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# Obligatory nonlocal binding

## An exclusively long distance anaphor in Yἀg Dii

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**Abstract** Grammatical dependencies, including anaphoric binding relations, are generally assumed not to ignore local relations and refer only to nonlocal relations. Yἀg Dii (Niger-Congo/Adamawa-Ubangi, Cameroon) provides counter-evidence to this otherwise well established generalisation. Yἀg Dii has a complicated pronominal system, originally described by Bohnhoff (1986, 2010), with pronominal forms whose distribution is determined by the nature of their antecedent, their grammatical function, and the type of clause in which they may appear. One set of forms exhibits an otherwise unattested form of nonlocality: the pronominal form and its antecedent must be separated by at least one clause, and the presence or absence of coreferent phrases in the intervening clause does not affect its appearance or distribution. The relation between this exclusively long-distance pronominal form and its antecedent seems to violate otherwise well-established locality conditions for anaphoric relations and, indeed, for grammatical dependencies more generally. We provide an analysis of binding in Yἀg Dii which captures the binding requirements for the exclusively long-distance form in a locally constrained manner by reference to an independently motivated feature demarcating the domain in which the exclusively long-distance pronominal must appear.

**Keywords** Binding · Anaphora · Locality · Lexical Functional Grammar

## 1 Locality in grammar

It is generally assumed that languages do not have grammatical dependencies that are exclusively nonlocal—there are no grammatical dependencies that operate at a

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minimum distance of two clauses away, for example (Fitzpatrick 2002; Sag 2010, among many others). In the context of anaphoric binding patterns, this assumption amounts to the claim that pronouns never ignore their local context. This is the *subset principle* of Manzini and Wexler (1987) for anaphoric binding domains, which states that larger binding domains always properly contain smaller ones, and the *Locality Condition* of Dalrymple (1993), stated as: "binding constraints … always refer to local elements, never exclusively to nonlocal ones". Reference to local elements in binding may take one of several forms: an anaphor may require, allow, or disallow a binder in the local context. In all of these cases, the local context is relevant for binding conditions, in that the antecedent of an anaphor must, may, or may not appear locally.

Binding patterns in Yǎg Dii[1] (Bohnhoff 1986, 2010) seem to run counter to these standardly accepted generalisations. The Yǎg Dii pronominal system contains four types of pronouns with different distributions depending on the binding requirements they must obey and the type of clause in which they must appear. The set of pronouns that Bohnhoff refers to as ìɪ appear as subjects of certain subordinate clauses; ìɪ pronouns cannot be used deictically, and a discourse antecedent is not acceptable. However, the antecedent of ìɪ must be the subject of a clause that is at least two clauses distant. Abstracting away from linear order, the general configuration is as in (1):

(1)    $_{S1}$[antecedent of ìɪ … $_{S2}$[ … $_{S3}$[ ìɪ …] …]]

*S*3, the clause whose subject is an ìɪ pronoun, may be a complement clause, an adjunct clause, a relative clause, or more deeply embedded within *S*2. The clause labelled *S*2 is a grammaticised logophoric domain, which may be either a typical logophoric domain such as the complement of a verb such as 'say', or a subordinate clause which does not typically constitute a logophoric domain, such as a subordinate purpose clause or a causal adjunct (Bohnhoff 1986, 2010). The ìɪ pronoun must be bound by the subject of *S*1.

The ìɪ pronouns are interesting from the point of view of locality conditions because the subject of *S*2 may be, but need not be, coreferential with ìɪ. It is not the presence or absence of a suitable binder in *S*2 that is required by ìɪ, but the presence of a suitable binder as the subject of *S*1. In other words, the ìɪ pronoun ignores the *S*2 context, and is sensitive only to the presence of a potential binder in *S*1. This sets the Yǎg Dii ìɪ pronouns apart from more familiar long-distance anaphors whose distribution is affected by the presence or absence of a potential binder in *S*2.

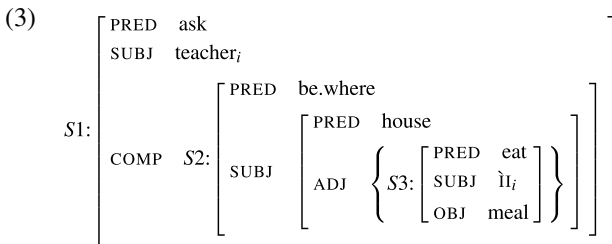In example (2) the ìɪ pronoun appears as the subject of a relative clause *S*3 (*in which he.*ìɪ *will eat the Easter meal*) which is contained within the complement clause *S*2 (*where is the house* $_{S3}$[*in which he.*ìɪ$_i$ *will eat the Easter meal with his*$_i$ *disciples?]*). The antecedent of ìɪ is 'teacher$_i$', the subject of the main clause *S*1, and

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[1]Bohnhoff (1986, 2010) describes the Western (mam be') dialect, centered around Mbé, Cameroon.

a discourse antecedent $j$ is not acceptable:[2]

(2)  $_{S1}$[ Àkàw  Ø  ǫ̀  $_{S2}$[ lig  $_{S3}$[ bà **ìi**  lá hẹn lálɨ́  páskà kan
     Teacher$_i$ (he$_i$) say  house  that **he.ìI**$_{i,*j}$ eat thing eating Easter with
waa duulí  bìì vu wǔlɨ́ máa] bà  dɨ  tɛ́lá?]
child following his$_i$ PL there when, that.it is.there where?

'$_{S1}$[ The teacher$_i$ asks, $_{S2}$[where is the house $_{S3}$[in which **he.ìI**$_{i,*j}$ will eat the
Easter meal with his$_i$ disciples?]]]'

<div align="right">(L. Bohnhoff, p.c., translation of Luke 22:11)</div>

An abbreviated functional structure (Bresnan 2001; Dalrymple 2001) shows the
grammatical structure of example (2) and the relation of the ìI pronoun to its an-
tecedent, 'teacher', with the matrix clause labelled $S1$, the grammaticised logophoric
domain $S2$, and the clause $S3$ whose subject is the ìI pronoun:

(3)
$$S1: \begin{bmatrix} \text{PRED} & \text{ask} \\ \text{SUBJ} & \text{teacher}_i \\ \text{COMP} & S2: \begin{bmatrix} \text{PRED} & \text{be.where} \\ \text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{house} \\ \text{ADJ} & \left\{ S3: \begin{bmatrix} \text{PRED} & \text{eat} \\ \text{SUBJ} & \text{ìI}_i \\ \text{OBJ} & \text{meal} \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

The clause containing the ìI pronoun may also appear more deeply embedded within
$S2$, as in example (4), where ìI is separated from its antecedent by two clause bound-
aries. In example (4), ìI is the subject of the relative clause $S3$, *that he.*ìI *created
and hid*. This relative clause modifies the object *things* of the subordinate purpose
clause *(so that) they know the things* $_{S3}$[*that he.*ìI *created and hid*]. This subordinate
clause modifies the $S2$ clause *that I should teach everyone (so that) [they know the
things* $_{S3}$[*that he.*ìI *created and hid*]], which is the complement of the matrix verb
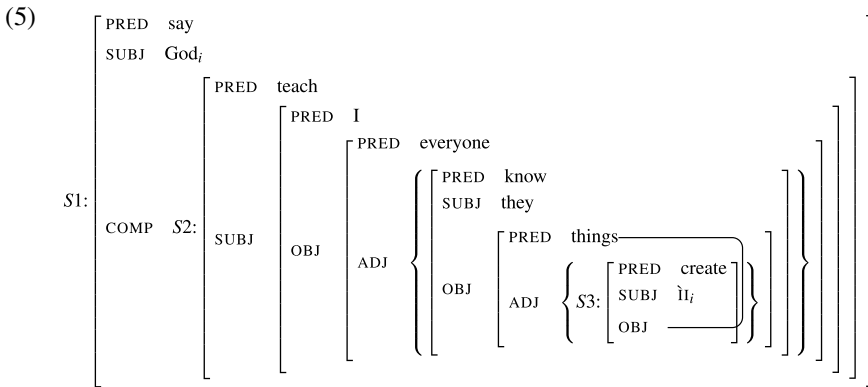*say*, whose subject 'God' is the antecedent of the ìI pronoun.

(4)  $_{S1}$[ Tayɨɨ Ø  ǫ̀  $_{S2}$[ bà ǎ̀n tú'ud nán  'wààpád [ ǔu  gàà hẹn  $_{S3}$[ bà
     God$_i$ (he$_i$) say  that I  teach person all  they know thing  that
**kii**  mbɔ́g yúg yè̩]]] nɔ].
**he.ìI** create hide DEM CM

'$_{S1}$[God$_i$ said $_{S2}$[that I should teach everyone [so they know the things $_{S3}$[that
**he.ìI**$_i$ created and hid…]]]]'  (L. Bohnhoff, p.c., translation of Ephesians 3:9)

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[2]Glossing conventions for Yạg Dii examples follow Bohnhoff (1986, 2010):

| CM  | clause-final particle | DEM  | demonstrative    |
|-----|-----------------------|------|------------------|
| DU  | dual                  | FUT  | future           |
| NEG | negation              | PERF | perfective       |
| PL  | plural                | Q    | question marker  |
| SG  | singular              |      |                  |

DECL is used for declarative. Glosses for examples in other languages follow the source.

The structure of example (4) and the relation of ìì to its antecedent is shown in (5):

(5)

$S1:$ 
$$\begin{bmatrix} \text{PRED} & \text{say} \\ \text{SUBJ} & \text{God}_i \\ \text{COMP} & S2: \begin{bmatrix} \text{PRED} & \text{teach} \\ \text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{I} \end{bmatrix} \\ \text{OBJ} & \begin{bmatrix} \text{PRED} & \text{everyone} \\ \text{ADJ} & \left\{ \begin{array}{l} \begin{bmatrix} \text{PRED} & \text{know} \\ \text{SUBJ} & \text{they} \\ \text{OBJ} & \begin{bmatrix} \text{PRED} & \text{things} \\ \text{ADJ} & \left\{ S3: \begin{bmatrix} \text{PRED} & \text{create} \\ \text{SUBJ} & \text{ìì}_i \\ \text{OBJ} & \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix} \end{array} \right\} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

Example (6) is similar to example (2), but is unacceptable for two reasons: ìì does not appear in a logophoric domain, and the only potential binder of the ìì pronoun is in the next clause up and so not sufficiently distant:

(6)   *Akàw   Ø    hò lig   [ bà **ìì**   lá hẹn lálɨ́   páskà kan waa
      Teacher$_i$ (he$_i$) see house   that **he.ìì** eat thing eating Easter with child
      duulí     bìì   vʉ wʉlɨ́ máa].
      following his$_i$ PL there when

      ('The teacher$_i$ saw the house [in which **he.ìì** will eat the Easter meal with his$_i$
      disciples].')                                                              (L. Bohnhoff, p.c.)

The complement of the verb *hɨ́ɨ́* 'want' is a logophoric domain, and so in example (7), the logophoric domain condition is fulfilled. In (7a), as in (6), the subject of the main clause is unsuitable as an antecedent for ìì because it is too close. Since ìì cannot take a discourse antecedent, and there is no potential binder that is sufficiently distant, (7a) is ungrammatical. The grammatical version in (7b) contains a different type of pronoun, a BI pronoun, which does not require a nonlocal antecedent.
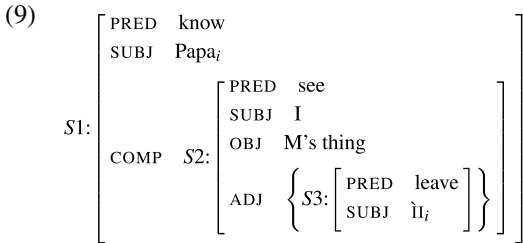
(7)   a.  *Vʉ     hɨ́ɨ́  [ **'ìi**    làà kaalɨ́ ].
           they.MÍ want  **they.ìì** go town.to
           ('They want to go to town.')                                          (L. Bohnhoff, p.c.)

      b.  Vʉ     hɨ́ɨ́  [ **bi**    làà kaalɨ́ ].
          they.MÍ$_i$ want  **they.BI**$_i$ go town.to
          'They want to go to town.'        (corrected version of Bohnhoff 1986, 113)

In example (8) the ìì pronoun appears as the subject of an adjunct clause $S3$ (*he.ìì doesn't leave*) which is contained within a complement clause $S2$ (*even if he.ìì$_i$ doesn't leave, I'll see Moses's thing*). The antecedent of ìì is 'Papa', the subject of the main clause $S1$:

(8)   $_{S1}$[ Bà'á   Ø    gàà   $_{S2}$[$_{S3}$[ kóó **ìì**   lúu ní  sɨ̀'] bà míń hò hẹn
          Papa$_i$, (he$_i$) knows      time **he.ìì**$_i$ leave NEG even, that I    see thing
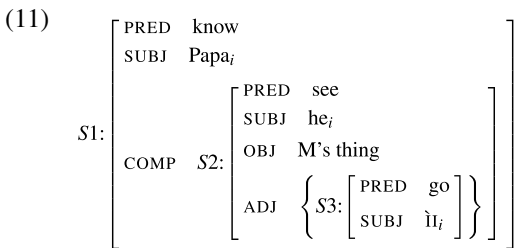      Múúsà wòò]].
      Moses his

'$_{S1}$[Papa$_i$ knows that $_{S2}$[$_{S3}$[even if **he.ìɪ**$_i$ doesn't leave], I'll see Moses's thing]].' (L. Bohnhoff, p.c.)

The abbreviated functional structure in (9) shows the grammatical structure of example (8) and the relation of the ìɪ pronoun to its antecedent, 'Papa':

(9)

$$S1:\begin{bmatrix} \text{PRED} & \text{know} \\ \text{SUBJ} & \text{Papa}_i \\ \\ \text{COMP} & S2:\begin{bmatrix} \text{PRED} & \text{see} \\ \text{SUBJ} & \text{I} \\ \text{OBJ} & \text{M's thing} \\ \\ \text{ADJ} & \left\{ S3:\begin{bmatrix} \text{PRED} & \text{leave} \\ \text{SUBJ} & \text{ìɪ}_i \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix}$$

In example (8), there is no potential binder of ìɪ in $S2$. In contrast, the subject of $S2$ is coreferential with the ìɪ pronoun in the structurally similar and equally acceptable example in (10). The syntactic structure for example (10) is shown in (11).

(10)    $_{S1}$[ Bà'á   Ø    gàà    $_{S2}$[$_{S3}$[ sèỳ **ìi**    làà tée]   bà bíń hò hẹn
       Papa$_i$, (he$_i$) knows      time **he.ìɪ**$_i$ goes when, that he$_i$ see thing
       Múúsà wòò]].
       Moses his

'Papa$_i$ knows that [[when **he.ìɪ**$_i$ goes], he$_i$'ll see Moses's thing].'
(L. Bohnhoff, p.c.)

(11)

$$S1:\begin{bmatrix} \text{PRED} & \text{know} \\ \text{SUBJ} & \text{Papa}_i \\ \\ \text{COMP} & S2:\begin{bmatrix} \text{PRED} & \text{see} \\ \text{SUBJ} & \text{he}_i \\ \text{OBJ} & \text{M's thing} \\ \\ \text{ADJ} & \left\{ S3:\begin{bmatrix} \text{PRED} & \text{go} \\ \text{SUBJ} & \text{ìɪ}_i \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix}$$
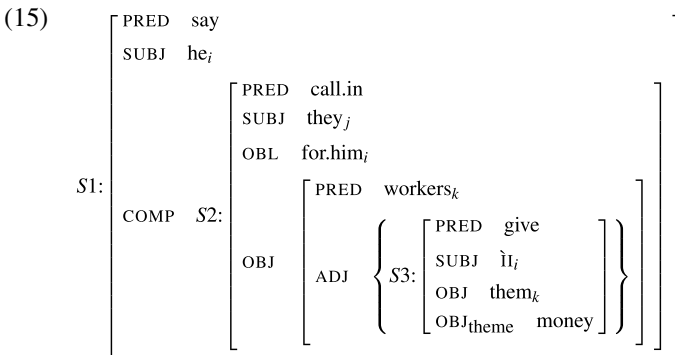
Besides example (8), examples where the subject of $S2$ does not corefer with the ìɪ pronoun appear in (2), (4), (12), (13), (14), (16), and (49d). The presence or absence of a coreferential element in $S2$ does not have an effect on the distribution of ìɪ: rather, ìɪ ignores the $S2$ context in fulfilling its binding conditions.

(12)    $_{S1}$[ Yạg   gàn   Ø    ọd nàa wakẹ́ẹ́   $_{S2}$[ bà   à    lúú   kan waa    wòò
       mouth seer$_i$ she$_i$ tell lady woman$_j$     that she$_j$ leave with child$_k$ her$_j$
       yẹ,    kan hen   $_{S3}$[ bà **kii**      wá'ad-ʉ     yẹ…]]]
       DEM, and thing     that **she.ìɪ**$_i$ list.for-her$_j$ DEM…

'$_{S1}$[The seer$_i$ told the woman$_j$ $_{S2}$[that she$_j$ must leave with her$_j$ child$_k$ and the things that $_{S3}$[**she.ìɪ**$_i$ listed for her$_j$ ]]].' (L. Bohnhoff, p.c.)

(13)  (Bằbằạm kẹ́ẹ́  . . . Ø  kà  moo . . . kan moo wạyạg) $_{S1}$[ wằằ̀
      Hare$_i$  wife$_j$  she$_j$ take word  and word cry       her$_j$.husband$_i$
      ka  bàà       wằằ:  $_{S2}$[ gbanàà vʉǹ  bèè  bi   $_{S3}$[ ìi   dɔ̀gga ma'ad
      he$_i$ continually cry    chief$_k$  they$_k$ call him$_i$   **he.ÌI$_i$** go.up catch.for
      bi   mbèè-ɨ̀  pèè, . . .]]]
      him$_k$ sheep-CM DEM

  '(Hare's wife$_j$ . . .tells about) $_{S1}$[her$_j$ husband$_i$'s crying out continually $_{S2}$[that
  the chief$_k$ calls him$_i$ $_{S3}$[that **he.ÌI$_i$** should go up and catch sheep for him$_k$]]]. . .'
  (L. Bohnhoff, p.c.)

In examples (8) and (10), the binder of the ÌI pronoun is the subject that immediately precedes it, but in other examples this is not the case. In example (14), the ÌI pronoun appears as the subject of a relative clause[3] *S3* (*that he.ÌI$_i$ gave (them) money*) within the complement clause *S2* (*that they should call in the workers $_3$[that he.ÌI$_i$ gave (them) money]*). Although the immediately preceding subject is the pronominal subject *they* of *S2*, the ÌI pronominal subject of *S3* must be bound by the subject of the main clause *S1*, the unexpressed subject of *says*. The grammatical structure of example (14) is shown in (15).

(14)  Ø   fíí    ya,  $_{S1}$[ ọ̀   $_{S2}$[ bà   ʉ̀ʉ   beed  bi
      (he$_i$) returns come, says   that they$_j$ call.for him$_i$
      nán ba'ad $_{S3}$[ bà  **kii**  pʉ́  vʉ  sɨɨdè  máa vʉ yʉ],
      man work$_k$   that **he.ÌI$_i$** give them$_k$ money DEM PL FOCUS,

      moo bi gàà  hẹn  bà  kʉʉ  kɔ́ń    kan sɨɨdè bìì má nɔ]].
      for  he$_i$ know thing that they$_k$ do-with and money his$_i$ DEM CM

  '. . .(he$_i$) returns, $_{S1}$[says $_{S2}$[that they$_j$ should call in for him$_i$ the workers$_k$
  $_{S3}$[that **he.ÌI$_i$** gave (them$_k$) money], so he$_i$ can know the thing which they$_k$
  have done with his$_i$ money]].'

  (L. Bohnhoff, p.c., translation of Luke 19:15)

(15)

$$
S1: \begin{bmatrix} \text{PRED} & \text{say} \\ \text{SUBJ} & \text{he}_i \\ \\ \text{COMP} & S2: \begin{bmatrix} \text{PRED} & \text{call.in} \\ \text{SUBJ} & \text{they}_j \\ \text{OBL} & \text{for.him}_i \\ \\ \text{OBJ} & \begin{bmatrix} \text{PRED} & \text{workers}_k \\ \\ \text{ADJ} & \left\{ S3: \begin{bmatrix} \text{PRED} & \text{give} \\ \text{SUBJ} & \text{ÌI}_i \\ \text{OBJ} & \text{them}_k \\ \text{OBJ}_{\text{theme}} & \text{money} \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix} \end{bmatrix}
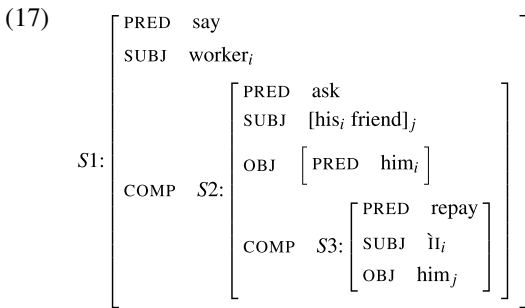$$

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[3]The pronoun *vʉ* 'them' in the relative clause is a resumptive pronoun.

A pronoun coreferential with the ìɪ pronoun appears in *S*2 in example (14), but not in the similarly-structured example (2). As shown in (3), ìɪ is the subject of the relative clause *S*3 (*in which he.ìɪ will eat the Easter meal with his disciples*), which is embedded in the complement clause *S*2 (*where is the house* $_{S3}$*[in which he.ìɪ will eat the Easter meal with his disciples]*).

In examples (2), (4), (8), (10), and (14), *S*3 is an adjunct clause: a concessive clause in examples (8) and (10), and a relative clause in examples (2), (4), (12), and (14). *S*3 may also be a complement clause within *S*2, as in (13) and (16):

(16)  $_{S1}$[ Nán ba'ad Ø  'ọ̀  $_{S2}$[ moo 'ẹ̀ǹ  dà  bì  tóó  bà  ka  vì  bi
    man work (he$_i$) say  for  what friend$_j$ his$_i$ other that he$_j$ ask him$_i$

  $_{S3}$[ bà  **'ìɪ**  sɨ́ɨ́wɨ  'ɨ́lá]]]?
    that **he.ìɪ**$_i$ repay.him$_j$ CM.Q

  '$_{S1}$[The worker$_i$ asked $_{S2}$[why his$_i$ friend$_j$ asked him$_i$ $_{S3}$[that he.ìɪ$_i$ repay the IOU]]].'  (corrected version of Bohnhoff 1986, 119)

(17)  *S*1: 
$$
\begin{bmatrix}
\text{PRED} & \text{say} \\
\text{SUBJ} & \text{worker}_i \\
\text{COMP} & S2: \begin{bmatrix}
\text{PRED} & \text{ask} \\
\text{SUBJ} & [\text{his}_i \text{ friend}]_j \\
\text{OBJ} & \begin{bmatrix} \text{PRED} & \text{him}_i \end{bmatrix} \\
\text{COMP} & S3: \begin{bmatrix}
\text{PRED} & \text{repay} \\
\text{SUBJ} & \text{ìɪ}_i \\
\text{OBJ} & \text{him}_j
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
$$

Thus, the ìɪ pronominal forms exemplify an exclusively nonlocal dependency: they must be bound by a subject at least two clauses distant. Their distribution is not affected by the presence or absence of potential binders in *S*2, by the relative linear order of the subjects of *S*1, *S*2, and *S*3, or by the argument/adjunct status of either *S*2 or *S*3.

## 1.1 ìɪ is not a standard long-distance anaphor

It is not possible to capture the exclusively long-distance nature of the binding constraints on ìɪ pronouns by means of standard binding-theoretic constraints. ìɪ does not behave like a standard pronominal, in that it does not obey only a negative binding condition such as Binding Condition B (a pronominal must be free in its governing category: Chomsky 1981). ìɪ pronouns require an antecedent in the same sentence, unlike pronominals, and cannot appear without an antecedent. Of course, ìɪ also does not behave like a standard short-distance anaphor in obeying Binding Condition A (an anaphor must be bound in its governing category), since it is not locally bound.

It is well known that some reflexive pronouns can take nonlocal antecedents; an example is Chinese *ziji*, which can be bound by any commanding subject, whether local or nonlocal.[4]

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[4]This is a simplification; for detailed discussion of binding constraints for Chinese *ziji*, see Huang and Tang (1991) and references cited there.

(18)  Zhangsan shuo [Wangwu zhidao [Lisi chang piping    ziji]].
           said         knew       often  criticized self
      'Zhangsan$_i$ said that Wangwu$_j$ knew that Lisi$_k$ often criticized himself$_{i,j,k}$.'

(Chinese; Huang and Tang 1991, 264)

ìɪ pronouns resemble long-distance anaphors such as Chinese *ziji* in requiring a binder in the same sentence and allowing binding by a nonlocal antecedent. However, ìɪ pronouns differ from *ziji* in disregarding potential local antecedents, and requiring binding by a nonlocal antecedent.

## 1.2 ìɪ does not exemplify switch reference

Binding patterns for ìɪ pronominal forms may appear similar to familiar patterns of switch reference, where clauses are marked to indicate coreference between arguments, often subjects, of two different clauses. Haiman and Munro (1983) provide example (19) from Pima (Uto-Aztecan), citing Langdon and Munro (1979) and personal communication from Etheleen Rosero. The morpheme glossed SS enforces coreference between the subject of *cry* and the subject of *hit*, while the DS morpheme indicates that the subjects of the two verbs are not coreferent:

(19)  a.  Hegai 'uuvi    'a-t    'am ṣohñi hegai ceoj c    'am ṣoṣa.
          that    woman 3-perf   hit    that man SS      cry
          'The woman$_i$ hit the man and she$_i$ cried.'
      b.  Hegai 'uuvi    'a-t    'am ṣohñi hegai ceoj ku-t (hegai ceoj) 'am ṣoṣa.
          that    woman 3-perf   hit    that man DS    that    man      cry
          'The woman hit the man$_i$ and he$_i$ (the man) cried.'

(Pima; Haiman and Munro 1983, x)

The Y̧ag Dii ìɪ pronoun differs from switch reference in Pima, however, in that the ìɪ pronoun does not place any constraints on the reference of the subject of the immediately higher clause. In contrast, switch-reference always operates locally: according to Haiman and Munro (1983, xiii), "there seem to be no languages… in which switch-reference is marked *exclusively* between non-adjacent clauses. Thus, if a language has switch-reference marking between non-adjacent clauses, it will also mark switch-reference between adjacent clauses."

## 1.3 ìɪ is not obviative

In some constructions in Spanish and other Romance languages, the pronominal subject of a subjunctive complement clause cannot corefer with the matrix subject (Quer 2006); in the Romance literature, this is generally called "obviation".

(20)  a.  *Queremos que ganemos.
           want.1PL   that win.SUB.PRS.1PL
          ('We want to win.')
      b.  Queremos que ganen.
          want.1PL   that win.SUB.PRS.3PL
          'We want them to win.'                      (Spanish; Quer 2006, 662)

Analyses of Romance obviation constructions generally assume that the binding domain for the subordinate subject pronoun is extended to the matrix clause (but no further). Extending this analysis to ÌI pronouns would be incorrect in two respects: such an analysis incorrectly predicts that ÌI disallows a local binder, while in fact ÌI neither disallows nor requires a local binder; and the analysis provides no means of enforcing coreference with a more distant binder, as ÌI requires.

### 1.4 ÌI is not a pronominal anaphor

To ensure the presence of a nonlocal antecedent for ÌI, we might attempt to state the binding requirements for ÌI as a combination of a local noncoreference requirement (as we expect to find with pronominals) and a nonlocal coreference requirement (as we find with long-distance reflexives): that is, ÌI would be an overt pronominal anaphor, which must be locally free but bound in a larger domain, as originally suggested for the Malayalam pronoun _taan_ by Mohanan (1981) or the Scandinavian pronoun _seg_ by Hellan (1988) (see also Dalrymple 1993 and Kiparsky 2002). Mohanan (1981) provides examples (21a) and (21b) to show that _taan_ must be bound, and example (21c) to show that the binder of _taan_ may not be a coargument of the same predicate—that is, _taan_ must be bound within the sentence in which it appears, but may not be locally bound:

(21)   a.  *_taan_        aanaye       nuḷḷi.
          self.NOM elephant.ACC pinched

          'Self pinched the elephant.'          (Malayalam; Mohanan 1981, 13)

      b.  [ _taan_      aanaye     nuḷḷi    ennə] kuṭṭi r̄aajaawinooṭə maraññu.
          self.NOM elephant.ACC pinched that   child king.DAT      said

          'The child$_i$ told the king that self$_i$ pinched the elephant.'

                                             (Mohanan 1981, 17)

      c.  *moohan _taane_    aar̄aaḍhik'k'uṇṇu.
          Mohan   self.ACC worships

          'Mohan$_i$ worships himself$_i$.'          (Mohanan 1981, 15)

Such an approach does not produce the right result for ÌI, however. We cannot ensure that the antecedent of ÌI appears at least two clauses removed by requiring ÌI to be free in the _S_2 domain but bound in the entire sentence, since ÌI can appear whether or not there is a potential binder in the _S_2 domain.

    Refining the condition to disallow particular types of binders in _S_2 does not help. Yǎg Dii has three types of pronouns (MÍ, ÀŇ, and BI, to be described in Sect. 2) that are in principle potential binders for ÌI in _S_2. Since ÌI must appear in a grammaticised logophoric domain and must corefer with the logophoric antecedent, any potential pronominal binder for ÌI within the logophoric domain must also be a logophoric pronoun. As we will show in Sect. 3, the MÍ and ÀŇ series are antilogophoric, and cannot appear in the logophoric domain when coreferential with the logophoric antecedent. This leaves only BI as a potential binder for ÌI in _S_2. In (10), repeated here, the subject of _S_2 is a BI-type pronoun, and there is no problem with coreference between the BI subject of _S_2 and the ÌI subject of _S_3.

**Table 1** Distribution of MÍ, ÀŃ, BI, and ÌI forms

|  | Acceptable in nonlogophoric domain, antilogophoric in logophoric domain | Only in grammaticised logophoric domain with logophoric antecedent |
|---|---|---|
| Subject | MÍ in declarative main clauses, ÀŃ in imperative main clauses, ÀŃ in most subordinate clauses | BI, ÌI in some subordinate clauses |
| Nonsubject | MÍ | BI |

(22) Bà'á Ø gàà $_{S2}$[ $_{S3}$[ sèỳ **ìi** làà tée] bà bíń họ hẹn Múúsà
Papa$_i$, (he$_i$) knows    time **he.ÌI**$_i$ goes when, that he$_i$ see thing Moses
wòò].
his

'$_{S1}$[Papa$_i$ knows that $_{S2}$[$_{S3}$[when **he.ìi**$_i$ goes], **he.BI**$_i$'ll see Moses's thing].'
(L. Bohnhoff, p.c.)

## 2 The Yạg Dii pronominal system

The pronominal system of Yạg Dii is exceptionally complex, with four main classes of pronominal forms morphologically realised as independent pronouns, pronominal affixes, and verbal auxiliaries formed on pronominal bases.[5] ÌI pronouns share some properties with ÀŃ pronouns, which usually appear as subjects of subordinate clauses, and also share some other properties with BI pronouns. Here we provide a description of the pronominal system of Yạg Dii, situating the ÌI pronouns in the overall system and demonstrating important commonalities and differences among the four classes of pronominal forms.

Following Bohnhoff (1986, 2010), we refer to the four main types as MÍ, ÀŃ, BI, and ÌI forms, named after the first person forms of each series. Their distribution is roughly as in Table 1.[6]

**Logophoric vs. nonlogophoric domain**   A major division in the pronominal system is between what Bohnhoff calls the 'nonlogophoric' MÍ/ÀŃ sets and the 'logophoric' BI/ÌI sets. The BI/ÌI sets appear only in a grammaticised logophoric domain or BI domain, and cannot be used for deictic reference. The BI domain is triggered by five types of subordinate clauses, including typical logophoric domains such as indirect speech as well as domains not usually associated with logophoricity, such

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[5]We set aside a fifth class of 'hypothetical' verbal auxiliaries which are morphologically similar to the MÍ verbal auxiliaries; see Bohnhoff (2010) for discussion of this class.

[6]Bohnhoff (2010) uses the term "factative" for what we call "declarative" in the following. The term "factative" is commonly used in descriptions of West African languages for the unmarked form signaling past or perfect tense for nonstative clauses and present tense for stative clauses (Welmers 1973), but Bohnhoff (2010) uses the term for both perfective and imperfective declarative clauses, distinguishing factative from imperative and hypothetical mood.

as purpose clauses: BI pronouns are found in indirect quotations, indirect orders, subordinate desiderative clauses, affirmative purpose clauses, and causal adjuncts introduced by *ka* or *bà* (see Sect. 4 for more discussion of the logophoric domain and grammaticised logophoricity in Yąg Dii). Note that the BI domain includes both complement clauses (indirect quotations, indirect orders) and adjunct clauses (subordinate desiderative clauses, affirmative purpose clauses, and certain kinds of causal adjuncts). BI pronouns appear only within the BI domain, and must corefer with the subject of the clause that contains the BI domain (the 'logophoric antecedent'): Bohnhoff (1986, 2010) refers to this as the *reference condition* or REF COND. The MÍ/ÀŇ forms may also appear in the BI domain, but may not corefer with the logophoric antecedent when they appear there.

**Subject vs. nonsubject pronoun forms**   MÍ and BI pronominal forms can appear either as subjects or as nonsubjects. ÀŇ and ÌI forms appear only as subjects. Subject forms in all four types can encode future/nonfuture tense and declarative/imperative mood; they then appear in a fixed position after the full subject phrase and before the verb, in what Bohnhoff calls the PN-ML-TE (person-number-mood-logophoricity-tense-emphasis) position. Bohnhoff (1986, 2010) analyses these forms as tensed pronouns, noting that they are transparently related to the free pronoun sets in the case of the MÍ and BI pronouns, and Nordlinger and Sadler (2004a, 2004b) adopt the analysis of these forms as tensed pronouns in their discussion of nominal tense. Nordlinger and Sadler observe that it can be difficult to distinguish tensed pronoun forms from verbal auxiliaries with pronominal agreement marking, and point out that an analysis of such forms as tensed pronouns is best motivated for languages in which the relevant forms bear case, appear in multiple positions within the clause, and/or bear a grammatical function other than subject. In Yąg Dii, however, these forms cooccur with full pronominal and nonpronominal subject forms, always appear after the full subject phrase and before the verb, and do not bear case, suggesting that they are best analysed as verbal auxiliaries and not as tensed pronouns. Specifically, if we assume that clauses are best analysed as of category IP, these verbal auxiliary forms are of category I and head the IP phrase. In functional terms, the forms contribute tense and/or mood information at the clausal level as well as a pronominal subject with the binding properties appropriate to each type of pronoun.

A related issue is whether third person verbal auxiliaries must always be treated as contributing an incorporated third person pronoun; if they are, free pronominal and non-pronominal third person subjects must be treated as topics or appositions to such incorporated third person subject pronouns.[7] This corresponds to the distinction between what Bresnan and Mchombo (1987) call *anaphoric agreement*, involving an anaphoric relation between a topic or appositional phrase and an incorporated pronominal subject, and *grammatical agreement*. In their exploration of grammatical vs. anaphoric agreement in Chicheŵa, Bresnan and Mchombo (1987) demonstrate convincingly that the Chicheŵa third person object agreement morpheme is best treated as an incorporated pronoun (anaphoric agreement), while the subject

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[7]Thanks to Lee Bohnhoff for extensive discussion of this issue, and for important observations about differences between grammatical and anaphoric agreement in first and second vs. third person forms.

agreement morpheme is ambiguously used for grammatical and anaphoric agreement. Austin and Bresnan (1996) provide a thorough discussion of grammatical and anaphoric agreement from a crosslinguistic perspective, demonstrating the necessity of treating many agreement morphemes as ambiguous between grammatical and anaphoric agreement.

In fact, the treatment of third person forms as anaphoric or grammatical agreement in the presence of a full noun phrase subject does not affect the analysis of the binding patterns we examine here, since bound pronouns do not cooccur with an overt full subject phrase in the clause. Hence, for clarity and consistency with Bohnhoff's presentation of examples, we assume that all verbal auxiliaries contain incorporated subject pronouns which may show anaphoric agreement with other nominal phrases in the sentence. However, further research may reveal that the correct analysis of Yǎg Dii third person forms involves ambiguity between grammatical and anaphoric agreement (as in Chicheŵa), if evidence is found that full third person noun phrases behave as subjects and not appositions in Yǎg Dii.

## 3 Nonlogophoric pronouns

The nonlogophoric pronouns MÍ and ÀN̄ are distinguished in terms of the syntactic environments in which they must appear: roughly, ÀN̄ pronouns appear in imperatives and in most types of subordinate clauses, while MÍ pronouns appear elsewhere, in non-imperative main clauses and in some types of subordinate clauses. They do not differ in binding requirements: neither MÍ pronouns nor ÀN̄ pronouns require a binder, and both are antilogophoric when appearing in the grammaticised logophoric domain.

A partial paradigm for the MÍ and ÀN̄ nonlogophoric pronominal forms is given in Table 2. The discontinuous 1INCL.PL forms (e.g. *ba…ví*) can be interrupted by the verbal complex (the verb or series of serial verbs and any object pronouns). There are additional emphatic and possessive MÍ forms not listed here, as well as portmanteau forms of the verbal auxiliaries incorporating a complementizer; see Bohnhoff (1986, 2010) for the full paradigms. There are no nonsubject ÀN̄ forms. For present purposes, it is sufficient to distinguish the members of the MÍ and ÀN̄ series listed in Table 2, and in fact we will mainly be concerned with the four-way distinction in distribution involving the subject MÍ, ÀN̄, BI, and ÌI forms.

In examples (23)–(26), the MÍ subject, object, and possessive pronouns are used:

(23)  Subject and object in independent declarative clause:

**Mí**  hò̩  **ví**            'ú.
**I.MÍ**  see  **you.PL.MÍ**  CM

'I see you.'                                                                    (Bohnhoff 1986, 110)

(24)  Subject and possessor in independent declarative clause:

**Mí**  hò̩  lig    **móó**      sú'ú.
**I.MÍ**  see  house  **your.SG.MÍ**  already

'I saw your house already.'                                          (Bohnhoff 1986, 110)

**Table 2** MÍ and ÀŃ pronominal forms (Bohnhoff [1986], [2010])

MÍ and ÀŃ verbal auxiliaries:

|  | unmarked MÍ | nonfuture MÍ | future MÍ | main clause unmarked ÀŃ | subordinate unmarked ÀŃ |
|---|---|---|---|---|---|
| 1SG | -ń/mí | mín | míń | àn | |
| 1INCL.DU | -a/ba | baǹ | báń | ba | àa |
| 2SG | -ḿ/mɔ́ | mɔ́n | mɔ́ń | àm̀ | |
| 3SG | Ø | | wúń, síń, síˊ, ɑ́ń | à | |
| 1EXCL.PL | vɔ́ | vɔ́n | vɔ́ń | òo | |
| 1INCL.PL | ba...ví | baǹ...ví | báń...ví | ba...ví | àa...ví |
| 2PL | ví | vín | víń | ì | |
| 3PL | vʉ | vʉǹ | vúń | ùu | |

MÍ free pronoun and affix (non-auxiliary) forms:

|  | MÍ emphatic, non-kinship poss | MÍ obj | MÍ final, emphatic | MÍ kinship poss |
|---|---|---|---|---|
| 1SG | míí | -n/mí | mí | -n |
| 1INCL.DU | bàà | ba | | bà |
| 2SG | móó | -m/mɔ́ | mɔ́ | -m |
| 3SG | wòò | -wʉ | wʉ | -gà |
| 1EXCL.PL | vóó | vɔ́ | | |
| 1INCL.PL | bàà ví | ba ví | | bà ví |
| 2PL | víí | ví | | |
| 3PL | vòò | vʉ | | vʉ̀/-y |

(25)   Subject of indirect quotation:

... bà   **mɔ́**   làà kaalíˊ.
that **you.MÍ** go  town.to

'... that you go to town'                                         (Bohnhoff [1986], 107)

In contrast, examples ([26]) and ([27]) require ÀŃ subject pronouns (there are no ÀŃ nonsubject pronouns).

(26)   Imperative:

**'Ạ̀m̀**   làà kaalíˊ!
**you.ÀŃ** go  town.to

'Go to town!'                                                       (Bohnhoff [2010], 98)

(27)   Temporal/locative/conditional subordinate clause:

Tòẁ/sè'èy/ya **'ạ̀m̀**   làà kaalíˊ   tée...
if/when/where **you.ÀŃ** go  town.to DEM

'If/when/where you go to town...'                              (Bohnhoff [1986], 108)

MÍ and ÀŃ subject forms appear in the environments listed in Table [3]: ÀŃ pronouns are required as the subject of imperatives and many types of subordinate clauses, while MÍ pronouns appear elsewhere. Beyond these tendencies, there does not seem to be any unifying synchronic generalization governing the environments in which

**Table 3** Distribution of Mí and ÀŃ subject forms (Bohnhoff 2010, 89)

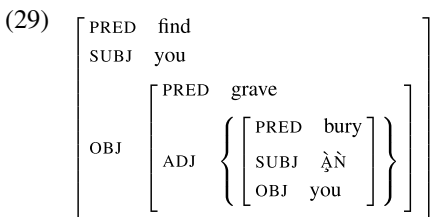|  | Main clauses | Subordinate clauses |
|---|---|---|
| Mí | Declarative | Indirect quotation, comparison clauses, causal adjuncts introduced by *moo*, manner adjuncts, 'until' adjuncts |
| ÀŃ | Imperative | Indirect order, relative clause, temporal/locative/conditional adjunct, desiderative clause, affirmative purpose clause, concessive clause, causal adjunct introduced by *ka* or *bà* |

either form appears; clauses requiring ÀŃ subjects must simply be marked as such in the synchronic grammar.

The set of clauses requiring ÀŃ subjects do not share properties of subordination, tense, mood, morphological marking, grammatical role, or binding relations involving the subject of the clause. First, the distinction between Mí-clauses and ÀŃ-clauses cannot be defined in terms of subordination: though the ÀŃ-clause is often a subordinate clause, the ÀŃ form is required as the main clause subject in imperatives, as shown in example (26). Second, there are no special tense, mood, or morphological attributes which distinguish ÀŃ from Mí clauses. Third, the Mí/ÀŃ distinction does not correspond to the argument/adjunct distinction: both Mí and ÀŃ can be subjects of complement clauses (indirect quotations for Mí, indirect orders for ÀŃ) as well as adjunct clauses (for example, comparison clauses and manner adjuncts for Mí, relative clauses and causal adjuncts for ÀŃ).

Fourth, the choice between Mí and ÀŃ forms does not depend on binding relations with other elements in the sentence. Both Mí and ÀŃ are antilogophoric, and may not be bound by the logophoric antecedent within the logophoric domain. In nonlogophoric domains, ÀŃ forms may appear with or without a binder in the same sentence, and with or without a binder in the immediately higher clause. In (28), the subject of the relative clause is an ÀŃ pronoun, and there is no other phrase coreferent with it in the sentence:

(28)  Mɔ́ nùŋ sí        [ bɛ́ɛ́g  [ **ùu**      dɔ̀-m-mʉ-lí      máa]] sʉ́'ʉ́.
       You find DECL.PERF  grave$_i$  **they.ÀŃ** bury-you-there$_i$-in DEM  DECL.PERF

       'You've already found the grave where they will bury you.'

(Bohnhoff 2010, 284)

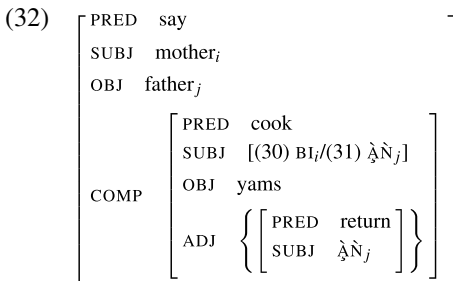The grammatical structure of example (28) is shown in (29):

(29)
$$
\begin{bmatrix}
\text{PRED} & \text{find} \\
\text{SUBJ} & \text{you} \\
\text{OBJ} & \begin{bmatrix}
\text{PRED} & \text{grave} \\
\text{ADJ} & \left\{ \begin{bmatrix}
\text{PRED} & \text{bury} \\
\text{SUBJ} & \text{ÀŃ} \\
\text{OBJ} & \text{you}
\end{bmatrix} \right\}
\end{bmatrix}
\end{bmatrix}
$$

In (30), the ʌ̀Ǹ form appears as the subject of an adjunct clause within the clausal complement of the main verb *say*. In this example, ʌ̀Ǹ does not have a binder in the immediately higher clause, though it is coreferent with an argument in the main clause:

(30)  Nà'á    Ø      'ọd bà'á   [[ sè'èy bà  **'à**    fíí    ya    babbɨ́
      Mother$_i$ (she$_i$) tells Father$_j$   time  that **he.ʌ̀Ǹ**$_j$ returns comes field.from
      tée]   bà   bíń́  dàà  dɨbbɨ̀].
      then] that she$_i$ cook yam.CM

      'Mother$_i$ tells Father$_j$ that when he$_j$ returns from the field, she$_i$ will cook the
      yams.'                           (corrected version of Bohnhoff 1986, 122)

Example (31) is structurally similar to (30), but the coreference relations are different. The ʌ̀Ǹ subject of the most embedded verb, *return*, corefers with the ʌ̀Ǹ subject of *cook* in the immediately higher clause as well as with a nonsubject in the main clause:

(31)  Nà'á    Ø      'ọd bà'á   [[ sè'èy bà  **'à**    fíí    ya    babbɨ́
      Mother$_i$ (she$_i$) tells Father$_j$   time  that **he.ʌ̀Ǹ**$_j$ returns comes field.from
      tée]   bà   'à     dàà  dɨbbɨ̀].
      then] that he.ʌ̀Ǹ$_j$ cook yam.CM

      'Mother$_i$ tells Father$_j$ that when he$_j$ returns from the field, he$_j$ should cook
      the yams.'                        (corrected version of Bohnhoff 1986, 122)

The grammatical structure of examples (30) and (31) is shown in (32):

(32)  ⎡ PRED   say                                              ⎤
      ⎢ SUBJ   mother$_i$                                       ⎥
      ⎢ OBJ    father$_j$                                       ⎥
      ⎢                                                         ⎥
      ⎢               ⎡ PRED   cook                   ⎤         ⎥
      ⎢               ⎢ SUBJ   [(30) BI$_i$/(31) ʌ̀Ǹ$_j$] ⎥      ⎥
      ⎢       COMP    ⎢ OBJ    yams                   ⎥         ⎥
      ⎢               ⎢                                ⎥        ⎥
      ⎢               ⎢ ADJ    { ⎡ PRED   return ⎤ }   ⎥        ⎥
      ⎢               ⎣         { ⎣ SUBJ   ʌ̀Ǹ$_j$  ⎦ }  ⎦        ⎥
      ⎣                                                         ⎦

In examples (30) and (31), the ʌ̀Ǹ pronoun precedes the subject of the immediately higher clause, and may but need not be bound by it. The same is true if the order is reversed: in examples (33) and (34), the ʌ̀Ǹ pronoun follows the subject of the immediately higher clause, and coreference is allowed but not required. Coreference with the immediately higher subject obtains in example (33), in which the ʌ̀Ǹ pronoun is the subject of a relative clause. In contrast, in example (34) the ʌ̀Ǹ pronoun is the subject of a subordinate desiderative clause, and does not corefer with the subject of the main clause.

(33)  Bʌ̀bʌ̀am Ø      gàan     [ hẹn [ **à**    kɔ́n    né]].
      Rabbit$_i$ he.Mɨ́$_i$ knows.NEG   thing  **he.ʌ̀Ǹ**$_i$ does.NEG CM.NEG

      'Rabbit doesn't know what to do.'           (Bohnhoff 2010, 285)

(34) Nà'á      Ø        hɨ́ɨ́  [ bà'á   **à**      gbɔ́ bi   sá].
     Mother$_i$ she.MÍ$_i$ want father$_j$ **he.ÀŃ$_j$** hit her.BI$_i$ not
     'Mother$_i$ wants father$_j$ not to hit her$_i$.'          (Bohnhoff 2010, 102)

Thus, ÀŃ can appear with no binder, or with a binder in the same sentence, which may but need not be in the immediately higher clause.

The MÍ/ÀŃ distinction might be thought of as similar to a specialised case-marking requirement for ÀŃ subjects of a certain class of clauses. This is reminiscent of the requirement for genitive subjects of nominalised subordinate clauses in some languages; Givón (2009) provides the following examples of this pattern from Ute (Numic, Uto-Aztecan):

(35)   Finite main clause:

       ta'wach    yoghovʉch-i pakha-qa-'u.
       man.SUBJ coyote-OBJ   kill-PERF-he/him

       'The man killed the coyote.'

(36)   Subordinate clause:

       mamach      pucucugwa-pʉga [ ta'wach-i yoghovʉch-i pakha-pʉga-na-y].
       woman.SUBJ know-REM          man-GEN coyote-OBJ   kill-REM-NOM-OBJ

       'The woman knew that the man (had) killed the coyote.'

                                                          (Ute; Givón 2009, 89)

However, this explanation does not extend to Yạg Dii, since there is no morphological evidence that ÀŃ-clauses are nominalized, or that ÀŃ pronouns are genitive: the Yạg Dii possessive pronoun paradigm is distinct from the subject MÍ and ÀŃ paradigms, as shown in Table 2.

## 4 BI pronouns

According to what Bohnhoff (1986, 112) calls the *reference condition*, BI pronouns appear at any depth of embedding within a restricted set of subordinate clauses, the grammaticised logophoric domain or BI domain, labelled *S*2 in Sect. 1. Within the BI domain, BI pronouns must be bound by the 'logophoric antecedent', the grammatical subject of the clause immediately containing the BI domain; if noncoreference with the logophoric antecedent is intended, the corresponding MÍ or ÀŃ pronoun is used instead.

Table 4 presents the unmarked, nonfuture, and future forms of the logophoric BI series, and provides a comparison of nonlogophoric MÍ and logophoric BI non-auxiliary forms. The MÍ, ÀŃ, and BI pronouns can all appear as subjects in the BI domain, and MÍ and BI pronouns can appear as nonsubjects. See Bohnhoff (1986, 2010) for the complete paradigm for the BI series, including emphatic forms.

Within the BI domain *S*2, the BI pronoun is used when coreference with the logophoric antecedent is intended; when noncoreference is intended, the nonlogophoric MÍ or ÀŃ forms must be used. In (37), the BI domain is the subordinate clause *they go to town*, and the antecedent of BI is the subject of the matrix verb *want*:

**Table 4**  MÍ and BI pronominal forms (Bohnhoff [1986], [2010])

BI verbal auxiliaries:

|  | unmarked BI | nonfuture BI | future BI |
|---|---|---|---|
| 1SG | bi | biǹ | bíń |
| 1INCL.DU | | baǹ | báń |
| 2SG | | biǹ | bíń |
| 3SG | | | bíń |
| 1EXCL.PL | | | vɔ́ń |
| 1INCL.PL | | | báń...ví |
| 2PL | | | bíń |
| 3PL | | | |

MÍ and BI full pronoun and affix (non-auxiliary) forms:

|  | MÍ emphatic, non-kinship poss | BI emphatic, non-kinship poss | MÍ obj | BI obj | MÍ kinship poss | BI kinship poss |
|---|---|---|---|---|---|---|
| 1SG | míí | | -n/mí | | -n | |
| 1INCL.DU | bàà | | ba | | bà | |
| 2SG | móó | bìì | -m/mɔ́ | bi | -m | bì |
| 3SG | wòò | | -wʉ | | -gà | |
| 1EXCL.PL | vóó | | vɔ́ | | vɔ́ | |
| 1INCL.PL | bàà ví | | ba ví | | bà ví | |
| 2PL | víí | víí/bìì | ví | bi | ví | |
| 3PL | vòò | vòò/bìì | vʉ | | vʉ̀/-y | bì/vʉ |

(37)  Vʉ    hɨ́ɨ́  [ **bi**    làà kaalɨ́ ].

they.MÍ$_i$ want  **they.BI$_i$** go  town.to

'They want to go to town.'                 (corrected version of Bohnhoff [1986], 113)

In example (38), coreference between the matrix and complement subject is not intended, and the BI pronoun cannot be used. Since the subordinate clause is an indirect order, which is an ʌ̀Ǹ-type clause, the ʌ̀Ǹ pronoun is used:

(38)  Vʉ    hɨ́ɨ́  [ **'ʉ̀ʉ**    làà kaalɨ́ ].

they.MÍ$_i$ want  **they.ʌ̀Ǹ$_{*i,j}$** go  town.to

'They want others to go to town.'                 (Bohnhoff [1986], 114)

Thus, in a BI domain, use of a nonlogophoric pronoun produces an antilogophoric effect: here, the ʌ̀Ǹ pronoun may not corefer with the logophoric antecedent. The antilogophoric effect holds only within the BI domain, and only relative to the BI antecedent; the ʌ̀Ǹ pronoun may in general be used in a subordinate clause to corefer with the immediately higher subject, as long as noncoreference with the logophoric antecedent is maintained. The antilogophoric effect is shown in example (31), whose grammatical structure is shown in (32).

The BI domain is triggered by clauses of various types: indirect quotations, indirect orders, subordinate desiderative clauses, affirmative purpose clauses, and causal adjuncts introduced by *ka* or *bà*. Some of these are typical domains associated with

logophoricity, but in fact a purely semantic or pragmatic characterisation of binding requirements for BI is not possible. Culy (1997) discusses the extension of logophoric marking from standard logophoric complements to adjuncts such as purpose clauses and causal clauses, and proposes that this is the result of grammaticisation of an original logophoric system (see also Hyman and Comrie 1981); this seems to be the case for Yạg Dii. Thus, as with ạ̀Ǹ-clauses, the BI domain must be syntactically marked as such, and cannot be defined in purely semantic terms. We discuss morphosyntactic commonalities in different types of BI domains below.

There are several pieces of evidence that Yạg Dii exhibits grammaticised logophoricity, and that neither the BI domain nor the antecedent of BI can be defined in purely semantic terms. First, the antecedent of a true logophoric pronoun is the individual "whose speech, thoughts, feelings, or general state of consciousness are reported" (Clements 1975; see also Sells 1987): the antecedent is identified through semantic and pragmatic means, not syntactically. In Yạg Dii, however, the antecedent of a BI pronoun must be a subject, and nonsubject antecedents are not permitted. This is also the case in other partially grammaticised logophoric systems, including Icelandic (Sells 1987; Bresnan 2001).

Second, Schlenker (2003) observes that "a logophoric element should not be allowed to denote the speaker of the actual speech act", meaning that there should be no first person forms of true logophoric pronouns. As seen in Table 4, however, BI pronouns instantiate the full pronominal paradigm, including first person forms.

Third, typical logophoric domains encode reported speech, thought, or perception, but the BI domain includes additional types of subordinate clauses such as purpose clauses or causal constructions (see Culy 1997, for discussion of similar patterns in other grammaticised logophoric systems). Indeed, not all causal constructions trigger a BI domain, but only those that are marked by particular complementizers: causal constructions introduced by *ka/bà* constitute a BI domain (example (42)), while causal constructions with *moo*, as in example (39), do not:

(39)  Cause with *moo*:

Vʉ           yaa    bi     mà"ọ    lùù    'ú, [ moo    **vʉ**           'ọ̀  bà
they.MÍ$_i$  come,  they.BI$_i$  grab.him$_j$  leave  CM,  because  **they.MÍ**$_i$  say that.he$_j$
yạŋŋè].
crazy.CM

'They$_i$ came to take him$_j$ away, because they$_i$ said that he$_j$'s crazy.'

(Bohnhoff 1986, 115–116)

The MÍ pronoun is used as the subject of the subordinate clause *because they said that he's crazy* because this is neither a BI domain nor a ạ̀Ǹ-clause: only causal constructions with *ka/bà* allow BI or ạ̀Ǹ pronouns, not causal constructions with *moo*.

There is an interesting overlap between the BI domain and clauses that require ạ̀Ǹ subjects. As shown by the contrast between examples (37) and (38), certain clauses require ạ̀Ǹ subjects and also constitute a BI domain: in subject position of such clauses, the BI pronoun is used for coreference with the matrix subject, while the antilogophoric properties of the ạ̀Ǹ pronoun require noncoreference. The different clause types are summarized in Table 5.

**Table 5** Inventory of clauses requiring ʌ̀Ǹ subjects and clauses constituting a BI domain

| | |
|---|---|
| Requires ʌ̀Ǹ subject, does not trigger BI domain | Temporal/locative/conditional clause, relative clause, concessive clause |
| Requires ʌ̀Ǹ subject, triggers BI domain | Indirect order, purpose clause, subordinate desiderative, causal adjunct introduced by *ka* or *bà* |
| Requires Mɪ́ subject, triggers BI domain | Indirect quotation |

Bohnhoff provides example (40) to show that the BI pronoun must be bound by the *closest* eligible binder. The verbs *say* and *tell* both introduce a BI domain, since their complements are indirect quotations. However, example (40) is not ambiguous; the antecedent of the BI pronoun must be Moses, the closest eligible BI antecedent, and not Mother:[8]

(40) Nà'á    Ø    'ǫd bà'á  [ Múúsà bà  Ø    'ǫ̀  [ bà  **bìǹ**    hį́́
     Mother$_i$ (she$_i$) tells Father   Moses$_j$ that (he$_j$) says   that **he.BI**$_{j,*i}$ wants
     làǎlɪ́ kaalɪ́ ]].
     to.go town.to

     'Mother$_i$ tells Father that Moses$_j$ says that *she$_i$/he$_j$ wants to go to town.'
                                                                    (Bohnhoff 1986, 118)

In example (41), the first person feature of the closest logophoric antecedent does not match the third person feature of the BI pronoun, and the result is ungrammaticality:

(41) *Nà'á    Ø    'ǫd bà'á  [ bà  mí 'ǫ̀  [ bà  **bìǹ**    hį́́    làǎlɪ́ kaalɪ́ ]].
      Mother$_i$ (she$_i$) tells Father   that I    say   that **she.BI**$_i$ wants to.go town.to
     'Mother$_i$ tells Father that I say that she$_i$ wants to go to town.'

                                                                    (L. Bohnhoff, p.c.)

Unlike the ʌ̀Ǹ pronoun, whose appearance is restricted to subject position, the BI pronoun may appear as a subject, object, or possessor within the BI domain. In example (42), the object of the subordinate verb *refuses* is a BI pronoun whose antecedent is the subject of the matrix verb *attack*:

(42) Yǫ̀ǫb         vʉ    kɔ́  'à'á       [ bà         háŋ́
     ancestor.spirits$_i$ they.Mɪ́$_i$ attack grandmother$_j$   because.she$_j$ refuses
     **bi**      nannè].
     **them.BI**$_i$ food

     'Ancestor spirits$_i$, they$_i$ attack grandmother$_j$ because she$_j$ refuses them$_i$
     food.'                                                    (Bohnhoff 1986, 115)

In example (43), both the subordinate subject and the possessor of the object are BI pronouns:

---

[8]Example (40) also shows that the clause containing the logophoric domain, *S*1 in Sect. 1, can itself be embedded.

(43)   Vʉ      hɨ́ɨ́   [ **bi**      mbàà kan yúú **bìì**      nu].
       they.MÍ$_i$ want  **they.BI$_i$** sit    with head **their.BI$_i$** CM

       'They$_i$ want to sit with their$_i$ head.' (= 'They want to be independent.')

                                                                    (Bohnhoff 1986, 116)

Morphosyntactically, the BI domain is usually marked either by the subordinator/complementiser *bà* or by the presence of a particular lexical predicate in the immediately higher clause; Culy (1997) discusses the importance of marking by particular complementisers in defining the logophoric domain in many languages. Subordinate affirmative purpose clauses seem to constitute an exception to this generalisation, since they do not contain special marking to indicate the BI domain, and need not appear with a particular predicate in the immediately higher clause; these may be positionally encoded.

(44)   Subordinate purpose clause:

       Bà'á    Ø     nə'əy hághá [ **bi**      hɔ̀  púggɩ̀].
       Father$_i$ (he$_i$) bends down   **he.BI$_i$** sees animal.CM

       'Father bends down to see the animal.'

                                                       (corrected version of Bohnhoff 1986, 114)

Example (37) contains a subordinate desiderative clause, signaled by the presence of the verb 'want' in the matrix clause. Example (42) contains a causal adjunct with the subordinator/complementiser *bà*. Indirect quotations are also introduced by *bà*:

(45)   Indirect quotation:

       Bà'á    Ø     'ɔ̀   [ bà **bɨ́ń**    làà kɔ̀ddɨ́ ].
       Father$_i$ (he$_i$) says   that **he.BI$_i$** go forest.to

       'Father$_i$ says that he$_i$ will go to the forest.'

                                                       (corrected version of Bohnhoff 1986, 114)

In fact, indirect discourse may consist of a number of clauses, as in (46):

(46)   … vʉ   ɔd   Yésù: "Bà'á, ɨ́      nii    vóó Ø   ba' vɔ́ ya,   moo òo
       they say.to Jesus: Sir,   the.one elder$_i$ our (he$_i$) send us come, so    we
       ɔd   ví biì     màan    bà vín dɔ́n kɨ́i  bììlí    ní.
       say.to you that.he.BI$_i$ is.worthy that you enter house his.BI$_i$.in NEG.

       Moo wòò nɔ  mà, biì      yaan    kan fɔ́ɔ̀ bìì    ní  yɛ̀ nɔ.
       for   that CM then that.he.BI$_i$ come.NEG with body his.BI$_i$ NEG here CM

       Ạmáa bà  ì    ɔ̀   moo yɘ̀ŋ  dágá sɪ̀', nán bìì    yɛ̀ bàn  zɑ̀ɑ̀  ɔ́.
       but    that you say word cheek one   only man his.BI$_i$ this that.he heals CM

       Moo bi   ạ́ń, bà biì    kid   ɨ́      nii  bìì    vʉ tɔ́ggʉ́, bà biì
       for   he.BI$_i$ too, that he.BI$_i$ hear.to the.one elder his.BI$_i$ PL ear.CM that he.BI$_i$
       dɨ    kan sɔ́ɔ́zè bìì     bà kʉʉ kid bi    tɔ́g máa vʉ ạ́ń.
       is.there with soldier his.BI$_i$ that they hear him.BI$_i$ ear this PL too

Bà ìi ǫd dágá: 'Àm̀ làà ú' tée, bàn làà.
that if.he.ìi[i] say.to one:   You go CM if,  that.he go

Bà ìi ǫd tóó:  'Àm yaa ú' tée, bàn yaa.
that if.he.ìi[i] say.to another: You come CM if,  that.he come

Bà ìi ǫd nán ba'ad bìì:  'Àm̀ kɔ́ hẹn yẹ nɔ' tée, bàn
that if.he.ìi[i] say.to man work his.BI[i]: You do thing this CM then that.he
kɔ́ ú."
do CM

'…they say to Jesus: "Sir, our elder[i] has sent us to you, to say to you that
he[i] isn't worthy for you to enter his[i] house. That's why he[i] hasn't come here
himself[i]. But even if you simply say a single word, his[i] worker will be healed.
For he[i] too (says) that he[i] takes orders from his[i] superiors; that he[i] has his[i]
soldiers that take orders from him[i], too. That if he[i] says to one: 'Go!', then he
will go. That if he[i] says to another: 'Come!', he will come. That if he[i] says to
his[i] worker, 'Do this!', he will do it." '

(L. Bohnhoff, p.c., translation of Luke 7:6b–8)

Each clause in these multi-clause indirect discourse segments is marked with the sub-
ordinator/complementiser *bà*, thus conforming to the syntactic criteria defining a BI
domain, and contains a BI pronoun that is coreferent with the logophoric antecedent
'our elder'. Bresnan (2001) provides an extensive discussion of binding of logophoric
pronouns and partially or completely grammaticised logophoric systems in Icelandic,
Ewe, Latin, and other languages, noting that even in languages with grammaticised
logophoricity, logophoric pronouns can often appear in extended indirect discourse,
as in the Yǎg Dii example (46). Following Bohnhoff (2010, 209), we analyse these
examples as subordination to an unpronounced main clause predicate, with only the
subordinate BI domain realised. An alternative analysis might treat these in terms of
a morphologically marked main-clause BI domain interpreted as indirect discourse
(see Dimmendaal 2001 for more discussion). For uniformity, and in the absence of
evidence that the conditions governing these multi-clause examples are different from
the other examples, we assume that subordination is involved, with an unpronounced
main-clause predicate. In either case, with the presence of the complementizer *bà*,
the syntactic criteria defining the BI domain are met in these cases as well, even in
the absence of an explicit main clause predicate.

## 5 Subordinate clause logophoric pronouns: ìi

Our primary interest is a fourth series of pronouns which we label ìi, shown in Ta-
ble 6 and characterised above as the "exclusively long-distance" series. Like the BI
series, ìi pronouns cannot be used deictically: they appear in the BI domain and must
corefer with the logophoric antecedent. In some contexts, in fact, either the BI or the
ìi pronoun may appear: "Initial concessive and cause clauses for many speakers sim-
ply retain the BI forms, although some examples of ìi may also be heard" (Bohnhoff
1986, 121). However, ìi pronouns are unlike BI pronouns in that they must appear

**Table 6** Subject pronouns of all four pronoun types (Bohnhoff 1986, 2010)

|  | MÍ | ÀŃ | ÌI | FAR PAST MARKER ka + ÌI | BI |
|---|---|---|---|---|---|
| 1.SG | -ń/mí | ʾà̰n | | káń | |
| 1INCL.DU | -a/ba | ba | ʾàa | kaa | |
| 2.SG | -m̀/mɔ́ | ʾàm̰ | ʾìi | kii | bi |
| 3.SG | ∅ | ʾà | | | |
| 1EXCL.PL | vɔ́ | ʾòo | | kɔ́ɔ́ | |
| 1INCL.PL | ba...ví | ʾàa...ví | kaa...ví | | |
| 2PL | ví | ʾì | ʾìi | kii | |
| 3PL | vʉ | ʾùu | | | |

as the subject of an embedded clause (*S*3) within the logophoric domain (*S*2), and must corefer with the logophoric antecedent (the subject of *S*1), at least two clauses distant. Further, as shown in examples (8) and (10), the ÌI pronoun neither requires nor disallows a coreferential pronoun in the intervening clause in the BI domain; ÌI ignores potential binders in *S*2, requiring the subject of *S*1 as its binder. ÌI is, then, an exceptionally long-distance anaphor, whose binding conditions seem to be exclusively nonlocal.

Besides sharing binding properties with BI, the ÌI series is also similar in distribution and, in some cases, in morphological shape to the ÀŃ series; indeed, Bohnhoff (1986, 123) states that "in the same way that ÀŃ subjects are used instead of MÍ subjects in certain clauses, so ÌI subjects occur instead of BI subjects in (some of) those same grammatical contexts". Both ÌI and ÀŃ pronouns are used only in subject position of certain subordinate clauses within the BI domain; there are no ÌI object or possessive pronouns. The subordinate environments in which the ÀŃ series must appear were given in Table 3 and are repeated here:

(47) Subordinate clauses with ÀŃ subjects: indirect order, temporal/locative/ conditional adjunct, concessive clause, affirmative purpose clause, causal adjunct introduced by *ka* or *bà*, relative clause, desiderative clause
(Bohnhoff 2010, 89)

A very similar list of subordinate clauses require ÌI subjects within the logophoric domain: ÌI pronouns are attested as the subject of an indirect order (example (16)), in temporal/locative/conditional adjunct clauses (examples (10) and (48)), concessive clauses (example (8)), affirmative purpose clauses, causal adjuncts, and relative clauses (example (2)).

(48) *S*1[ ∅ ʾǫ̀ *S*2[ *S*3[ sè'èy bà **'ìi** là fíí ya babbɨ́ tée]
(she*i*) says time that **she.ÌI***i* goes returns comes field.from when,
bà bíń dɔ̀ɔ̀ gbɔkìì].
that she.BI*i*.FUT cook pigeon

'*S*1[She*i* said that *S*2[*S*3[when **she.ÌI***i* returned from the field], she.BI*i* would cook the pigeon]].' (Bohnhoff 1986, 121)

Given this, it is tempting to analyse ÌI as just the logophoric version of ÀŃ: ÌI pronouns appear in subject position of (most) ÀŃ clauses, just like ÀŃ pronouns, and are bound by the logophoric antecedent, just like BI pronouns. This seems to give

the correct result in many cases. However, examination of cases of overlap between the ÀṄ and BI domains, shown in Table 5, reveals problems with this proposal. The complement of the verb *want* is an indirect order: indirect orders require ÀṄ subjects, and are also a BI domain. ÀṄ pronouns (ex. (49a)) as well as logophoric BI pronouns (ex. (49b)) appear in this domain. If Ìɪ were simply required to appear in a ÀṄ clause and to be bound by the logophoric antecedent, we would expect the Ìɪ pronoun and not the BI pronoun in this environment. This is not possible, however, as shown by the ungrammaticality of (49c). In contrast, if the logophoric antecedent is sufficiently far away, the Ìɪ pronoun is acceptable as the subject of a purpose clause, as shown in (49d).

(49) a. ÀṄ:

   Vʉ  híí [ **'ùʉ**  làà kaalɨ́ ].
   they.MÍ$_i$ want **they.ÀṄ$_j$** go town.to

   'They$_i$ want that **they**$_j$ go to town.'  (Bohnhoff 1986, 114)

 b. BI:

   Vʉ  híí [ **bi**  làà kaalɨ́ ].
   they.MÍ$_i$ want **they.BI$_i$** go town.to

   'They$_i$ want that **they**$_i$ go to town.'

           (corrected version of Bohnhoff 1986, 113)

 c. Ìɪ, logophoric antecedent too close:

   *Vʉ  híí [ **'ìi**  làà kaalɨ́ ].
   they.MÍ$_i$ want **they.Ìɪ$_i$** go town.to

   ('They$_i$ want that **they**$_i$ go to town.')  (L. Bohnhoff, p.c.)

 d. Ìɪ, logophoric antecedent sufficiently distant:

   Gbanàà vʉ vì [ waa pèè [ bà  híí [ **ìi**  pʉ́-gʉ èná?]]]
   Chief they$_i$ ask child$_j$ recall that.she$_j$ want **he.Ìɪ$_i$** give-her$_j$ what.Q

   'The chief$_i$ asks that child$_j$ what she$_j$ wants that **he.Ìɪ$_i$** give her$_j$?'
           (L. Bohnhoff, p.c.)

The Ìɪ pronoun is similarly unacceptable in examples (50c) and (51c), where Ìɪ is in a BI domain and is the subject of an ÀṄ clause, since there is no antecedent for Ìɪ that is sufficiently far away in these cases:

(50) a. ÀṄ:

   Nà'á Ø  od bà'á [ bà **à**  dɔ̀ɔ̀ dʉbbì].
   Mother$_i$ (she$_i$) tells Father$_j$ that **he.ÀṄ$_j$** cook yam.CM

   'Mother$_i$ tells Father$_j$ that **he**$_j$ will cook the yams.' (L. Bohnhoff, p.c.)

 b. BI:

   Nà'á Ø  od bà'á [ bà **bíń** dɔ̀ɔ̀ dʉbbì].
   Mother$_i$ (she$_i$) tells Father$_j$ that **she.BI$_i$** cook yam.CM

   'Mother$_i$ tells Father$_j$ that **she**$_i$ will cook the yams.'

           (L. Bohnhoff, p.c.)

c. Ìɪ, logophoric antecedent too close:

*Nà'á    Ø      ọd bà'á    [ bà  **ìi**      dɔ̀ɔ̀ dʉbbì].
Mother$_i$ (she$_i$) tells Father$_j$    that **she.Ìɪ**$_i$ cook yam.CM

('Mother$_i$ tells Father$_j$ that **she**$_i$ will cook the yams.')

(L. Bohnhoff, p.c.)

(51)  a. ÀṄ:

Bàbàạm Ø     sɔ̀    kóọ́ … moo kẹ́ẹ́ bìì     [ bà  **à**
Rabbit$_i$ (he$_i$) skins skin    for  wife$_j$ his.Bɪ$_i$   that **she.ÀṄ**$_j$
gàgan        waa wʉ-lí].
carry-together child it-in

'Rabbit skins out the hide for his wife$_j$…so that **she**$_j$ can carry her child
in it.'                                                       (Bohnhoff 2010, 121)

b. Bɪ:

Bà'á    Ø      nə'əy hághá [ **bi**    họ̀  púggì].
Father$_i$ (he$_i$) bends down    **he.Bɪ**$_i$ sees animal.CM

'Father$_i$ bends down so that **he**$_i$ sees the animal.'
(corrected version of Bohnhoff 1986, 114)

c. Ìɪ, logophoric antecedent too close:

*Bà'á    Ø      nə'əy hághá [ **'ìi**    họ̀  púggì].
Father$_i$ (he$_i$) bends down    **he.Ìɪ**$_i$ sees animal.CM

('Father$_i$ bends down so that **he**$_i$ sees the animal.')    (L. Bohnhoff, p.c.)

These examples cannot be accounted for in terms of a noncoreference requirement
between the ìɪ pronoun and the next subject up, since, as shown in examples (10)
and (48), coreference between Ìɪ and the next subject up is in fact possible.

It is also not possible to get around this problem by claiming that a clause must
be either a logophoric Bɪ clause or a nonlogophoric ÀṄ clause, but not both at once.
This would lead to the prediction that Bɪ and ÀṄ pronouns cannot appear in the same
clause, but this prediction is incorrect: example (52) shows that Bɪ and ÀṄ pronouns
can appear in the same clause.

(52)  Bàbàạm Ø     vì  [ moo 'ɛ̀ǹ pɛ́ń vʉ̀ǹ     tid waa bìì   gbɔ mammé
Rabbit$_i$ (he$_i$) asks   for   what first they.Mɪ́$_j$ hold child his.Bɪ$_i$ leave water.in
máalá?] [ 'ɨ́  yɛ̀  máa, bà vʉ̀ǹ    sóó 'ʉ́] [ bà    **'ʉ̀u**    sòò
Q?        this here focus that they.Mɪ́$_j$ fake CM,   that   **they.ÀṄ**$_j$ look.for
waa **bìì**   pʉ́ **bi**    dɔ̀g  'yà̰'a̰ yɛ̀  nɔ].
child **his.Bɪ**$_i$ give **him.Bɪ**$_i$ go.up now  here CM

'Rabbit$_i$ asks why they$_j$ (Boar) held his$_i$ child and let it fall in the water? (He
says) that they$_j$ faked it, that **they.ÀṄ**$_j$ must look for **his.Bɪ**$_i$ child and give it
to **him.Bɪ**$_i$ now!'                                       (Bohnhoff 1986, 118–119)

In sum, ìɪ is an exclusively long-distance anaphor, and its antecedent must appear
at least two clauses away.

## 6 Summary: Distributions of the Yǝg Dii pronouns

The following generalisations govern the distribution of the four types of Yǝg Dii pronouns:

(53)  Mí:  can bear any grammatical function, except for subject of ʌ̀Ǹ clause; antilogophoric in BI domain

ʌ̀Ǹ:  must appear as subject of ʌ̀Ǹ clause; antilogophoric in BI domain

BI:  appears only in BI domain; can bear any grammatical function (except for some subordinate subject positions within BI domain); coreferent with logophoric antecedent

ÌI:  appears only as subordinate subject within logophoric domain; coreferent with logophoric antecedent

The status of the parenthesised portion of the condition on BI reflects the uncertainty discussed at the beginning of the previous section: in at least some clauses within the BI domain, either BI or ÌI can appear, but it is not clear whether the BI and ÌI pronouns are in free variation in all ʌ̀Ǹ-type clauses in the BI domain.

## 7 Binding in lexical functional grammar

### 7.1 Background assumptions

Lexical Functional Grammar (LFG) assumes that different aspects of the structure of sentences of natural language are represented by different formal structures which are related to one another by principles of correspondence. The constituent structure or *c-structure* represents word order, phrasal grouping, and phrasal dominance relations, and the functional structure or *f-structure* represents grammatical functions and relations such as control.

In the foregoing, we have presented abbreviated functional structures as an aid to understanding the syntactic relation between a pronoun and its antecedent. We have used the f-structure to depict these syntactic relations because it is this structure that is of crucial importance in the statement of binding relations (Dalrymple 1993; Bresnan 2001; Asudeh 2004, 2012). LFG's binding theory assumes that binding relations are properly stated in terms of functional relations such as subject and object, relations that are native to f-structure. Pronouns may require a subject as binder, for example, or may allow a binder bearing any grammatical function, so long as the structural superiority relation between a pronoun and its antecedent is met. Crosslinguistically, the domain in which a pronoun must be bound or free is also defined in terms of f-structural concepts, specifically predicate, subject, and tense. These three concepts each correspond to some syntactically or semantically "complete" entity: a saturated proposition involving a predicate and its arguments, a predication involving some property and a subject, and a temporally anchored proposition, respectively (Dalrymple 1993). We will see that binding in Yǝg Dii requires reference to an additional feature defining the logophoric domain.

Another central tenet of LFG's binding theory is that binding requirements are specified lexically rather than on a universal or language-by-language basis. This is

clear in the analysis of languages with more than one reflexive, such as Norwegian or Marathi (Dalrymple 1993): if a language has more than one reflexive, each obeying a different set of binding constraints, it is not possible to state binding constraints for reflexives for the language as a whole. As we have seen, the logophoric and nonlogophoric pronouns in Yɑ̰g Dii obey different constraints on where they can appear and where they must be bound, and so it is necessary to specify binding constraints lexically, and associate the appropriate constraints with each type of pronoun.

## 7.2 Binding in LFG

LFG provides a precise formal vocabulary for the statement of universally available binding requirements. According to LFG's binding theory, binding requirements are stated in terms of binding equations like the schematic equation shown in (54), where $\uparrow$ is the f-structure of the pronoun, $\uparrow_\sigma$ is the semantic structure corresponding to $\uparrow$, and ($\uparrow_\sigma$ ANT) refers to the antecedent of the pronoun. According to the equation in (54), the antecedent must be found within the binding domain (GF* GF$_{pro}$ $\uparrow$), and the antecedent bears the grammatical function GF$_{ant}$ within this domain:[9]

(54)   General form of binding equations:

$$(\uparrow_\sigma \text{ ANT}) = ((\quad \text{GF}^* \qquad \text{GF}_{pro} \quad \uparrow) \qquad \text{GF}_{ant} \qquad )_\sigma$$

| | DELIMITS | GRAMMATICAL | GRAMMATICAL |
|---|---|---|---|
| | BINDING | FUNCTION OF | FUNCTION OF |
| | DOMAIN | PRONOUN | ANTECEDENT |

The f-structural relation between the antecedent and the pronoun is shown in (55):

(55)
$$\begin{bmatrix} \text{GF}_{ant} & [\text{ANTECEDENT}] \\ \dots \text{GF}^* \dots & \text{GF}_{pro} \quad [\text{PRONOUN}] \end{bmatrix}$$

The outermost f-structure in (55) is the binding domain, within which both the pronoun and its binder must appear. The general form of the binding equation in (54) derives the requirement for the antecedent to command the pronoun: the antecedent must appear at the end of the singleton path GF$_{ant}$, while the pronoun appears embedded within the binding domain, at the end of a possibly longer path.

Binding equations for particular pronouns are further specialised to encode binding domains delimited by the attributes PRED (which marks the domain of a predicate and its arguments), SUBJ (which marks a domain of predication involving a subject), and TENSE (which marks the domain of a temporally anchored proposition). This is accomplished by the use of *off-path constraints*, which encode constraints on f-structures which may contain the pronoun and its binder. For example, the binding equation in (56) uses the off-path constraint $\neg(\rightarrow \text{TENSE})$ to require the pronoun to find its antecedent in the minimal finite domain containing the pronoun; the off-path constraint has a limiting effect on the pronoun's search for an antecedent, preventing

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[9]The symbol GF is an abbreviation defined as a disjunction over members of the set of grammatical functions (SUBJ, OBJ, COMP, ...): that is, it is any grammatical function. The superscript asterisk (GF*) is the Kleene star, which allows zero or more occurrences of GF.

the path through the binding domain from passing through an f-structure with the attribute TENSE:

(56)     Bound in minimal finite domain:

$$(\uparrow_\sigma \text{ ANT}) = ((\quad \text{GF}^* \qquad \text{GF}_{\text{pro}} \uparrow) \quad \text{GF}_{\text{ant}})_\sigma$$
$$\neg(\rightarrow \text{ TENSE})$$

Binding equations for all types of pronouns are specified as in (54), with a single-ton path GF$_{\text{ant}}$ within the binding domain determining the antecedent of the pronoun, and a path of length one or more to the pronoun. As such, LFG's binding constraints conform to the Locality Condition for anaphoric binding ("binding constraints ... always refer to local elements, never exclusively to nonlocal ones": Dalrymple 1993). Since the binding domain is defined in terms of a path of *one or more* grammatical functions (GF$^*$ GF$_{\text{pro}}$), local elements are always included in consideration as potential antecedents. Of course, some local elements may be ineligible as antecedents for particular pronouns because of additional requirements associated with the pronoun: for instance, particular pronouns may require the antecedent to be not only a local element, but also a subject. We will see examples of this below, where the attribute LOG is important in determining antecedenthood for BI and ÌI pronouns. Importantly, LFG's binding theory disallows the specification of a longer path which ignores local elements and requires the antecedent to appear at least two clauses away; encoding such a requirement would require specification of a path of length *two or more*, and this is not allowed.

## 8 The BI requirement

In order to constrain the distribution of the four types of Yᶏg Dii pronouns, we introduce an additional binding feature which is relevant for logophoric binding. We propose that the BI domain is marked LOG +, and we add the LOG feature to the inventory of features that are universally available to constrain the binding domain. Such a feature is necessary in the analysis of logophoric binding not only in Yᶏg Dii, but in other languages with grammaticised logophoricity as well: it is directly related to the ±LOG binding feature proposed by Bresnan (2001) in her discussion of logophoric binding, and is compatible with Strahan's (2009, 2011) discussion of f-structural marking of the 'perspective holder' in logophoric binding, though it differs formally from Strahan's proposal in that it does not impose the problematic requirement for the logophoric antecedent to control the search for any pronouns that it might be required to bind. It is also similar to the LOGOPHORIC feature proposed by Asudeh (2009), which appears on all structures within the entire logophoric domain, though under Asudeh's analysis, unlike the current proposal, it is difficult to capture the requirement for BI pronouns to be bound by the *closest* logophoric antecedent. In a different analytical tradition, it is similar in spirit to the null logophoric operator which binds logophoric pronouns in Adesola's (2006) analysis of Yoruba (Niger-Congo) (see also Koopman and Sportiche 1989) though it differs in that the LOG feature is not itself the binder of the pronoun: it merely marks the matrix clause of the logophoric domain in which the logophoric pronoun must appear.

In Yẹ̀g Dii, the presence of the LOG feature is enforced by the predicate or construction which defines the logophoric domain (the main clause predicate whose complement is an indirect quotation, subordinate desiderative, or indirect order; the *ka* or *ba* marking on causal adjuncts; or the phrase structure rule marking a subordinate clause as a purpose clause). In (57), GF$_{log}$ is an abbreviation which stands for any of the grammatical functions that the logophoric domain may bear: often, this will be COMP, the grammatical function of sentential complements. Clauses constituting a logophoric domain $S2$ appear as the value of GF$_{log}$, and are marked as LOG +:

(57)
$$S1: \begin{bmatrix} \text{SUBJ} & [\text{logophoric antecedent}] \\ \text{GF}_{log} & S2: \begin{bmatrix} \text{LOG} & + \\ & \text{... BI ...} \end{bmatrix} \end{bmatrix}$$

We can now state the requirements associated with the BI pronouns by reference to the feature LOG:

(58)   Binding constraints for BI:
$$(\uparrow_\sigma \text{ ANTECEDENT}) = ((\underset{1}{\underset{(\to \text{LOG})}{\text{GF}_{log}}} \quad \underset{2}{\underset{\neg(\to \text{LOG})}{\text{GF}^*}} \quad \uparrow) \quad \underset{3}{\text{SUBJ}})_\sigma$$

The form of the logophoric binding equation is different from the nonlogophoric binding equation given in (54), because in this case it is important to identify the logophoric domain (the f-structure marked with the LOG feature). In (58), the logophoric domain is the f-structure value of the GF$_{log}$ feature, and the logophoric pronoun must appear within that domain. The numbers under each element of the binding equation cross-reference the position in which the following constraints are imposed:

1. Logophoric domain: the logophoric domain must be marked as such. Formally, the value of the attribute GF$_{log}$, labelled $S2$ in (57), must be marked with the LOG attribute.
2. Logophoric domain: the BI pronoun may be embedded at an arbitrary depth within the logophoric domain, but it must be bound by the closest logophoric binder: see the discussion of examples (40)–(41) for evidence that the smallest BI domain must be chosen). Formally, the path through the binding domain to the BI pronoun may not pass through another clause with LOG marking.
3. Subjecthood of antecedent: the ANTECEDENT of the pronoun is the SUBJ of $S1$, the clause containing the logophoric domain.

This combination of constraints encodes the binding requirements for the BI pronoun; importantly, it adheres to the generalisation that binding requirements are specified purely locally, and does not require a path of length two or more.

## 9 The ẹ̀N requirement

The ẹ̀N series of pronouns must appear as the subject of the clause types listed in Table 3. As we have noted, this is not a binding requirement, but a requirement constraining the form of the subject pronoun for the relevant types of clauses. There

seems to be no independent syntactic criterion by which ÀŃ clauses can be identified: ÀŃ clauses must simply be marked as such. We accomplish this by marking the subject of ÀŃ clauses with AN +.

(59) $\begin{bmatrix} \text{SUBJ} & [\text{AN} & +] \end{bmatrix}$

ÀŃ pronouns are marked with an existential constraint requiring the presence of the AN feature, as shown in (60), while MÍ pronouns are incompatible with that feature.

(60) Constraint on ÀŃ forms, requiring the presence of the AN feature:

$(\uparrow \text{AN})$

## 10 Constraints on ÌI

By appealing to the AN and BI features which we have already introduced, we can capture the commonalities in binding requirements between ÀŃ and ÌI, and between BI and ÌI, by requiring ÌI to obey the ÀŃ requirements as well as the BI requirements. In (61), we associate ÌI pronouns with the same existential constraint requiring the AN features as for the ÀŃ pronouns (line 1 in (61)), and the same binding equation as for the BI pronouns (line 2 in (61)). Simply combining the two constraints, as in (61), is almost but not quite sufficient to encode the binding constraints which are relevant for ÌI:

(61) Binding constraints for ÌI (incomplete):
$(\uparrow \text{AN})$
$(\uparrow_\sigma \text{ANTECEDENT}) = ((\quad \text{GF}_{\log} \quad \text{GF}^* \quad \uparrow) \quad \text{SUBJ})_\sigma$
$(\rightarrow \text{LOG}) \quad \neg(\rightarrow \text{LOG})$

This combination of constraints correctly allows ÌI to appear in arbitrarily deeply embedded ÀŃ-clauses within the logophoric domain *S*2, but also incorrectly allows it in non-embedded clauses in *S*2 (recall our discussion of examples (49)–(51) above).

To disallow ÌI as the subject of *S*2, we must impose an additional requirement preventing the ÌI pronoun from appearing in the highest clause within the logophoric domain: this is the clause that bears LOG + marking. In other words, ÌI cannot appear in a LOG-marked clause. The final version of the binding constraints for ÌI are given in (62):

(62) Binding constraints for ÌI, final version:

$(\uparrow \text{AN})$
$(\uparrow_\sigma \text{ANTECEDENT}) = ((\quad \text{GF}_{\log} \quad \text{GF}^* \quad \uparrow) \quad \text{SUBJ})_\sigma$
$(\rightarrow \text{LOG}) \quad \neg(\rightarrow \text{LOG})$
$\neg((\text{SUBJ} \uparrow) \text{LOG})$

As in (61), the first two lines of (62) duplicate the requirements for ÀŃ (ÌI must appear as the subject of an ÀŃ-type clause) and for BI (ÌI must be bound within the logophoric domain, and by the logophoric antecedent). The third line is new, and unique to ÌI: ÌI may not appear as the subject of a LOG-marked clause.

On this analysis, the nonlocal nature of ìɪ's binding requirements is captured by means of the same feature that governs the distribution of BI, and in keeping with the general form of LFG's binding equations. The binding requirements for ìɪ are surprising and complicated: ìɪ must appear embedded at an arbitrary depth in a domain marked with the LOG feature (the second line of (62)) but may not appear as the subject of the highest clause in the logophoric domain, the clause marked with the LOG feature (the third line of (62)). Thus, it may only appear in embedded subject position within the logophoric domain. It is not the long-distance nature of the binding requirements associated with ìɪ that makes it an unusual anaphor, but the seemingly contradictory requirements that it must obey: it both requires LOG-marking in an expanded domain (line 2), and disallows it in a local domain (line 3). We do not encode binding constraints on ìɪ by means of a path requiring a distance of two or more clauses between a pronoun and its antecedent, because this would require nonlocal specification of binding requirements, and this is not allowed by LFG's binding theory. Our analysis achieves a local specification of constraints on an apparently exclusively nonlocal relation.

## 11 Conclusion

Yǎg Dii presents a complicated picture for theories of anaphoric binding. The distributions of the Mí, ÀŇ, and BI pronouns are not unexpected, given standard locality constraints on LFG's binding equations and the ability to mark domains with information about their syntactic properties. We have proposed that the distribution of the ìɪ pronoun can be stated in local terms by reference to a LOG feature, which is independently motivated for Yǎg Dii's BI pronouns as well as for logophoric pronouns more generally. Our analysis achieves a purely local specification of the binding requirements for ìɪ, preserving the generalisation that grammars do not impose nonlocal grammatical constraints, and predicts the nonexistence of other possibilities—for example, a hypothetical anaphor that must appear at least three clauses removed from its antecedent.

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