</sub> mother asked.'

- (45) Py-so'oot-on ŷonso<sub>i</sub> [[ombaky ta<sub>i</sub>-oky]-ty [ta<sub>i</sub>-man pykyn byyk]]  
 ASSERT-see-ASSERT.NFUT woman jaguar 3ANAPH-kill-OBL 3ANAPH-husband run after  
 'The woman<sub>i</sub> saw the jaguar kill her<sub>i</sub> after her<sub>i</sub> husband had run away (in a dream).'

The same pattern is also found in long-distance anaphors in Icelandic (Maling, 1984; Thráinsson, 1991).<sup>11</sup> Figure 2 shows the syntactic structure of (44), repeated below as (46).

- (46) Yn Ø-naka-'y-t [gok [ta-ti haadn byyk] Maria<sub>i</sub> ti-amangă]  
 I 3-DECL-eat-NFUT manioc 3ANAPH-mother say after Maria INV-plant  
 'I ate the manioc that Maria<sub>i</sub> planted after her<sub>i</sub> mother asked.'

In sum, clausal boundaries are not an opacity factor for **ta-**, which can be bound regardless of the level of embedding between it and its antecedent (the antecedent may be in the main clause or in the larger embedded clause). Also, adjunction of an adverbial clause to the VP of a relative clause must allow c-command of the anaphor, subject of the adverbial clause, by its antecedent in subject position of the relative, represented in boxes in (46).

In order to accommodate this long-distance behavior, the binding domain of **ta-** has to be expanded to the first inflected clause. Reuland and Koster (1991) state that this is a possibility for binding exploited by many languages, and the definition of governing category that allows that is restated below:

- (47) (a) **b** is a governing category for **a** if and only if **b** is the minimal category containing **a**, a governor of **a**, and F  
 (F an opacity factor)  
 (b) English: F = (accessible) Subject  
 Karitiana: F = finite Infl

<sup>11</sup> There is one important difference between Icelandic and Karitiana anaphors: the latter can be found in adverbial clauses (see (29) and (32)), whereas the former are prohibited in such environments.

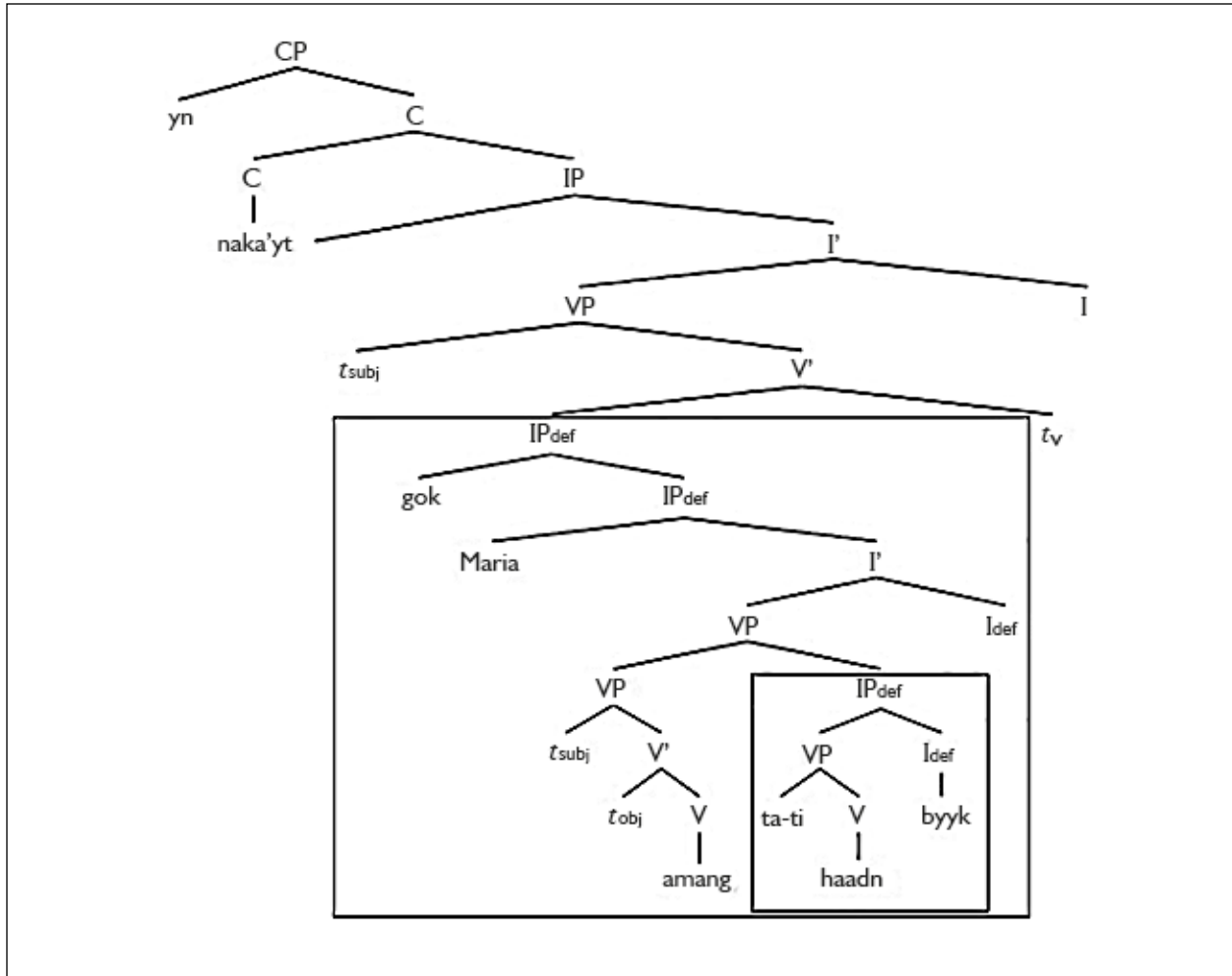


Figure 2. Syntactic structure of sentence (44)/(46).

The difference in the value *F* explains why the English equivalents of Karitiana sentences in (30) and (32) (namely, ‘\*Maria<sub>i</sub> ate the porridge that herself<sub>i</sub> made’ or ‘\*When himself danced, he sang’) are ungrammatical: The value of *F* in English has the effect of making the anaphor ‘himself/herself’ clause-bound, whereas the value of *F* in Karitiana allows the binding domain of *ta-* to extend beyond the embedded clause.

This extended binding domain is also able to capture the behavior of *ta-* in multiple embedded clauses such as (43–45). Since all embedded clauses in Karitiana are non-finite (see section “Karitiana morphosyntax”), the whole sentence always works as one single binding domain regardless of how many embedded clauses it contains. In fact, this could actually mean that *ta-* is not truly a long-distance anaphor like Icelandic, because it is not bound across several inflected clauses. Rather, it would be better classified as a “medium-distance” anaphor in the terminology of Reuland and Koster (1991).

The analysis of *ta-* as a medium-distance anaphor could explain an important difference between *ta-* and other long-distance anaphors. The complementary distribution between anaphors and pronouns in local domains disappears





- (51) 'Les parents de Marie<sub>i</sub> s'occupent de son<sub>i</sub> propre avenir et de celui de ses cousins.'  
'Mary<sub>i</sub>'s parents take care of her<sub>i</sub> own future and that of her cousins.'  
(Charnavel, 2020)

- (52) Sigvaldi<sub>i</sub> neitaði því, að þetta væri vilji þjóðarinnar. Að  
Sigvaldi denied it that this was will the nation's at  
  
minnstra kosti væri það ekki sinn<sub>i</sub> vilji  
least was it not self's will  
'Sigvald<sub>i</sub> denied that this was the nation's will. At least it was not his<sub>i</sub> will [he said].'  
(Thráinsson, 1991)

One key factor constraining this exempt behavior of anaphors is what has been known as logophoricity. Logophoric elements were described in some African languages, and in these, it is used in reportative contexts to signal some kind of change in the point of view (Clements, 1975).<sup>12</sup> In other words, exemption from Principle A must involve some kind of shift of mental perspective towards the anaphor's antecedent (see Charnavel, 2020).<sup>13</sup>

The fact that this *ta-* is found in narratives, which exhibit a great richness of discursive and pragmatic operations, may lead us to propose that *ta-* in sentences (48) and (49) also behaves as a logophoric anaphor. Therefore, some examples of narratives may indeed indicate a possible 'change of point of view' property that in essence could be the underlying property of reportative contexts.<sup>14</sup> This is shown in the extract below. At some specific point in this story, one of the characters sits down and starts to tell stories about him and his colleagues. The use of *ta-* in (53b) and (53c) could signal a shift of perspective towards this character, or some kind of focus on his own words or thoughts. In these examples, the direct evidential morpheme *ta'ă* in (53a) and (53c) is also evidence of this discursive 'shift':

- (53) (a) hadn hadn ta'ă hit-it  
tell tell DIR.EVID give-OBL  
'He told what they had given him.'
- (b) hadn hadn keerep ta-ki-ty  
tell tell formerly 3ANAPH-be.PL-OBL  
'He told how they had lived back then.'
- (c) hadn hadn ta-iriso ta'ă ti-soojo-t-oty  
tell tell 3ANAPH-colleague DIR.EVID INV-marry-ADV-OBL  
'He told how he married another man's wife.'  
(Storto, n.d.) "Encontro dos Capivari e dos Karitiana"

<sup>12</sup> In languages like Ewe, Clements (1975) states that the class of logophoric elements is morphologically distinct from both pronouns and anaphors. Nonetheless, languages like Latin and ancient Greek (and English, like 50) have a logophoric use of reflexive elements.

<sup>13</sup> Sells (1987) proposes that logophoricity is not a unified concept, but rather the interaction of the primitive concepts of 'source', 'self', and 'pivot'. According to him, these can respectively be defined as "the source of the report, the person with respect to whose consciousness (or 'self') is made, and the person from whose point of view the report is made." (Sells, 1987, p. 445). Binding of long-distance anaphors could then be sensitive to each of these components. For more information, see also Charnavel (2020).

<sup>14</sup> Reinhart and Reuland (1991) exploit the notion of 'centre' to capture this discursive-pragmatic shift, a composite consisting of participants, time, and place. When a (logophoric) anaphor cannot find its antecedent in their own governing category, it seeks another antecedent in another centre.

For more information on reported speech in Karitiana, as well as citative mood and direct speech, we refer the reader to Storto and Ferreira (n.d.).

There is another property of logophoric elements that may shed some light on this narrative use of *ta-*. Clements (1975) claims that logophoric elements help to avoid ambiguity in reference. In the examples below, for example, the English *him* is ambiguous between 'Mr. Smith' or someone else in the universe of discourse, while the logophoric anaphora *sibi* in Latin is not:

(54) Mr. Smith<sub>i</sub> said he had insulted him<sub>i</sub>.

(55) Cicero<sub>i</sub> dexit eun<sub>j</sub> sibi<sub>i</sub> melodixisse  
 Cicero said he him insulted  
 'Cicero said he<sub>j</sub> insulted him<sub>i</sub>.' (Clements, 1975)

The property of logophoric elements to reduce ambiguities may be the reason why *ta-* is used in the fragment below. This story, which describes the meeting of two local groups, contains a lot of characters. One can see two instances of the expression 'to be/go alone', *-myr̃-tat*, which can be marked with *ta-* or the 1<sup>st</sup> person exclusive, *yta-*. The use of *ta-* here could then be a mechanism to avoid ambiguity of reference in example (56a) and (56b), signaling who is the exact character that remained alone in each sentence:

(56) (a) Y-mbykiit Ø-na-aka-t hak i-aka-t ta-myr̃-tat  
 1-deceased.father 3-DECL-COP-NFUT here PART-COP-ADVR 3ANAPH-alone-go  
 'My deceased father remained here alone.'

(b) Hak i-aka-t ta-myr̃-tat Pojepap  
 here PART-COP-ADVR 3ANAPH-alone-go Pojepap  
 'Pojepap remained here alone.'

(c) Yta Ø-na-aka-t hot i-ki-t yta-pitik  
 1PL.EXC 3-DECL-COP-NFUT go.PL 3-be.PL-ADVR 1PL.EXC-place  
 'We all went and stayed there.'

(d) Yta-ka-ki horop yta, yta-myr̃-tat  
 1PL.EXC-DECL-be.PL long 1PL.EXC 1PL.EXC-alone-go  
 'We remained alone for a long time.'  
 (Storto, n.d.) "Encontro dos Capivari e dos Karitiana"

The extract (56) is not a clear-cut evidence that this is the case, because *ta-* in some cases can be really bound and not logophoric – in (56b), for instance, it is bound by '*Pojepap*'. Nonetheless, this may shed some light on the capacity of *ta-* to convey some kind of discursive-pragmatic information that is not completely understood.

Even though there are not many examples of this logophoric **ta-**, its existence may have important consequences for the analysis of medium-distance **ta-**. We saw in (sections ‘Karitiana **ta-**’ through ‘Binding and embedding in Karitiana’) that there are syntactic requirements on **ta-**, but they seem to vanish in its logophoric use. Should we posit two lexical entries for **ta-**, one regulated by the Principle A and with a governing category of the tensed clause and another one logophoric, whose behavior is regulated by pragmatic-discursive properties? Or are all instances of anaphors the same lexical element obeying strict locality constraints, with its logophoric use captured by the existence of a non-overt local antecedent (see Ross, 1970; Charnavel, 2020)?<sup>15</sup> This is still an open question, but it is tied to the reason why certain anaphoric elements (such as the English ‘himself’ in 50, which unexpectedly overrides Principle A) seem to become logophoric under certain circumstances. We hope that further research may shed light on this topic not only for Karitiana, but for all languages that exhibit this phenomenon.

## FINAL REMARKS

This paper reports the findings in Storto (2007) and adds examples from texts to illustrate them. The description by Storto (2007) of **ta-** as a long-distance anaphor was revisited and it was reanalyzed as a medium-distance anaphor. The description was also expanded to include examples of multiple embedding. It was shown that **ta-** may show co-reference of the anaphoric element with an antecedent in the matrix clause, in the same subordinate clause or between embedded clauses. There is a logophoric use of **ta-** which has an antecedent not clearly mentioned in the immediate discourse.

The uses of the **ta-** anaphor in Karitiana described in this paper are relevant for the understanding of the third person anaphoric element in languages of every one of the ten branches inside the Tupian family, since cognates have been found in at least three other families: Mondé (the Gavião prefix **a-**) (see Moore, 1984), Tupari (the Mekéns prefix **se-**) (see Galucio, 2014) and Ramarama (the Karo prefix **to-**) (see Gabas Jr., 1999). In fact, Anchieta (1595), who wrote one of the first grammars of a Tupian language in the 16th century, already identified a particle **o-** (which he calls ‘reciprocal’) which meant something like ‘his own X’ in Tupinambá (Tupi-Guarani family). Interestingly, this anaphoric prefix also occurs in configurations similar to what we have been describing for **ta-** in Karitiana (compare it to example 31):

- (57)    Ioãne Pedro oçauçûb, o-gúba, rauçúme  
           ‘Ioãne loves Pedro because he loves his father.’ (Anchieta, 1595)

In this sentence, Anchieta (1595) states that ‘his father’ may either refer to Pedro and Ioãne, but he adds that ‘it is more certain/correct to refer to Ioãne’. Even though Anchieta (1595) description must be taken carefully, this could be the oldest report of a subject-orientation of anaphoric elements within the Tupian family. Therefore, much of what has been described here regarding **ta-** resonates across related languages. We hope this paper can serve as a guide for researchers working on these languages, so that they may collect similar data for comparison. A complete description of the phenomenon of anaphora in Tupian languages is still to be accomplished.

<sup>15</sup> Reinhart and Reuland (1991) for example, claim that whenever the syntactic requirements for binding (Principle A) are met, then the anaphor must be bound. When these are not met (for example, within adjuncts) then there is a logophoric use regulated by other discursive pragmatic principles beyond Binding Theory.

## ABBREVIATIONS

1	first person	FUT	future
2	second person	IND.EVID	indirect evidential
3	third person	INT	interrogative
ASSERT	assertive mood	INV	inverse voice or object focus construction
ADVR	adverbializer	ITER	iterative aspect
ANAPH	anaphor	LOC	locative
ASP	aspect	MOVT	movement
ASP.IMPF	imperfective aspect	NEG	negation
CAUS	causative	NFUT	non-future
CIT	citative mood	NMLZR	nominalizer
COP	copula	OBL	oblique
DECL	declarative mood	PART	participle (nominalizer)
DEIC	deictic	PERF.ASP	perfective aspect
DIR.EVID	direct evidential	PL	plural
DUB	dubitative	POSP	posposition
EXC	exclusive	S	singular

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## CONTRIBUIÇÃO DAS AUTORAS

As autoras declararam participação ativa durante todas as etapas de elaboração do manuscrito.