

Pronouns, Logical Variables, and Logophoricity in Abe

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Source: *Linguistic Inquiry*, Vol. 20, No. 4 (Autumn, 1989), pp. 555-588

Published by: [MIT Press](#)

Stable URL: <http://www.jstor.org/stable/4178645>

Accessed: 22-10-2015 18:32 UTC

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1. Introduction

1.1. Preliminaries

In this article we describe and analyze the properties of the pronominal system of Abe, a Kwa language spoken in the Ivory Coast, which we view as part of the study of pronominal entities (that is, of possible pronominal types) and of pronominal systems (that is, of the cooccurrence restrictions on pronominal types in a particular grammar).

Abe has two series of third person pronouns. One type of pronoun (*O-pronoun*) has basically the same properties as pronouns in languages like English. The other type of pronoun (*n-pronoun*) very roughly corresponds to what has been called the *referential* use of pronouns in English (see Evans (1980)). It is also used as what is called a *logophoric* pronoun—that is, a particular pronoun that occurs in special embedded contexts (the logophoric contexts) to indicate reference to “the person whose speech, thought or perceptions are reported” (Clements (1975)). This dual use of *n-pronouns* makes this pronominal system particularly interesting because it permits placing the logophoric properties in a wider perspective.

This article contains four major sections. In section 1 we present some background assumptions. In section 2 we present the data on referential interactions between pronouns and nominals. In section 3 we offer an analysis of the pronominal system excluding logophoric effects. We motivate our proposal that the *n-pronouns* should in fact be treated as LF (or logical) variables, that is, as being \bar{A} -bound by an operator at LF. This proposal provides a key to the complexity and apparent contradictions of Abe’s pronominal system. It is against this background that we address the problem of logophoric pronouns in section 4. The rather surprising properties of logophoric pronouns in Abe follow from the conjunction of two independent factors. First, they are instances of pronouns that are treated as logical variables. Second, certain types of clausal complements in Abe (as in many West African languages) are introduced by verbal complementizers. We will show how these apparently unrelated syntactic factors conspire to

The Abe data have been collected in Montreal and in the Ivory Coast. Thanks to Philomène Nguessan, Christine Tellier, Jean François Prunet, Tanya Reinhart, Tim Stowell, Richard Kayne, Norbert Hornstein, Joseph Aoun, and two anonymous reviewers.

We will transcribe ε as *E*, ς as *O*, and ω as *U*.

yield the typical logophoric effects. In Abe, then, there is no logophoric pronoun as such. If our analysis can be successfully extended to other languages, there is no “logophoric pronoun”; there are pronouns treated as logical variables yielding “logophoric” effects in certain syntactic contexts.

1.2. Background

Following Chomsky (1981) and much other work, we suppose that pronouns realize (phonologically or not—that is, overtly or covertly) the possible bundles of features drawn from the set of so-called ϕ -features, including number, gender, person, Case, and so on (or whatever is the right set of features generating the space of possible NPs, apart from lexical properties; see, for example, the class systems of Bantu languages). Furthermore, we assume that the relevant interpretive properties are described as follows:

Pronouns can be used independently; this requires no special statement. An independent pronoun makes reference (with all the usual provisos about reference) to an entity present in the shared perceptual environment or rendered salient in some other way. Speaking about John, we may say *He left*, interpreting it exactly like *John left*, that is, treating *he* as a kind of proper name.

A pronoun can also depend for its reference upon another NP. This NP is called the *antecedent* of the pronoun. In a certain domain D (governing category or GC) a pronoun cannot depend for its reference upon a c-commanding NP: this property is accounted for by Principle B of the binding theory. We take referential dependency to be ambiguous between coreference (or more generally referential overlap) and binding; that is, pronouns so used are either referential or bound variables (see, for example, Lasnik (1976), Reinhart (1983), Sells (1986), Evans (1980)). The referential case is exemplified by a sentence like *John likes his mother*, where the speaker intends *his* to refer and to have the same reference as *John*. The bound variable case is exemplified when a pronoun has a quantified expression as antecedent and is used in such a way as to be analogous to the bound variable of the logician: *Every man/No man saw his mother*, $\forall x/\text{No } x, x \text{ a man}, x \text{ saw } x\text{'s mother}$). Naturally, in such a case, neither the pronoun nor its antecedent is referential. We will say that the pronoun is bound by its antecedent or that it is a case of pronominal binding.

We will assume that the bound pronoun interpretation can arise iff the pronoun is c-commanded¹ by its antecedent (Condition on Pronominal Binding).² We represent all

¹ The actual condition could be more complex (compare *donkey*-sentences) in a way that does not affect our discussion. See, for example, Reinhart (1983) and Haik (1984).

² Although in English this referential/bound variable distinction is not overtly indicated, in some languages it is. Such is the case of Fula. In Fula two sets of [+human] third person pronouns occur: the *dum*-series and the *mO*-series (Arnott (1970)). (We abstract away from a third type of pronoun: *oon* ‘the other’.) Their relevant properties can be summarized as follows (for more details, see Koopman and Sportiche (in preparation)): (a) All obey Principle B of the binding theory: they must be free in their GC (that is, neither bound nor overlapping in reference with a c-commanding NP in their GC). (b) Pronouns of the *dum*-series are *bound* pronouns (bound to a c-commanding referential NP, a QP, or a *wh*-phrase). They cannot be bound by an *mO*-pronoun. (c) Pronouns of the *mO*-series are used as referential pronouns. Therefore, they can only be coreferential with other NPs, and in particular, they must be *dum*-pronoun free, since these pronouns are not referential.

cases of referential dependence as coindexing: we assume with Lasnik (1981) and Higginbotham (1983) that both the coreference and the bound variable cases are syntactically represented (but see Reinhart (1983) for a different view). We assume furthermore that referential dependence of X upon Y can be interpreted as coreference only if Y is a referential NP and Y is in an A-position. We therefore have the following possibilities:

- (i) Y is in an A-position and Y is referential: coindexing is either coreference or binding.
- (ii) Y is not referential, or Y is not in an A-position: coindexing can only be interpreted as binding.

If X is in an A-position, these are standard assumptions. However, we need to specify what happens if X is in an \bar{A} -position. The case we are interested in is the case where X is an operator in an \bar{A} -position. We assume that coindexing of such an operator with some Y can in principle be interpreted exactly as above. It can be bound, which means that its range is identified with the value of some variable. This situation is illustrated by a sentence like *No one_i is too stubborn [*Op_i for [John to talk to e_i]]*. It can also be coreferential with some Y, provided that the range of such an operator can be set in the absence of any antecedent (just like the reference of a pronoun can be set in the absence of any antecedent); that is, if, intuitively speaking, it is “referential.” Such a case might be illustrated in English with a focalized pronoun: *John_i thinks that him_i, Mary likes*. Note again that we simply extend current assumptions about arguments to operators. Unlike pronouns, anaphors usually require some antecedent in order to have their reference fixed. This is why an anaphor must be bound by its antecedent, but a pronoun may either be bound by or corefer with its antecedent.*

Finally, we assume that if X is referentially dependent upon Y, X cannot c-command Y. This assumption is made explicit in various ways by different authors (see, for example, Higginbotham (1983) or the work on Principle C of the binding theory). Consequently, if X and Y are coindexed and neither c-commands the other, referential dependency may go either way. If X c-commands Y, Y is referentially dependent upon X.

1.3. The Pronominal System of Abe

We will be exclusively concerned with third person singular pronouns in Abe; first and second person pronouns behave like English or French first and second person pronouns. There are two series of morphologically distinct third person singular pronouns in Abe. We will refer to these third person pronouns respectively as pronouns of the *O-series* (or *O-pronouns*) and pronouns of the *n-series* (or *n-pronouns*). The distinction is not marked in the plural.

(1)	<i>O-series</i> [± animate]	<i>n-series</i> [+ human]
a. Nominative/Inalienable	ø	n
b. Elsewhere	O	n

The nominative pronoun of the *O*-series and the genitive pronoun expressing inalienable possession are null pronouns³ (context (1a)); all other forms are represented as *O* (context (1b)). Pronouns of the *n*-series are invariably represented as *n*. The tone on both series of pronouns varies and depends on mood, tense, and aspect features (nominative *n*), on construction type (genitive, in conjunction with tonal properties of the following noun), and on Case (accusative pronouns). Tone will not be indicated here. Pronouns of the *O*-series can stand for or replace both animate and inanimate nouns; those of the *n*-series refer exclusively to humans.

As is to be expected, pronouns of the *O*-series and the *n*-series can be used as independent pronouns: to questions like those in (2), the answers in (3) are appropriate.

- | | |
|--|---|
| <p>(2) a. <i>api a e</i>
 <i>Api came Q</i>
 ‘Did <i>Api</i> come?’</p> | <p>b. <i>f wu api e</i>
 <i>you saw Api Q</i>
 ‘Did you see <i>Api</i>?’</p> |
| <p>(3) a. $\left\{ \begin{smallmatrix} n \\ \emptyset \end{smallmatrix} \right\} a$
 ‘She came.’</p> | <p>b. <i>m wu</i> $\left\{ \begin{smallmatrix} n \\ O \end{smallmatrix} \right\}$
 ‘I saw her.’</p> |

2. Referential Interactions

We now turn to the referential interaction between a pronoun, call it the *target*, and another NP, call it the *antecedent*. In order to describe the properties of the pronominal system of Abe, we must take into account the nature of the antecedent and the nature of the target. The antecedent can be a referential NP, a nonreferential NP, an *O*-pronoun, or an *n*-pronoun. The target can be either an *O*-pronoun or an *n*-pronoun. The initial description, summarized in section 2.3 and analyzed in what follows, will be restricted to configurations in which the antecedent c-commands the target. Other configurations will be discussed in section 3. Until section 3.3 we will further limit our discussion to coindexing, not taking the coreference/bound variable difference into account except when directly relevant. Nonreferential antecedents will be discussed in section 3.3. We will use the following indexing convention: lack of coindexing between two NPs denotes disjoint reference (that is, coindexing is excluded). In other words, when two NPs cannot overlap in reference, they are contraindexed. In order to clarify the exposition, we will sometimes explicitly indicate that coindexing is impossible.

2.1. The Target Is an *O*-Pronoun

2.1.1. The Antecedent Is a Lexical NP or an *O*-Pronoun and the Target Is an *O*-Pronoun. Let us start with the properties of a target *O*-pronoun, with respect to a lexical NP or *O*-pronoun antecedent. Ignoring the specific properties of Abe—in other words,

³ In the latter case this situation is comparable to that found in French (for example, *Il a levé le bras* ‘He raised his arm’): it seems plausible to assume that the pronoun is syntactically represented, since it is semantically present. The question remains where this pronoun appears structurally: presumably as specifier of NP (see Sportiche (1988)).

putting aside the *n*-pronoun and the logophoric contexts—pronouns of the *O*-series basically behave in the same way as pronouns in English or French. First, pronouns of the *O*-series obey Principle B of the binding theory and must be contraindexed with *c*-commanding NPs in their GC:

- (4) $yapi_i/\emptyset_i$ wu $O_{j,*i}$
 Yapi/he(*O*) saw him(*O*)

As expected, they may be coindexed with an antecedent outside their GC:

- (5) a. $yapi_i/\emptyset_i$ wu [_{NP} $O_{i,j}$ wo n]
 Yapi/he(*O*) saw his (*O*) dog Det
 b. $yapi_i/\emptyset_i$ wu $orovi$ [_{PP} $O_{i,j}$ sE]
 Yapi/he(*O*) saw snake him(*O*) near

When the target occurs in an embedded complement, its behavior depends on the type of complement. In an indicative embedded complement introduced by the complementizer *ye* the *O*-pronoun may be coindexed with an antecedent outside its GC:

- (6) a. nku_i/\emptyset_i bO wu ye $O_{i,j}$ mU api
 Nku/she(*O*) believed *ye* she(*O*) knew Api
 b. nku_i/\emptyset_i bO wu ye f mU $O_{i,j}$
 Nku/she(*O*) believed *ye* you knew her(*O*)

In two other embedded environments, however, the *O*-pronoun behaves differently: if it occurs in subject position of a subjunctive complement, and if it is contained in a complement that induces logophoric effects (*kO*-complements). Here we will only describe the referential possibilities in subjunctive complements, reserving the discussion of logophoric effects in *kO*-complements for section 4.

We call the clausal complements of certain Abe verbs *subjunctive complements*. These verbs translate in languages with subjunctive morphology (say, French) as verbs typically taking control complements or subjunctive complements. In Abe these subjunctive complements contain a special mood marker, which is realized tonally on Infl and morphologically in the form of certain nominative pronouns. The following examples illustrate the referential possibilities of the *O*-pronoun in subjunctive complements:

- (7) a. $yapi_i$ $kolo$ ye api $b-$ wu $O_{i,j}$
 Yapi wants *ye* Api Subj see him(*O*)
 ‘Yapi wants Api to see him.’
 b. $yapi_i$ $kolo$ ye $O-b_{i,*j}$ wu api
 Yapi wants *ye* he(*O*) Subj see Api
 ‘Yapi wants to see Api.’

An *O*-pronoun in object position of a subjunctive complement behaves like the *O*-pronouns in (6). In subject position, however, an *O*-pronoun *must* be coindexed with the subject of the main verb. Disjoint reference is indicated by the *n*-pronoun (see section 2.2.1).

2.1.2. *The Antecedent Is an n-Pronoun and the Target Is an O-Pronoun.* So far the *O*-pronoun behaves like a regular pronoun with respect to the binding theory, except when it occurs in subject position of a subjunctive complement. Quite a different situation obtains, however, if the antecedent is not a lexical NP or an *O*-pronoun but an *n*-pronoun. The following examples establish that the *O*-pronoun must be taken as disjoint from a *c*-commanding *n*-pronoun:

- (8) a. n_i wu $O_{j,*i}$ wo n
 he(*n*) saw his(*O*) dog Det
 b. n_i wu $orovi$ $O_{j,*i}$ sE
 he(*n*) saw snake him(*O*) near

Moreover, disjoint reference is not restricted to a local domain, but holds throughout:

- (9) a. n_i bO wu ye $\emptyset_{j,*i}$ mU api
 he(*n*) believed *ye* he(*O*) knew Api
 b. n_i bO wu ye api mU $O_{j,*i}$
 he(*n*) believed *ye* Api knew him(*O*)

Finally, subject orientation (or anti-orientation) is not involved here. Disjoint reference also holds with respect to a *c*-commanding *n*-antecedent that is not in subject position:

- (10) m hE n_i $O_{j,*i}$ wo n jO
 I told him(*n*) his(*O*) dog Det about

2.2. *The Target Is an n-pronoun*

2.2.1. *The Antecedent Is a Referential NP or an O-pronoun and the Target Is an n-pronoun.* We now illustrate the behavior of an *n*-target with respect to a referential NP or *O*-pronoun antecedent.

If the potential antecedent is too “close” to the *n*-pronoun in a way to be defined below, contraindexing is required ((11d) illustrates the subject of a subjunctive complement):

- (11) a. $yapi_i/\emptyset_i$ wu $n_{j,*i}$
 Yapi/he(*O*) saw him(*n*)
 b. $yapi_i/\emptyset_i$ wu [_{NP} $n_{j,*i}$ wo n]
 Yapi/he(*O*) saw his(*n*) dog Det
 c. $yapi_i/\emptyset_i$ wu $orovi$ [_{PP} $n_{j,*i}$ sE]
 Yapi/he(*O*) saw snake him(*n*) near
 d. $yapi_i/\emptyset_i$ $kolo$ ye $n_{j,*i}$ wu api
 Yapi/he(*O*) wants *ye* he(*n*) see Api

If the antecedent is not too close—say, if it occurs in the matrix clause and the pronoun is in an embedded indicative complement, or in object position of a subjunctive complement—disjoint reference is preferred, but coindexing is possible:

- (12) a. nku_i/Ø_i bO wu ye n_{(i),j} mU api
 Nku/she(*O*) believed ye she(*n*) knew Api
 b. nku_i/Ø_i bO wu ye f mU n_{(i),j}
 Nku/she(*O*) believed ye you knew her(*n*)
- (13) yapi/Ø_i kolo ye f bo wu n_{(i),j}
 Yapi/he(*O*) wants ye you Subj see him(*n*)

A clear and consistent contrast holds between cases like (11a–c), in which coindexing is impossible, and cases like (12) and (13), in which coindexing is possible.

The *n*-pronoun behaves differently from the *O*-pronoun: whereas the *O*-pronoun can be coindexed with an antecedent NP in the same clause but outside the NP or PP containing it (in contexts like (5)), the *n*-pronoun must be disjoint in reference from it in these environments (contexts (11b,c)).

2.2.2. *The Antecedent and the Target Are n-Pronouns.* Surprisingly, if the antecedent itself is an *n*-pronoun, the referential possibilities of the target *n*-pronoun change. ((14d) illustrates the subject of a subjunctive complement and (15) embedded complements.)

- (14) a. *n_i wu n_{*i,*j}
 he(*n*) saw him(*n*)
 b. n_i wu n_{i,*j} wo n
 he(*n*) saw his(*n*) dog Det
 c. n_i wu orovi [n_{i,*j} sE]
 he(*n*) saw snake him(*n*) near
 d. n_i kolo ye n_{i,*j} wu api
 he(*n*) want ye he(*n*) see Api
 ‘He wants to see Api.’
- (15) a. n_i bO wu ye f mU n_{i,(j)}
 he(*n*) believed ye you knew him(*n*)
 b. n_i bO wu ye n_{i,(j)} mU api
 he(*n*) believed ye he(*n*) knew Api

An *n*-target must be coindexed with a close—but not too close—*n*-antecedent (see the contrast between (14a) and (14b–d)). A preference exists to construe two *n*-pronouns as referring to the same person, but in contexts like (15) different references are possible.

An *n*-target is also necessarily coindexed with an *n*-antecedent that is not in subject position:

- (16) m hE n_i n_{i,*j} wo n jO
 I told him(*n*) his(*n*) dog Det about

2.3. Summary

The data discussed so far are summarized in (17) and (18). Boundaries intervening between the antecedent and the first constituent containing the pronoun are indicated. Variable context elsewhere can contain any material.

(17) The *c*-commanding antecedent is a lexical NP or an *O*-pronoun

- a. NP/ \emptyset_i . . . [_{VP} V $O_{j,*i}/n_{j,*i}$. . .]
- b. NP/ \emptyset_i . . . [_{NP}[_{NP} $O_{i,j}/n_{*i,j}$] N]
- c. NP/ \emptyset_i . . . [_{PP}[_{NP} $O_{i,j}/n_{*i,j}$] P]
- d. NP/ \emptyset_i . . . [ye $O_{i,*j}/n_{j,*i}$ V(Subj) . . .]
- e. NP/ \emptyset_i . . . [ye $O_{i,j}/n_{(i),j}$ V(Indic) . . .]
- f. NP/ \emptyset_i . . . [ye . . . V(Indic/Subj) $O_{i,j}/n_{(i),j}$]

(18) The *c*-commanding antecedent is an *n*-pronoun

- a. n_i . . . [_{VP} V $O_{*i,j}/n_{*i,*j}$]
- b. n_i . . . [_{NP}[_{NP} O_j/n_i] N]
- c. n_i . . . [_{PP}[_{NP} O_j/n_i] P]
- d. n_i . . . [ye O_j/n_i V(Subj) . . .]
- e. n_i . . . [ye $O_j/n_{i,(j)}$ V(Indic) . . .]
- f. n_i . . . [ye . . . V(Indic/Subj) $O_j/n_{i,(j)}$]

Let us now examine what generalizations emerge from (17) and (18) and which of these are accounted for.

Certain patterns in (17) and (18) follow straightforwardly from Principle B of the binding theory: disjoint reference in (17a) and (18a), and the referential options of the *O*-pronoun in (17b) and (17c), assuming that NP and PP count as GCs, that is, as the domain in which the (*O*-) pronoun must be free. We will return to this in the next section.

It is also to be expected that the *O*- and *n*-pronouns in an embedded clause are free to coindex or not with an NP outside of their clause (for instance, cases (17e,f)). An explanation must be given here for the reading preferences of the *n*-pronoun (preferred coindexing with another occurrence of an *n*-pronoun, preferred disjoint reference from another occurrence of a lexical NP or *O*-pronoun). Some problems arise. The first concerns the *n*-pronoun in NPs and PPs: contrary to expectations, the *n*-pronoun *must* be coindexed with the antecedent, if the antecedent is an *n*-pronoun (see (18b,c)). Moreover, if the antecedent is not an *n*-pronoun, the *n*-pronoun *must* be disjoint in reference from it (see (17b,c)). Descriptively, then, there is a certain domain D such that in D *n* is *O*-free or coindexed with an occurrence of *n*.⁴ This explains (18a): in domain D *n* must be coreferential with an occurrence of *n*. However, in (18a) it must also be disjoint from its antecedent by virtue of Principle B of the binding theory. *n* therefore cannot occur in object position if the subject is also an *n*-pronoun.

(18f) raises a second problem. The *O*-pronoun must be *n*-free regardless of its relative degree of embedding.

A third problem arises with respect to the referential possibilities of a pronoun occurring in the subject position of a subjunctive clause. In the context (17d) an *O*-pronoun must be coindexed and an *n*-pronoun conraindexed with a lexical NP or *O*-

⁴ As we will show, this is not entirely accurate. We will modify this generalization and the consequence for the explanation of (18a) below.

pronoun antecedent. In the same context (that is, (18d)) the *n*-pronoun must be (and the *O*-pronoun cannot be) taken as coindexed with an *n*-pronoun antecedent. We will return to this problem in section 3.4.

In sum, then, the following generalizations emerge:

- (19) a. *O/n* is free in its GC.
- b. *n* is *O*/lexical NP-free in some domain *D*.
- c. Subjunctive facts
- d. Two occurrences of *n* in domain *D* are necessarily coindexed.
- e. *O* is *n*-free throughout.
- f. *n* is preferably coindexed with some other occurrence of *n* not in domain *D*, and preferably contraindexed with some NP or *O*-pronoun antecedent not in domain *D*.

(19a) needs no further discussion. We now turn to the problem of (19b,d,e,f). (19c) will be discussed in section 3.4.

3. The Syntax of Pronouns

We now develop our analysis, where we will start with the generalizations directly involving the *n*-pronoun in (19b,d,e). The first question we need to answer is how domain *D* should be characterized. We can greatly facilitate the discussion by noticing that the data presented so far are consistent with the assumption that the domain *D* of some item is the first clause containing that item. Let us adopt this preliminary and informal characterization of domain *D*.

We will establish in section 3.1 that the characterization of domain *D* is not dependent on binding-theoretic notions. Rather, the domain *D* of some item should be characterized as the first clause containing this item and a Comp.

In section 3.2 we will present the analysis of the pronominal system. In section 3.2.1 we will motivate an analysis according to which *n* is an LF variable that needs to be operator-bound at LF. We will show how this proposal, together with some independently motivated assumptions, accounts both for the *n*-freeness of *O* (19e) and for the characterization of domain *D* as a clause with a Comp. In section 3.2.2 we will demonstrate how the behavior of a target *n*-pronoun with respect to an *O*-pronoun antecedent follows. Moreover, we will show that some surprising predictions about configurations in which there is no (S-Structure) c-command between the antecedent and the target are borne out and thus provide strong support for the analysis. In section 3.2.3 we will discuss the analysis of an *n*-pronoun with respect to an *n*-antecedent in domain *D*.

In section 3.3 we will turn to the pronominal binding properties of *O* and *n*, which will straightforwardly follow from our analysis. Finally, in section 3.4 we will show that the subjunctive facts are consistent with our analysis.

3.1. *The Nature of Domain D*

3.1.1. *GC.* Given the data so far, it is not implausible to suppose that domain *D* is somehow related to the binding theory. A simple assumption would take the domain of an item to be this item's governing category.

This would contradict the account of the *O*-pronoun given in (19a), where we claimed that taking NP and PP as GCs could account for the referential options of an *O*-pronoun occurring in NP or PP. Here, for the *n*-pronoun, we would need to say that NP and PP are not GCs; rather, the first clause must be.

Independent evidence, based on the distribution of the reflexive anaphor *Ose/nse*, suggests that our initial position is more plausible. The reflexive anaphor is, at least historically, composed of one of the third person pronouns *O* or *n* and a noun meaning 'body'. The surface form of the anaphor depends on the features of the antecedent (*O*-*se* with a name or *O*-pronoun antecedent, *n*-*se* with an *n*-pronoun antecedent):

- (20) a. *yapi* mU *Ose/*nse*
 Yapi knows him(*O*)self
 b. *n* mU *nse/*Ose*
 he(n) knows him(*n*)self

Reflexive anaphors are excluded from positions inside NPs and PPs in which pronouns are permitted, showing that NP and PP must count as the GC for the reflexive anaphor:

- (21) a. **yapi* mU [_{NP} *Ose* *erenyi*]
 Yapi knows him(*O*)self house
 b. **n* mU [_{NP} *nse* *erenyi*]
 he(n) know him(*n*)self house

Given an anaphor and a pronoun in the same position, the GC of the anaphor is always larger than or equal to the domain of the pronoun (see Chomsky (1986)). In other words, the domain in which an anaphor must be bound is larger than or equal to the domain in which a pronoun must be free. This is simply illustrated by pairs of English examples such as *They like their shoes/They like each other's shoes*, *They think that pictures of them are on sale/They think pictures of each other are on sale*. If NPs and PPs count as GCs for anaphors, we can conclude that they should also count as GCs for pronouns.

Thus, it might be possible that the binding theory is involved, but not in such a simple way. Let us consider an alternative binding-theoretic account.

3.1.2. (Accessible) *SUBJECT.* If domain *D* is clausal, it is tempting to try to relate this to characteristics of clauses that the kind of NPs and PPs that we have seen so far do not have. One such characteristic is the presence of an (accessible) *SUBJECT*. We could then state:

- (22) In the domain of an (accessible) *SUBJECT*, *n* must be (lexical NP and *O*-pronoun) free and two occurrences of *n* are necessarily coindexed.

This would work for clauses, but consider the predictions it makes in (23a,b) with respect to pronouns that are embedded in NPs or gerunds that contain a subject (see below for evidence bearing on the existence of gerunds in Abe). Or, if accessibility is involved, consider the predictions in (23c) with respect to pronouns that would have no accessible SUBJECT in their clause:

- (23) a. $[_{NP} NP [_{N'} [_{NP} n \dots] N]$
 b. $[_{gerund} NP [_{VP} n]]$
 c. $[_{CP} \dots [ye [[_{NP} n N] \dots]]]$

(22) predicts that the *n*-pronoun in (23a,b) need not be necessarily *O*-free or coindexed with *n* in its clause; moreover, in (23c) it would need to be *O*-free or coindexed with *n* in the superordinate clause. Structures like (23a) are prohibited in Abe: only one argument may precede the noun, and none may follow. (The meaning equivalent to (23a) is rendered in Abe by a relative clause.)

Examples of the structures in (23b) and (23c) do not support (22). The following examples show that the notion (accessible) SUBJECT is too strong, since it creates a domain D when one is not present:⁵

- (24) a. \emptyset/api_i fa $[_{gerund} m_j [_{VP} n_{i,k} e]]$
 she/Api forbade me her(*n*) hit
 ‘She/Api forbade my hitting her.’
 b. n_i fa $[_{gerund} m_j [_{VP} n_{i,*k} e]]$
 she(*n*) forbade me her(*n*) hit
 ‘She forbade my hitting her.’

We analyze the preceding structures as gerunds, for the following reasons: (a) The head bears nominal tonology. (b) Just like direct objects, objects in this construction can be extracted by *Wh* Movement, leaving a trace. Extraction of the object of N must leave a resumptive pronoun. This suggests the presence of a verbal projection. (c) Extraction of adjuncts is excluded, as it is from within English NPs or gerunds (but not infinitivals). (d) The verbal head cannot be extracted under predicate clefting (*Wh* Movement of the verb; see Koopman (1984)), whereas it can be in clauses. Moreover, the following examples show that the notion accessible SUBJECT is too weak. It wrongly predicts that the embedded clause should not count as a domain D, when it does:

- (25) a. $yapi_i$ bO wu ye $n_{(i),j}$ ceewu n a
 Yapi believe ye his(*n*) friend Det come
 ‘Yapi believed that his friend was coming.’
 b. n_i bO wu ye $n_{i,(j)}$ ceewu n a
 he(*n*) believe ye his(*n*) friend Det come
 ‘He believed that his friend was coming.’

Given these data, (22) does not seem adequate.

⁵ Alternatively, the structure is $m_j [_{gerund} PRO_j [_{VP} n_{i,k} e]]$. This does not affect the argument.

3.1.3. *The Binding Theory.* The notions used by the binding theory to define binding domains (governing category or accessible SUBJECT) do not seem relevant for the definition of domain D. However, one could still try to tailor the definition of domain to this particular case, so that even though D is not defined as a usual binding domain, the behavior of *n* is a binding theory effect.

In fact, there are strong reasons to believe that the binding theory is not involved in the computation of domain D. Any analysis that attempts to account for (19b) by means of disjoint reference runs into the problem with (19d): coindexing of *n* with an *n*-antecedent is *obligatory* in exactly the same domain.

Consider for concreteness an attempt to derive the asymmetry between the *O*- and *n*-pronoun in (17b) from the way in which the respective binding domains of *O*-pronouns and *n*-pronouns are computed:

- (17) b. $NP/\emptyset_i \dots [NP[NP O_{i,j}/n_{*i,j}] N]$

The GC would be NP* for the *O*-pronoun, but the CP for the *n*-pronoun. A larger disjoint reference domain for *n*-pronouns predicts that the *n*-pronoun has to be disjoint from *any* antecedent in this domain. This is simply false: *n* *must* be coindexed with an *n*-pronoun antecedent in the same domain D in which it must be disjoint from a lexical NP or *O*-pronoun antecedent:

- (18) b. $n_i \dots [NP[NP n_{i,*j}] N]$

In order to solve this problem, we would have to define the binding domain of *n* not only in terms of the properties of *n* but also by making crucial reference to the internal properties of the potential antecedent.

That the binding theory is not the right module to look at for an account of these data is further supported by the fact that (S-Structure) c-command within domain D does not play a necessary role in accounting for the coindexing possibilities (as we will show in section 3.2.2).

3.1.4. *Domain D Is CP.* At the beginning of this section we noted informally that taking domain D to be a clause seemed to fit all the data that had so far been presented. Let us therefore assume that

- (26) a. Domain D of *x* is the first CP containing *x*, and consequently
 b. Within its CP, an *n*-pronoun must be obligatorily disjoint from a c-commanding lexical NP or *O*-pronoun, and coindexed with a c-commanding *n*-pronoun.

What is the significance of this fact? What characterizes CPs as opposed to other domains like NPs? Clauses are typically domains over which operators (for example, *wh*-phrases) take scope. Furthermore, the fact that CPs but not gerunds (see (24)) count as domain D suggests that the presence of Comp is crucial, since gerunds do not seem to have (available) Comps (see Stowell (1981)).

3.2. *n* as an LF Variable

3.2.1. *The Behavior of O.* Having established that domain *D* is a CP, we now develop our analysis, beginning with the generalization (19e) that *O* must be *n*-free.

There are two surprising aspects to this generalization. First, the prohibition is nonlocal. Second, even when it is interpreted as coreference, coindexing is impossible despite the fact that both pronouns are third person.

It turns out that there is a simple way to tie these two facts together. Recall that coreference is possible only if the antecedent is a referential element in an A-position. Coindexing with a nonreferential element must be a case of binding. We will assume that the *n*-pronoun is not a referential element at the appropriate level of representation. In particular, we will assume that the *n*-pronoun is a variable:

(27) The *n*-pronoun is a (LF) variable.

Since it is only possible for an element to be coreferential with referential elements, *O* cannot be coreferential with *n*, regardless of the distance between them. Of course, this does not yet derive (19e). Judgments on which this generalization is based are judgments prohibiting identity of referential value. Since identity of referential value can arise either by coreference or by pronominal binding, we must still rule out binding. Whatever the reason is, there is independent and direct evidence that binding is ruled out. As (21) shows, there is an anaphor corresponding to each pronoun. But the *n*-anaphor cannot be bound by an *O*-pronoun and the *O*-anaphor cannot be bound by the *n*-pronoun. (19e) follows.

Why should binding be ruled out? *O*-pronouns and *n*-pronouns must be distinguished by some feature (say, $[\pm n]$), and binding requires nondistinctness of certain features (for instance, gender). The feature $[\pm n]$ could be among them. The *n*-anaphor cannot be bound by a lexical NP, either (or by a quantified NP; see section 3.3). This indicates that lexical NPs, QPs, and *O*-pronouns are $[-n]$, whereas *n*-pronouns are $[+n]$. From now on, we will suppose that $[+n]$ elements can never be bound by $[-n]$ elements and vice versa.⁶

So far, then, (19e) follows if the *n*-pronoun is in fact a variable. If *n* is a variable, we expect the existence of some \bar{A} -binder or operator to bind it. The preceding discussion shows that this operator must be assumed to be $[+n]$. Let us call it the *n*-operator. Where is this *n*-operator? If we assume that it must, like a *wh*-operator, appear in Comp at LF, we will be able to derive why domain *D* is clausal. Let us then further specify the assumption in (27) as follows:

(28) At LF the *n*-pronoun is bound by an *n*-operator in some Comp.

(19e) still follows from assumption (28): *O* cannot be bound by the *n*-pronoun or by the *n*-operator because of feature conflict. *O* cannot be coreferential with *n* because *n* is not

⁶ See section 4 for a restatement of this assumption.

- b. $[O_i \quad tEEwu \text{ foto} \quad n] \quad IE \quad n_{j,*i} \quad tE$
 his(*O*) enemy picture Det bother him(*n*) Part

In such examples the *O*-pronoun must be disjoint from the *n*-pronoun.

The correct generalization then is the following:

- (33) An *O*-pronoun cannot be coindexed with an *n*-pronoun if the Comp of the first clause containing *n* c-commands *O*.

However, the analysis we are developing predicts that an *O*-pronoun may very well be coindexed with an *n*-pronoun if the *O*-pronoun is not c-commanded by the Comp of the *n*-clause. Indeed, consider such a configuration:

- (34) $[_{CP} [_{CP} OP_i \dots n_i] \dots O_{i,j}]$

n is used like a third person pronoun. This means that the operator that binds it ranges over a set containing only one element—say, the singleton *w*. We know that the operator can have its range (the value of *w*) fixed in the absence of any antecedent, since *n* can be used independently. Suppose all three elements are coindexed. Since no c-command obtains between the operator and the *O*-pronoun, this cannot be a case of binding. However, it could be a case of coreference. If *w* is assigned the same referent as the *O*-pronoun, coreference will arise. Coreference is permitted, since the *O*-pronoun may be referential and occurs in an A-position.⁸ The following examples show that this is indeed the case:

- (35) a. $n_{i,j} \quad a \text{ su}, \emptyset_i \quad hE \quad na \quad hOrE$
 he(*n*) arrive he(*O*) told the truth
 ‘After he arrived, he told the truth.’
 b. $[kolo \ n \ f \ kolo \ n_{i,j}] \quad IE \quad O_i \quad tE$
 love Rel you love him(*n*) bothers him(*O*) Part
 ‘The fact that you love him bothers him.’

Reversing the order of the pronouns in this context should yield different results, as will be clear from (36):

- (36) $[_{CP} OP_i [_{CP} \dots O_j] \dots n_i]$

The *n*-operator will c-command *O*, which will therefore be in the scope of the *n*-operator. Coreference should therefore be impossible and contraindexing obligatory. This prediction is borne out, as the following examples illustrate:

- (37) a. $\emptyset_i \quad a \text{ su}, n_j \quad hE \quad na \quad hOrE$
 he(*O*) arrive he(*n*) told the truth
 ‘When he arrived, he told the truth.’

⁸ Note that we cannot say that *O* is referentially dependent upon the *n*-operator, since this operator is not in an A-position.

- b. [kolo n f yo kolo O_j] IE n_i tE
 love Rel you Neg love him(*O*) bothers him(*n*) Part
 'The fact that you don't love him bothers him.'

These data then strongly support our analysis.

Concluding this part, we have established that

- (i) The descriptive generalization in (19b) should be replaced by (33): an *O*-pronoun cannot be coindexed with an *n*-pronoun if the Comp of the first clause containing *n* c-commands *O*.
- (ii) (33) and (19e) follow from the requirement that *n* must be \bar{A} -bound from Comp at LF.

3.2.3. *n* in Domain D. So far we have discussed the behavior of an *n*-pronoun with respect to an *O*-antecedent and vice versa. We now turn to (19d,f): two occurrences of *n* in the same domain D (that is, clausemates) must be coindexed; *n* is preferably coindexed with some other occurrence of *n* not in domain D, and preferably contraindexed with some NP or *O*-pronoun antecedent not in domain D.

Our analysis rests on the assumption that *n* is a variable at LF and that it is \bar{A} -bound at LF. However, we have not said what we mean by variable. A syntactic or *formal variable* is a category *locally* \bar{A} - or operator-bound: a *wh*-trace, for example. A logical variable need not be a formal variable, however. An English example like *Who thinks he is sick?* can be interpreted as *For which x, x thinks that x is sick*. The pronoun *he* is treated as a (logical) variable even though it is not locally \bar{A} -bound. If we interpret (27) and related statements as requiring that *n* be treated as a logical variable, we conclude that it is not necessary that there be as many *n*-operators as there are *n*-pronouns. If *n*-operators are needed, it suffices to introduce the minimal number of such operators so that all occurrences of *n*-pronouns that need to be bound end up being \bar{A} -bound.

Consider the case of two occurrences of *n* in a simple clause:

- (38) [_{CP} Comp [. . . n n . . .]]

In order for them to be \bar{A} -bound, we need to postulate the presence of at least one *n*-operator in Comp to bind them. Moreover, if there is only one such operator, the two occurrences of *n* will both have to be bound by it and therefore will have to be coindexed. Thus, if no more than one *n*-operator is allowed per Comp, property (19d) follows. We will therefore assume:

- (39) At most one *n*-operator is allowed per Comp.⁹

If this analysis is correct, we expect (19d) to hold, even if there is no c-command relation between the pronouns. In a configuration in which one Comp node is available,

⁹ This restriction recalls the prohibition found in English, for example, that one clause cannot contain two topics. Note that other operators, like *wh*-operators, may cooccur with *n*-operators in Comp.

where the clause contains two n -pronouns n_1 and n_2 , and where n_1 does not c-command n_2 , n_1 and n_2 will have to be coindexed:

- (40) [_{CP} OP [[n_1] . . . n_2]]

The following example illustrates that this is indeed the case:¹⁰

- (41) n_i ceewu n kolo $n_{i,*j}$
 his(n) friend Det likes him(n)

Obligatory coindexing in domain D follows from (39) and the requirement that n be a variable at LF. This analysis also explains the impossibility of (18a): n cannot occur in object position if the subject is also an n -pronoun:

- (42) [_{CP} OP [n [_V n]]]

Since only one operator is allowed, both instances of n will have to be bound by the same n -operator. Therefore, the n in direct object position will also be bound by the subject n , and Principle B is violated.

Actually, property (19d) has been established only on the basis of simple clauses. In such structures, only one Comp node is available. According to (39), only one n -operator may occur per Comp. Suppose now that we embed a simple clause like (38), so that the structure contains two Comp nodes:

- (43) [_{CP} Comp₁ . . . [_{CP} Comp₂ [. . . n n . . .]]]

Since we have two Comp nodes, we may have two distinct operators, one in each Comp, and each binding one occurrence of n . Nothing forces coindexing in this case. Our account therefore makes the curious prediction that two occurrences of n must be coindexed if they occur in the same domain D *and* if they are both c-commanded by only one Comp node. This prediction appears to be correct. The sentences in (44) illustrate the possibilities left open by this prediction:

- (44) a. api bO wu ye n kolo n
 Api believes ye he(n) likes he(n)
 b. api bO wu ye n (ceewu) kolo n erenyi
 Api believes ye his(n) (friend) likes his(n) house

In each of these sentences the two occurrences of n may be contraindexed. In (44b) this

¹⁰ Note that (40) poses an apparent problem, since it is a weak crossover configuration. Both instances of the n -pronoun will be bound by the operator in Comp and will thus violate the Bijection Principle of Koopman and Sportiche (1982). Sportiche (1983) argues that a distinction should be made among \bar{A} -binders and that the Bijection Principle should be reformulated accordingly. Certain \bar{A} -binders (true operators) induce weak crossover effects. Others do not. It suffices to assume that the n -operator is not a true operator in the required sense. Lasnik and Stowell (1987) make a similar proposal and suggest that weak crossover effects are found only with quantificational operators. Since the [$+n$] operator is clearly not quantificational, the Abe facts are consistent with their proposal.

is possible but not preferred. In (44a) it is the only option; this is especially significant because its nonembedded counterpart is ungrammatical.

Let us now turn to the case where two occurrences of *n* are found in different clauses:

- (45) [_{CP} Comp₁ [. . . *n* . . . [_{CP} Comp₂ [. . . *n* . . .]]]]

Recall that in such configurations the two occurrences of *n* are preferably coindexed. In order to minimally satisfy the requirement that each *n* be \bar{A} -bound, it suffices to postulate the presence of an *n*-operator in Comp₁. If so, the two *n*'s will both be interpreted as variables bound by the *n*-operator in Comp₁ and will therefore be coindexed. But there is another option, namely, that we postulate one *n*-operator per Comp. In that case the two pronouns will not have to be coindexed. Each *n* will be bound by its own operator and will have its referential value determined by the range of its operator, and the two operators do not have to be coindexed.

The preference for the coindexing option will follow if we suppose that the requirement for \bar{A} -binding is preferably satisfied by giving as wide a scope as possible to the necessary *n*-operators. It is clear that this is minimally satisfied by postulating the presence of one *n*-operator in the matrix Comp. If it is preferred that there be only one operator, it is preferred that the two occurrences of *n* be coindexed.

Given that each Comp contains at most one such operator, any other postulated *n*-operator will fail to have widest possible scope.

The same assumptions entail that in (46)

- (46) [_{CP} Comp₁ [. . . *O*/lexical NP . . . [_{CP} Comp₂ [. . . *n* . . .]]]]

it is preferred to postulate only one *n*-operator, situated in the matrix Comp (although it is possible in addition to postulate one operator situated in Comp₂). From this, we expect it to be preferred to take the *n*-pronoun as being disjoint from *O* or the lexical NP in a higher clause (see the discussion of (19e)), as is indeed the case.

3.3. Pronominal Binding

The analysis presented so far disregards whether coindexing is interpreted as coreference or binding. We now turn to this aspect of the problem.

Recall that a pronoun may be either coreferential with some other NP (if this NP is referential and in an A-position) or bound by another NP (as for instance when this NP is a quantified expression). In examples like *John saw his mother*, the pronoun can be either a referentially used pronoun (*John saw John's mother*) or a bound variable (*John = x, x saw x's mother*). Following Reinhart (1983) (see also Lasnik (1976), Sag (1976), Williams (1976)), we will assume that, to a certain extent, VP deletion provides a test for this difference.

- (47) John saw his mother and Bill did too.

We understand (47) as meaning that ‘John saw his mother and Bill saw his mother too’. The existence of some level of mental representation at which the elliptical conjunct is reconstructed by filling in information taken from the first one is postulated. Assuming that the first conjunct means that ‘John saw his own mother’, the second one is ambiguous between ‘Bill saw John’s mother’ (the nonsloppy identity reading) or ‘Bill saw his own mother’ (the sloppy identity reading). If *his* is indeed used either referentially or as a bound variable, we have an explanation for the fact that we get exactly these two interpretations. In the first case *John saw his mother* in fact stands for ‘John saw John’s mother’. Reconstruction of the missing part in the second conjunct will yield ‘Bill saw John’s mother’. In the second case the first conjunct stands for ‘John = x (x saw x ’s mother)’. Reconstruction will yield ‘Bill = x (x saw x ’s mother)’. However, elaborating on Sells (1987), we also assume that it is not true that the nonsloppy identity reading arises iff the pronoun is coreferential with its antecedent. Sells provides cases in which nonsloppy readings arise with nonreferential pronouns in what he terms the *cospecificational* reading:

- (48) With each new Hollywood hit, the lead actress thinks she is the new Monroe and the director does too.

Here, nonsloppy identity is possible (the director thinks that the lead actress is the new Monroe). The NP antecedent of the pronoun is in the scope of the quantifier and thus not referential. The pronoun is not referential either. This shows that having a nonreferential antecedent does not guarantee sloppy identity. In sum, if sloppy identity is available, we can only conclude that the pronoun is a bound variable. Reciprocally, if the pronoun has a referential antecedent, nonsloppy identity is available.¹¹

3.3.1. Binding of O-Pronouns. We expect that *O*-pronouns will basically behave like English pronouns. The examples in (49) show that *O*-pronouns can be interpreted as pronouns bound to a ([−n]) nonreferential antecedent (quantifier or *wh*-phrase):

- (49) a. apOUN_{*i*} γo bO γo wu ye Ø_{*i*} mU api
 nobody Neg take Neg see *ye* he(*O*) knew Api
 For no x , x believed that x knew Api
 b. apOUN_{*i*} γo bO γo wu ye f mU O_{*i*}
 nobody Neg take Neg see *ye* you knew him(*O*)
 For no x , x believed that you knew x

Besides being bound to a quantificational NP, the *O*-pronoun can also be bound to a *wh*-quantifier and can occur as a resumptive pronoun in subject position,¹² indirect object

¹¹ Sells argues that what we have called coreference is in fact cospecification, so that sloppy identity is available iff the pronoun is a bound variable, nonsloppy identity iff the pronoun is cospecified with its antecedent. See also Fauconnier (1984) for relevant discussion.

¹² The subject *O*-pronoun is a null pronoun. It may seem a priori hard to decide whether the subject position contains a *wh*-trace or a zero resumptive pronoun. We assume it is a zero resumptive pronoun, because of the data described in section 3.3.2.

position, and genitive contexts:

- (50) ca_i f mU O_i erenyi e
 who you know his house *wh*
 'Whose house do you know?'

The data on sloppy identity corroborate these conclusions. The examples in (51) show that the *O*-pronoun can give rise to sloppy identity interpretation; that is, it can be bound by a referential NP:

- (51) $yapi/\emptyset$ bO wu ye \emptyset mU api, yavo ese
 Yapi/he(*O*) take see *ye* he(*O*) knew Api Yavo too
 'Yapi believed he knew Api, and Yavo too.'
 (i) believed Yapi knew Api (nonsloppy)
 (ii) believed he (Yapi) knew Api (sloppy)

In these examples the antecedent of the bound pronoun c-commands it. In general, the structural conditions for pronominal binding in Abe seem to be identical to those found in English. Thus, in (52) the pronoun cannot be interpreted as bound, due to lack of c-command:

- (52) [kolo n f γ_o kolo apOUN_{*i*}] IE $O_{j,*i}$ tE
 love Rel you Neg love nobody bothers him(*O*) Part
 'The fact that you love nobody bothers him.'

To sum up: The *O*-pronoun can be bound to a QP or a referential NP and occurs as a bound pronoun (resumptive pronoun) in *wh*-questions, relatives, and topicalizations in certain positions (subject, indirect object, genitive). The last possibility to consider is whether *O* can be bound by *n*. This question has already been addressed in the previous section: *O* can never be bound by a [+*n*] antecedent. When an *O*-pronoun and an *n*-pronoun are coindexed, sloppy identity is not possible (ignoring the data discussed in section 4).

3.3.2. Binding of *n*-Pronouns. This raises the question of whether the *n*-pronoun can occur as a bound pronoun at all. *n* cannot be bound by a quantifier like *nobody*:¹³

- (53) a. apOUN_{*i*} γ_o bO γ_o wu ye $n_{*i,j}$ mU api
 nobody Neg take Neg see *ye* he(*n*) know Api
 'Nobody believed that he knew Api.'

¹³ Nor by a *wh*-phrase:

- (i) caa_i f mU n_{*i} erenyi
 who you know his house
 'Whose house do you know?'

The analysis developed so far already accounts for the impossibility of (i): the *n*-pronoun needs to be bound by a [+*n*] operator, which the *wh*-phrase is not.

- b. apOUN_i γo bO γo wu ye api mU n^{*_{i,j}}
 nobody Neg take Neg see ye Api know him(*n*)
 ‘Nobody believed that Api knew him.’

As we would expect, the sloppy identity interpretation is not available in elliptical contexts:

- (54) yapi/∅ bO wu ye n mU api, yavo ese
 Yapi/he(*O*) take see ye he(*n*) know Api Yavo also
 ‘Yapi believes that he(*n*) (Yapi) knows Api, and Yavo too.’
 (i) knows that he(*n*), Yapi knows Api (nonsloppy)
 (ii) * sloppy identity interpretation

This follows straightforwardly: *n* cannot be bound by a [−*n*] element, and binding is a prerequisite for the sloppy identity interpretation. Binding of an *n*-element should be possible, however, if the antecedent is an *n*-element. And in fact, an *n*-pronoun *can* be a bound pronoun if the antecedent is also an *n*-pronoun. Several constructions illustrate this possibility.

In *wh*-constructions the *n*-pronoun occurs as a resumptive pronoun in certain extraction sites (subject, genitive, indirect object) if the antecedent is an *n*-pronoun. This is the case if an *n*-pronoun is topicalized (note that these examples are syntactic counterparts to the proposed LF representation of sentences containing *n*-pronouns):

- (55) a. n O m bO wu ye n mU api
 he(*n*) Top I take see ye he-R know Api
 ‘It is him who I believe knows Api.’
 b. n O f mU n erenyi
 him(*n*) Top you know his(*n*) house
 ‘It is his house you know.’

Moreover, in elliptical constructions the sloppy identity interpretation is available if the antecedent is an *n*-pronoun:

- (56) a. n kolo n ceewu n, yavo ese
 he(*n*) like he(*n*) friend Det Yavo too
 ‘He likes his friend and Yavo does too.’
 (i) Yavo likes Yavo’s friend (sloppy)
 (ii) Yavo likes *n*’s friend (nonsloppy)
 b. n bO wu ye n mU api, yavo ese
 he(*n*) take see ye he(*n*) know Api Yavo too
 ‘He(*n*) believes that he(*n*) knows Api, Yavo too.’
 (i) believes that Yavo knows Api (sloppy)
 (ii) believes that he(*n*) knows Api (nonsloppy)

In fact, both the sloppy and the nonsloppy interpretation are available in (56b).¹⁴ In sum, the *n*-pronoun cannot be bound by a non-*n* antecedent, because the *n*-element cannot be bound by a [−*n*] NP. The *n*-pronoun can be bound by an *n*-operator as in (55). These properties follow without any additional assumptions.

A final remark on the occurrence of several *n*-pronouns in the same domain D: Recall that only one *n*-operator is allowed per CP so as to account for obligatory coindexing of all the *n*-pronouns in CP. This correctly predicts that in elliptical constructions the sloppy interpretation should be possible regardless of c-command relations, since both instances of the pronoun are operator-bound (note that *Yapi* in the elliptical conjunct is an object):

- (57) *n* ceewu kolo *n*, *yapi* ese
 his(*n*) friend loves him(*n*) *Yapi* too
 (sloppy and nonsloppy)

Because of the presence of the operator, the first clause is treated as ‘The *x*, *x* human, such that *x*’s friend loves *x*’. Reconstruction of the second conjunct may yield the sloppy identity reading, which is the relevant reading for our purposes. The nonsloppy reading is also available, possibly a case of cospecification in Sells’s sense. However, the nonsloppy reading can also arise simply if the second conjunct is understood as conjoined to the object of the first clause, rather than to the whole clause.

Parallel facts hold in English. In a sentence like *His friends like him, and John’s friends too*, only the nonsloppy reading is available because the first pronoun fails to c-command the second. This contrasts with a case like *Him I would not ask his boss to listen to t, but John, I would*, where both readings are available. The topicalized pronoun binds the genitive pronoun and its own trace (at S-Structure), exactly as we claim the *n*-operator binds the two occurrences of the *n*-pronoun at LF in (57). Again, this provides strong evidence for the presence of such an operator.

3.4. Subjunctive Complements

We now briefly consider the subjunctive facts (19c). Although we do not have a full analysis of these facts, they seem to be consistent with and support some of our assumptions. In the configuration (58)

- (58) . . . NP* . . . [CP[_{IP} O/*n* . . . V(Subj) . . .]]

an *O*-pronoun in subject position of a subjunctive clause must be coindexed with some [−*n*] NP* (lexical NP or *O*-pronoun) in the immediately superordinate clause. An *n*-pronoun must be disjoint in reference from the same [−*n*] NP* in this context. The

¹⁴ The availability of the sloppy reading, coupled with the requirement on the logical treatment of the *n*-pronoun, suggests that the formula reconstructed in the second conjunct does not contain the pronoun—that is, that the formula reconstructed is [*x* believes that *x* knows *Api*], with *x* bound by *Yavo*.

n-pronoun must be (and the *O*-pronoun cannot be) taken as coindexed to this NP* when it is an *n*-pronoun.

Let us examine where our analysis takes us. The behavior of the *O*- and *n*-pronouns here recalls that of pronouns in subject position in subjunctive complements in Romance languages: an overt pronoun must be disjoint in reference from some c-commanding NP (*Jean_i veut qu'il_{j,*i} vienne* 'Jean wants that he come'), and coreference can only be expressed by using a control structure (*Jean veut venir* 'Jean wants to come'). Abe does not have complement control structures with infinitivals as French does (but compare the logophoric contexts discussed in section 4). Rather, obligatory control is expressed by using subjunctive subordinate clauses. The analogy with control is reinforced by the fact that obligatory coindexing or contraindexing of the subject of the embedded clause holds with respect to the NP corresponding to the controller in a French obligatory control structure: NP* in (58) corresponds to the controller. If this is a structure of obligatory control, it is probably more accurate to talk about the subject of the embedded clause as being bound by the controller rather than as being (obligatorily) coreferential with it. However, it is not really possible to totally assimilate these structures to obligatory control structures: coindexing between NP* and the embedded subject is not obligatory. For example, the embedded subject can be a name (see (7)). A more accurate generalization would be (59):

- (59) If the subject of the subjunctive clause can be bound by NP*, it must be bound by NP*.

With this assumption, some of the facts follow.

If the embedded subject is *O*, it will be bound by NP* if NP* is [−*n*]. Otherwise, if NP* is *n*, binding is impossible. Furthermore, coreference is also excluded, since *n* c-commands *O*. So *O* cannot be coindexed with NP* = *n*.

If the embedded subject is an *n*-pronoun, binding of this pronoun by NP* is impossible unless NP* is itself an *n*-pronoun.

But suppose NP* is [−*n*]. Why is coreference between *n* and NP* excluded? Some alternatives come to mind. The first would be to interpret (59) more broadly, as in Reinhart (1983): since the subject is an *n*-pronoun and the intended reading involves coreference with the matrix subject, use the *O*-pronoun instead since it expresses the same meaning but can also be bound. According to a second alternative, the behavior of *n* would follow if the embedded Comp position did not permit the appearance of an *n*-operator. To see this, suppose that the subjunctive Comp is unavailable (Kemperschinsky (1986) proposes that the subjunctive Comp is not available for *wh*-phrases). The *n*-operator binding the embedded *n* subject will then be one Comp up or higher. This is equivalent to extending the domain D of *n* (at least) to the higher clause. And in D, *n* is obligatorily *O*-free and *n*-bound (if there is an *n*-binder). The two approaches make different predictions in a structure like (60):

- (60) . . . NP* . . . [_{CP}[_{IP}[_{NP} *O/n* *N*] . . . V(Subj) . . .]

Neither alternative says anything about the *O*-pronoun. The first deals only with subjects, the second only with the *n*-pronoun. We therefore expect that the *O*-pronoun can be coindexed or contraindexed with a $[-n]$ NP*, and this seems to be the case. The first alternative says nothing about the *n*-pronoun in this case, either, so its options should be the same. The second approach rightly predicts that a genitive *n* in (60) should behave with respect to NP* exactly as a subject *n* would, since they have the same domain: *n* must be contraindexed with a $[-n]$ NP* and coindexed with NP* = *n* in such configurations.

4. Logophoricity

We now turn to the analysis of logophoric pronouns.

A number of West African languages, like Abe, have what are called *logophoric* pronouns or constructions (for instance, Yoruba (Pulleyblank (1986)), Mundang (Hagège (1974)), Ewe (Clements (1975)), Gokana (Comrie and Hyman (1981)): also see the references cited in these works). The puzzling problem of logophoric pronouns can be informally described as follows. There is a special class of verbs that typically, but not exclusively, includes verbs of saying like *say* and *report* and verbs of perception like *see*. Let us call these verbs *logophoric verbs*. In contexts embedded under a logophoric verb and only in these contexts, a special pronominal form, called the *logophoric pronoun*, must be used to indicate reference to ‘‘the person whose speech, thoughts or perceptions are reported’’ (Clements (1975)). Usually, but not necessarily, the subject of the verb of saying also refers to this person. Following Sells (1987), we will call this person the *logocentric referent*. The regular third person pronoun, often a weak or clitic pronoun, which otherwise behaves like its English counterpart, must be construed as not referring to the logocentric referent. This is illustrated in the following Yoruba example (from Pulleyblank (1986)):

- (61) a. o_i ri pe o_j ni owo
 he saw that he had money
 b. o_i ri pe oun_i ni owo
 he saw that he(L) had money

The logophoric verb here is *ri* ‘see’, the logophoric pronoun is *oun*, and the logocentric referent is denoted by the main subject. For ease of reference, the NP denoting the logocentric referent (here it is the subject of the main verb) will be designated NP*.

This raises the following questions: (a) What characterizes the set of logophoric verbs? (b) What determines the logocentric referent? and (c) What accounts for the behavior of pronouns in logophoric contexts?

4.1. Logophoric Pronouns in Abe and kO-Complementation

In embedded indicative sentences introduced by *ye* (*ye*-complementation), pronouns were shown to have the reference possibilities in (62):

- (62) a. NP/ O_i . . . [ye . . . $O_{i,j}/n_{(i),j}$] V(Indic) . . .]
 b. n_i . . . [ye . . . $O_j/n_{i,(j)}$] V(Indic) . . .]

ye-complements are not the only type of embedded complements in Abe, however. Another frequently occurring type of embedded complement is introduced by *kO*:

- (63) yapi hE kO f ye sE
 Yapi says *kO* you are nice
 'Yapi says that you are nice.'

We will refer to this type of complementation as *kO-complementation*. The pronouns in *kO*-complements behave quite differently from pronouns in *ye*-complements, and as the following examples show, they immediately recall the behavior of logophoric pronouns in other West African languages:

- (64) a. yapi_i hE kO $O_j/n_{i,(j)}$ ye sE
 Yapi said *kO* he is handsome
 b. yapi_i hE kO f wu $O_j/n_{i,(j)}$
 Yapi said *kO* you saw him
 c. yapi_i hE kO f bO wu ye $O_j/n_{i,(j)}$ ye sE
 Yapi said *kO* you take see *ye* he is handsome
 'Yapi said you believe that he is handsome.'

Here the *O*-pronoun, which as we have seen is the regular pronoun, must be disjoint from the main subject. The *n*-pronoun is used to express coreference with it. In this sense, the referential *n*-pronoun is used as a logophoric pronoun. The logocentric referent is the referent of the main subject, noted NP*.

Seen from the perspective of languages with logophoric pronouns, this is hardly surprising. In Abe, however, these properties are unexpected. A comparison of (62) and (64) shows that a reversal of the normal properties of *O*- and *n*-pronouns is observed in *kO*-complements. Whereas the *O*-pronoun is free in reference in (62), it must be disjoint from NP* in (64). Furthermore, although an embedded *n* in (62) is preferably taken as free, it is preferably taken as coindexed with NP* in (64).

This reversal is only observed with respect to a [−*n*] antecedent. When the antecedent is an *n*-pronoun, the data are exactly parallel to the usual pattern when the antecedent is an *n*-pronoun:

- (65) a. n_i hE kO $O_j/n_{i,(j)}$ ye sE
 he(*n*) said *kO* he is handsome
 b. n_i hE kO f wu $O_j/n_{i,(j)}$
 he(*n*) said *kO* you saw him
 c. n_i hE kO f bO wu ye $O_j/n_{i,(j)}$ ye sE
 he(*n*) said *kO* you believe *ye* he is handsome

(65) suggests some preliminary observations. The first runs counter to what we have seen of Abe's pronominal system: *O*- and *n*-pronouns in *kO*-complements behave uni-

formly, disregarding the NP type of their antecedent. Second, the pattern of behavior is exactly the one we would expect in normal contexts when the antecedent has the feature [+n]. The analysis developed below exploits this generalization: we will motivate an analysis for logophoric effects in which a [+n] element is always present. Before we do so, however, let us first determine the exact conditions that trigger logophoricity.

A first question concerns the class of logophoric verbs. What makes a verb qualify as a logophoric verb in Abe? So far as we have been able to determine, such verbs in Abe all are verbs of saying. However, not all verbs of saying select a *kO*-complement. A verb like *ka* 'tell', for instance, selects a *ye*-complement. As the following examples show, pronouns in this complement behave just like pronouns in regular *ye*-complements, and do not show logophoric effects. This indicates that being a logophoric verb is not (exclusively) a semantic property:

- (66) a. *yapi_i ka api ye O_{i,j}/n_{(i),j} ye sE*
 Yapi tell Api ye he is handsome
 b. *yapi_i hE kO O_j/n_{i,(j)} ye sE*
 Yapi said kO he is handsome

Logophoric effects thus seem to depend on the arbitrary syntactic property of taking a *kO*-complement.¹⁵ (Clements (1975) makes a similar observation about Ewe.)

Second, logophoric effects are not always observed in *kO*-complements. They occur only in a subset of *kO*-complements, with respect to a particular argument of the logophoric verb that we will call the *designated argument*.¹⁶ This can be concluded from the following examples, in which the pronouns behave in a normal fashion:

- (67) a. *m hE api_i kO O_{i,j}/n_{i,j} ye sE*
 I said to Api kO she is handsome
 b. *yapi_i ce kO O_{i,j}/n_{i,j} ye sE*
 Yapi heard kO he is handsome

In (67a) no logophoric effect is observed with respect to the object of the logophoric verb (here the source in Sells's sense would be the subject). In (67b) no logophoric effect is observed at all. There is no way in Abe to express the implicit source as an argument of the verb 'hear'. If the implicit source is expressed, it is by inserting *someone said*: *k hE* 'they said'.¹⁷ Then, logophoric effects obtain with respect to the subject of the verb 'say', but not with respect to the subject of 'hear':

- (68) *yapi_i ce api_k hE kO O_{i,j,*k}/n_{i,j,k} a*
 Yapi heard Api say kO s/he had arrived

This phenomenon thus qualifies in all respects as a case of logophoricity.

¹⁵ Although it might be the case that belonging to a certain semantic class is a necessary condition for taking a *kO*-complement.

¹⁶ Sells (1987) informally suggests that the role Source (of information) is the relevant notion determining what the designated argument is in African languages: Abe is consistent with this.

¹⁷ Indefinite pronouns are rendered as third person plural pronouns.

4.2. Analysis

Let us summarize the logophoric effects, noting that they hold everywhere, regardless of how far under a logophoric verb the pronouns are embedded:

- (69) a. The *O*-pronoun must be contraindexed with a particular argument (NP*, if expressed) of the logophoric verb.
 b. *n*-pronouns may be coindexed with NP* regardless of what NP* is.

We will propose an analysis that leaves our treatment of the pronominal system intact. The different behavior in *kO*-complements will be a consequence of (a) some lexical property related to the particular class of verbs that select a *kO*-complement and (b) a property of the *kO*-complement itself.

As mentioned earlier, the pronouns' behavior in logophoric complements would be entirely regular if the antecedent were not a lexical NP but rather an *n*-pronoun. The following examples—(70a,b) versus (70c)—illustrate the parallelism:

- (70) a. NP/ n_i . . . [*kO* . . . $O_j/n_{i,(j)}$. . .]
 b. n_i . . . [*ye* . . . $O_j/n_{i,(j)}$. . .]
 c. NP/ O_i . . . [*ye* . . . $O_{i,j}/n_{(i),j}$. . .]

(70a) shows that the NP type of the pronoun's antecedent does not matter, as long as it is the designated argument. As a first approximation, it appears that the target pronouns behave as though they had an *n*-pronoun antecedent. Let us therefore assume the following property of verbs selecting for a *kO*-complement:

- (71) A verb that selects a *kO*-complement assigns the feature [+*n*] to its designated argument.

It can easily be seen how (71) accounts for the data discussed so far:

- (72) a. $yapi_i$ hE *kO* O_j/n_i ye sE
 _[+n]
 Yapi said *kO* he is handsome
 b. $yapi_i$ hE *kO* f wu O_j/n_i
 _[+n]
 Yapi said *kO* you saw him
 c. $yapi$ hE *kO* f bO wu ye O_j/n_i ye sE
 _[+n]
 Yapi said *kO* you believe ye he is handsome

If the designated argument is different from the antecedent or not syntactically represented, the pronouns will behave in a regular fashion. We thus obtain the contrast between (72) and (67), repeated here as (73):

- (73) a. m hE api_i *kO* $O_{i,j}/n_{i,j}$ ye sE
 I said to Api *kO* she is handsome

The structure of a clause with a verb that selects for a *kO*-complement would really be as follows:

If this structure is correct, we can now propose that the NP carrying the *n*-feature is in fact the subject of the verb *kO* (or, equivalently, the *n*-operator introduced at LF to bind this empty [+n] category, if there is one; see below). To this effect, we modify (69) to (77), with (78) as result:

This silent category being $[+n]$, it requires the introduction of an n -operator to bind it. Furthermore, the simplest assumption seems to be that this kO -clause is a CP:

Some independent evidence for this full clausal structure (and therefore for the presence of a subject) derives from topicalization constructions, and from the *wh*-type of V-movement construction (predicate cleft; see Koopman (1984)): a topicalized NP or a topicalized verb can be moved to clause-initial position. If a *kO*-clause is involved, this topicalized element can occur sentence-initially, immediately following *kO*, or immediately preceding *kO*:

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- (80) a. saka a yapi hE api kO n di
 rice-Top Yapi told Api *kO* he ate
 'Rice, Yapi told Api that he ate.'
 b. yapi hE api saka a kO n di
 Yapi told Api rice-Top *kO* he ate
 c. yapi hE api kO saka a ne di
 Yapi told Api *kO* rice-Top he ate

Crucially, examples like (79b) and (80b) are only possible with *kO*-complements: they are not possible with *ye*-complements (though both the equivalents of (79a,c) and the equivalents of (80a,c) are):

- (81) *yapi ka api kolo O ye O kolo O
 Yapi told Api love-Top *ye* he loved her

This follows if we treat *ye* as a regular complementizer and *kO* as a verb.

If *kO* is a verb in a full clausal structure and is selected by a higher verb, a problem arises. It seems that selectional (and other semanticolexical) restrictions should be checked under government at LF (as suggested for example by the distribution of *wh*-words in English and Chinese): in order to fulfill this requirement, we are led to assume that the verb *kO* moves from a position in which it is ungoverned by a verb that selects for *kO* to a position in which it can be governed by such a verb; that is, it will have to move to the Comp position of its CP in LF. In a real sense, then, it is both a verb and a complementizer.¹⁸

4.3. Pronominal Binding in Logophoric Contexts

We now turn to a problem related to pronominal binding in logophoric contexts. Consider first nonlogophoric contexts. We have seen that an *n*-pronoun cannot be bound by anything but another *n*-pronoun. When coindexing of an *n*-pronoun with a [$-n$] NP occurs, this NP cannot be quantificational (a *wh*-phrase or quantified expression). When this NP is referential, the tests for pronominal binding fail: sloppy identity is never an option.

Consider now logophoric contexts. In such contexts an occurrence of *n* embedded under a logophoric verb is preferably understood as coindexed with NP*. So far, we have treated this as a case of coreference. The problem is that *n* can also be bound by NP*. This shows up in two ways:

- (82) a. apOUN_{*i*} ye hE kO O_{*j*}/n_{*i*} ye sE
 nobody Neg said *kO* he is handsome
 b. yapi hE kO n_{*i*} ye sE, api ese
 Yapi said *kO* he is handsome Api also (sloppy/nonsloppy)

¹⁸ This might relate to the tendency for what appears to be homophony between the verb 'say' and complementizers.

Thus, the reversal of behavior of the *n*-pronoun observed in logophoric contexts extends to pronominal binding as well. Let us examine the predictions of our proposals case by case. The basic structure to examine obeys the schema (83),

- (83) NP* . . . V . . . [_{CP1} Op₁ [_e _[+n] kO [_{CP2} Comp₂ [. . . NP** . . .

where V is the logophoric verb, NP* its designated argument, *kO* the verbal complementizer, *e* its silent subject, which is marked [+n], Op₁ the *n*-operator that must be introduced to bind this silent [+n] subject, and NP** a pronoun. By assumption, NP* and *e* (and consequently Op₁) are coindexed: this is the control property of the construction.

If NP** is an *O*-pronoun, it cannot be coindexed either with *e* or, by transitivity, with NP*, since it would become bound by Op₁: an *O*-pronoun can neither be coreferential with nor bound by NP*. Suppose next that NP** is an *n*-pronoun. We now have two options: either introduce an *n*-operator in the second Comp to bind NP** or not. If we do not, we must coindex NP** with Op₁ so as to turn it into a variable: by transitivity, it becomes coindexed with *e* and NP*. In this case NP** is bound by Op₁, which is itself bound by NP* because of the control property of the construction: NP** is bound by NP* and we get sloppy identity in elliptic constructions. The second option consists in introducing a [+n] operator Op₂ in the second Comp to bind NP**. This operator can either be coindexed with NP*/*e*/Op₁ or not. If it is, the coindexation between NP* and Op₂ can be either a case of coreference (the range of Op₂ is identical to the reference of *e*, or of NP*, which of course must be referential) or a case of binding. In the first case we get the nonsloppy identity reading in elliptical constructions. In the second case we get the sloppy identity reading.

We thus cover all the cases. Of course, one problem remains: Why can the [+n] operator Op₁ be bound to NP* by control even if NP* is [−n]?

Why is the prohibition against binding with mismatching features lifted in logophoric contexts? The only answer we can offer at this point is an analogy with observations made by Montalbetti (1984) concerning Spanish (and also Brazilian Portuguese, Japanese, and Catalan):

- (84) There is a class C of positions such that
- a. In some position P of C
 - i. Overt pronouns may freely alternate with covert pronouns.
 - ii. An overt pronoun cannot have a formal variable as antecedent; in other words, a trace generated by Quantifier Raising or *Wh* Movement of a quantified expression cannot bind an overt pronoun (see (85a)).
 - b. In some position P not in C
 - i. Covert pronouns are not allowed.
 - ii. Overt pronouns may have formal variables as antecedents (see (85b)).

Roughly speaking, then, in positions where there is a choice between an overt and a covert pronoun, the overt pronoun cannot have a formal variable as antecedent:¹⁹

- (85) a. Quién t_i cree que él_{*i}/e_i es inteligente?
 who believes that he is intelligent
 (Montalbetti (1984, 98))
- b. Quién t_i quiere que Maria hable de él_i/*e?
 who wants that Maria talk about him
 ‘Who wants Maria to talk about him?’
 Binding OK (Montalbetti (1984, 100))

Although the Abe and Spanish situations differ, they are formally similar. In Abe there is no real overt/covert alternation. However, there is an *O/n* alternation. In all but one of the contexts we have described so far, either one of these two pronouns may occur. In contexts where *O*-pronouns can be bound by some antecedent *A*, *n*-pronouns cannot be bound by *A*. Reciprocally, in contexts where *n*-pronouns can be bound by some antecedent *A*, *O*-pronouns cannot be bound by *A*. The one exception is the subject position of *kO*. There, we claim, the silent subject must be marked [+*n*], therefore not tolerating any alternation. By analogy with Montalbetti’s observations, we may propose to relativize our earlier claim that two elements must have the same feature specifications if a binding relation holds between them in the following way: feature value identity is required if there is a choice. If there is no choice, this restriction is overridden. Of course, we would not want to extend this to any kind of feature mismatch. In this case it does not seem unreasonable. After all, both *n*- and *O*-pronouns are third person pronouns that can be coreferential with each other.

5. Summary and Conclusion

Let us summarize the main features of our analysis of the referential interactions between pronouns and nominals in Abe. Binding theory accounts only for disjoint reference between pronouns in their GCs; it accounts for none of the complex referential interactions between pronominals and nominals. Central to understanding these is our hypothesis that pronouns of the *n*-series are logical variables. This implies that in sentences containing *n*-pronouns an appropriate operator must be introduced to turn the *n*-pronoun into a logical variable. We thus derive that the domain in which two (or more) *n*-pronouns are obligatorily coindexed is a domain with a *Comp*: *n*-pronouns are obligatorily coindexed when they are dominated by one and at most one *Comp* node. If more *Comp* nodes are present, more *n*-operators can be introduced and, as we have shown, coindexing is no longer obligatory. Furthermore, an *O*-pronoun that occurs in the scope of a *Comp* node immediately dominating an *n*-pronoun must be contraindexed with it, because the *O*-pronoun cannot be bound by an *n*-element (coindexing with an \bar{A} -position

¹⁹ In Spanish the generalization is more complicated: when there is a choice, the overt pronoun cannot have a formal variable as *local* antecedent (see Montalbetti (1984)).

or with an *n*-pronoun (a variable) must be interpreted as binding). We further showed that our analysis extends to the facts concerning pronominal binding and that it is consistent with the particular behavior of pronouns in subject position of subjunctive complements.

It is crucial to our analysis that an *n*-operator occurs in Comp, so as to convert the *n*-pronoun into a logical variable, if the *n*-pronoun is not already converted into a logical variable. So far we have not specified how such an operator is introduced. One possibility is that it can be freely introduced in any Comp. Prohibition against vacuous quantification will require the presence of an appropriate *n*-pronoun in its scope. Alternatively, we could assume that the operator-variable relation arises through movement of some *n*-pronoun to Comp. Once an *n*-pronoun has moved to Comp, other *n*-pronouns can be treated as logical variables. There are no clear indications in favor of a movement analysis (no ECP effects or constraint violation effects). In any case the precise way in which the *n*-operator is introduced does not really affect our analysis, and we will leave the matter open at this point.

We started by assimilating the overt *n*-pronoun to a referentially used pronoun. It seems to be an exact third person counterpart to first and second person pronouns. In a given sentence it identifies particular participants (preferably one) in a discourse situation. This is why, just like first and second person, there is a strong preference (if not a requirement) to take it to have only human referents. Because of its syntactic properties, we paradoxically concluded that it was in fact a logical variable. It appears natural to conclude that its referential qualities in fact reflect those of the operator introduced to bind it. By uniformity, it would also appear natural to conclude that first and second person pronouns should also be treated as logical variables.

A particularly interesting feature of Abe's pronominal system is that the *n*-pronouns are also used as logophoric pronouns. We described the logophoric effect in detail and motivated a purely syntactic analysis for it. The logophoric effect arises from the particular properties of the *n*-pronoun, in conjunction with the properties of a particular type of complementation: the complementizer *kO* is in fact a verb with a [+*n*] silent subject. Logophoricity was originally introduced as a descriptive category for the properties of certain pronouns in West African languages, which were deemed to be discourse properties (as the name *logophoricity* suggests). It has since been invoked as an important feature in understanding the properties of Japanese and Icelandic reflexives (see Sells (1987) and references therein), and it has again been argued to require the introduction of discourse considerations in the treatment of phenomena usually treated more syntactically, such as the constraints on referential dependencies between NPs. There is no a priori way to determine in terms of which concepts a given phenomenon should be treated. Logophoricity has often been treated in terms of discourse properties or representations. The Abe system suggests that it should be considered in the realm of syntax, at least as far as referential interactions are concerned. Certain other aspects of the problem do not seem to be syntactic. For example, we have left the meaning of the

feature [+n] open: it seems plausible that discourse considerations play an important role in determining it.

References

- Arnott, D. W. (1970) *The Nominal and Verbal Systems of Fula*, Oxford University Press, London.
- Chomsky, N. (1981) *Lectures on Government and Binding*, Foris, Dordrecht.
- Chomsky, N. (1986) *Knowledge of Language: Its Nature, Origin, and Use*, Praeger, New York.
- Clements, G. N. (1975) "The Logophoric Pronoun in Ewe: Its Role in Discourse," *Journal of West African Languages* 10, 141–177.
- Comrie, B. and L. Hyman (1981) "Logophoric Reference in Gokana," *Journal of African Languages and Linguistics* 3, 19–37.
- Evans, G. (1980) "Pronouns," *Linguistic Inquiry* 11, 337–362.
- Fauconnier, G. (1984) *Espaces mentaux*, Editions de Minuit, Paris.
- Hagège, C. (1974) "Les pronoms logophoriques," *Bulletin de la Société de Linguistique de Paris* 1, 287–310.
- Haïk, I. (1984) *The Syntax of Operators*, Doctoral dissertation, MIT, Cambridge, Massachusetts.
- Higginbotham, J. (1983) "Logical Form, Binding, and Nominals," *Linguistic Inquiry* 14, 325–420.
- Jackendoff, R. (1987) "The Status of Thematic Relations in Linguistic Theory," *Linguistic Inquiry* 18, 369–411.
- Kempschinsky, P. (1986) *Romance Subjunctive Clauses and Logical Form*, Doctoral dissertation, UCLA, Los Angeles, California.
- Koopman, H. (1984) *The Syntax of Verbs*, Foris, Dordrecht.
- Koopman, H. and D. Sportiche (1982) "Variables and the Bijection Principle," *The Linguistic Review* 2, 139–160.
- Koopman, H. and D. Sportiche (in preparation) "The Pronominal System of Fula."
- Lasnik, H. (1976) "Remarks on Coreference," *Linguistic Analysis* 2, 1–23.
- Lasnik, H. (1981) "On Two Recent Treatments of Disjoint Reference," *Journal of Linguistic Research* 1. 4, 48–58.
- Lasnik, H. and T. Stowell (1987) "Weakest Crossover," ms., UCLA, Los Angeles, California, and University of Connecticut, Storrs.
- Montalbetti, M. (1984) *After Binding*, Doctoral dissertation, MIT, Cambridge, Massachusetts.
- Pulleyblank, D. (1986) "Clitics in Yoruba," in H. Borer, ed., *Syntax and Semantics*. Vol. 19: *The Syntax of Pronominal Clitics*, Academic Press, New York.
- Reinhart, T. (1983) *Anaphora and Semantic Interpretation*, Croom Helm, London.
- Sag, I. (1976) *Deletion and Logical Form*, Doctoral dissertation, MIT, Cambridge, Massachusetts.
- Sells, P. (1986) "Coreference and Bound Anaphora: A Restatement of the Facts," in *Proceedings of the Sixteenth Annual Meeting, NELS, GLSA*, University of Massachusetts, Amherst.
- Sells, P. (1987) "Aspects of Logophoricity," *Linguistic Inquiry* 18, 445–479.
- Sportiche, D. (1983) *Structural Invariance and Symmetry in Syntax*, Doctoral dissertation, MIT, Cambridge, Massachusetts.
- Sportiche, D. (1988) *Conditions on Silent Categories*, ms., UCLA, Los Angeles, California.
- Stowell, T. (1981) *Origins of Phrase Structure*, Doctoral dissertation, MIT, Cambridge, Massachusetts.
- Williams, E. (1976) "Discourse and Logical Form," *Linguistic Inquiry* 8, 101–139.

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