# ARGUMENT OBVIATION AND SWITCH-REFERENCE IN HOPI

LaVerne Masayesva Jeanne and Ken Hale

In this paper we examine the suggestion made in Jeanne (1978) to the effect that the phenomenon of subject obviation, more popularly termed "switch-reference" (Jacobsen, 1967), belongs properly to the general system of grammatical principles which govern coreference relations among the arguments of a sentence, i.e., to what is now known as the Binding Theory within the framework elaborated by Chomsky in his *Lectures on Government and Binding* (1981). We reexamine Jeanne's original treatment of Hopi obviation in the light of recent formulations of the Binding Theory and in the light of recent work by Finer (1984, 1985) which also seeks to account for switch-reference within that theory.

The generally accepted version of the Binding Theory is that presented in (1) below:

(1) ***The Binding Theory*** (Chomsky, 1981:188):
(A) An anaphor is bound in its governing category.
(B) A pronominal is free in its governing category.
(C) An R-expression is free.

The following Hopi sentences, and their English counterparts, illustrate the functioning of each of these principles:

(2) (a) Mi' tiyo'ya [*ec*] naa-tuhota.
(that boy [*ec*] REFL/RECIP-hurt)
'The boy hurt himself.'
(b) Mi' tiyo'ya pu-t tuuhota.
(that boy him-ACC hurt)
'The boy hurt him.'
(c) Pam mi-t tiyo'ya-t tuuhota.
(he that-ACC boy-ACC hurt)
'He hurt the boy.'

In (2a), the object of the verb *tuuhota* (hurt), represented in syntax as an "empty category" (symbolized here as [*ec*]), is identified as an *anaphor* (by virtue of the reflexive/reciprocal marking on the verb). Being an anaphor, this object must be bound in its governing category, in accordance with condition (A) of the Binding Theory. The notion "governing category", in the sense relevant here, can be identified with the concept "Complete Functional Complex" of Chomsky (1984), defined very roughly, and minimally, as follows:

(3) ***Complete Functional Complex (CFC):***
*A* is a CFC for *B* if it is the minimal category containing (i) *B* itself, (ii) a *governor* of *B*, and (iii) a subject.

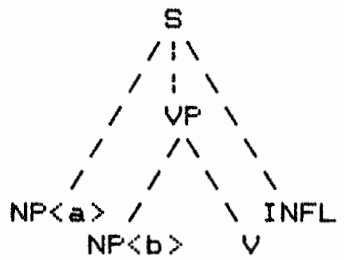
Assuming, as is usually done, that the verb governs its object and that the subject is a constituent of S, not VP, then it is the category S which constitutes the governing category of the object in (2a), in the sense relevant to the Binding Theory. The latter is satisfied in (2a), if we can assume that the object there is *bound* to the subject, as we customarily do assume to be the case for the reflexive relation. We will adopt the usual definition and notation for the relation *bound*:

(4) ***Bound:***
*A* binds *B* if *A* c-commands *B* and *B* is "referentially linked" to (co-indexed with) *A*.

If an argument is not *bound*, in the sense of (4), then it is *free*, as required by conditions (B) and (C) of the Binding Theory. Sentence (2b) conforms to condition (B), since the object NP, the pronominal *pu-t* (him), is free in its governing category (S). And sentence (2c) conforms to condition (C), since the object, the R-expression object -- i.e., the overt NP expression *wi-t tiyo'ya-t* (the boy, accusative) -- is free.

The structural configuration shared by the sentences of (2) is essentially that depicted in (5) below:

(5)




Following Jeanne (1978), we assume that INFL (formerly AUX) is the head of the category S in Hopi (as is now assumed, within the GB framework, to be the case for languages generally) and that the verb heads an autonomous projection VP. That is to say, S and VP are projections of the categories INFL and V, respectively. The subject argument and the VP which is predicated of it are introduced as complements of INFL. And since the object argument is introduced as a complement of V, it follows that the subject asymmetrically c-commands the object, as can be seen in (5), where NP<a> is the subject, and NP<b> the object. Given these structural relations, according to the Binding Theory, if NP<b> is an anaphor, it must be bound by NP<a> in (5). By contrast, if NP<b> is not an anaphor, i.e., if it is a pronominal or an R-expression, it must be free in (5) and, therefore, *not* bound to NP<a>. Thus, given the grammaticality judgments and coreference interpretations attached to the Hopi sentences of (2), it follows that the object of the verb must be an *anaphor* in (2a) and a *non-anaphor* in (2b-c).

The parallel which exists between binding relations of the type represented in (2) and the coreference relations involved in subject obviation, or switch-reference, is illustrated by the sentences of (6) below:

(6) (a) [*'I-pava paki-t puu'*] pam qatuptu.
(my-OBro enter-PROX then he sat)
'When my brother entered, he (my brother) sat down.'
'My brother came in and sat down.'

(b) [*'I-pava paki-q puu'*] pam qatuptu.
(my-OBro enter-OBV then he sat)
'When my brother came in, he/she (not my brother) sat down.'

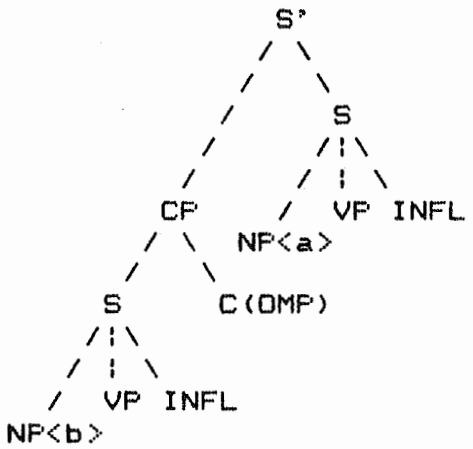
(c) Pam paki-q puu' *'i-pava* qatuptu.
(he enter-OBV then my-OBro sat)
'When he/she (not my brother) came in, my brother sat down.'

We assume here, as is usually done, that the first clause in these Hopi sentences is subordinate to the second. The relevant coreference relations are those holding between the subordinate-clause subject and the matrix-clause subject. In (6a), the first is necessarily interpreted as coreferential with the second, while in (6b-c), the two subjects are necessarily disjoint. This situation is, of course, closely similar in nature to the binding relations which hold in the sentences of (2), and it is reasonable to expect that the Binding Theory is at work here as well.

It is evident, however, that the Binding Theory cannot carry over directly and straightforwardly to the coreference relations involved in so-called switch reference. First, while the NP expression *'i-pava* (my brother) is necessarily coreferential with the subject of the matrix clause in (6a), we cannot say that it is *bound*, in the sense of the Binding Theory. It is inherently an R-expression and not an anaphor. Therefore, if it were bound, we would have a straightforward condition C violation -- condition C is otherwise inviolate in Hopi, as can be seen by the ungrammaticality which results if, for example, an R-expression is substituted for the empty category object in (2a). Second, it is most unlikely that a c-command relation (in either direction) holds between the arguments involved in subject obviation of the type represented in (6) -- hence, the binding relation is technically impossible there. And, as just noted, c-command between the subjects would lead immediately to condition C violations in cases of subject coreference.

It seems most reasonable to assume that the dependent clauses in the sentences of (6) are adjuncts, rather than daughters, to S (cf. Jeanne, 1978, for a detailed discussion of Hopi $\bar{X}$-theory). Simplifying somewhat, without loss of essential detail, the structure shared by the sentences of (6) is as depicted in (7) below:

(7)




Under "strong" c-command (according to which *A* c-commands *B* if the first branching node dominating *A* also dominates *B*; cf. Reinhart, 1976), NP<a> does not c-command NP<b>. The latter cannot, therefore, be *bound* to the former. This is fortunate, since otherwise the perfectly grammatical Hopi sentence (6a) would be in violation of condition C, in defiance of the facts regarding that condition elsewhere in Hopi and in defiance of what has been found to hold quite generally in languages of the world. We are left, however, with an as yet unexplained *similarity* between subject obviation (i.e., switch-reference) and the canonical situation, illustrated by (2), in which the Binding Theory applies straightforwardly.

To put the matter in question form: How do we account for the coreference facts of (6) and the like? Is the Binding Theory involved in Hopi subject obviation at all? And, if so, precisely how is it involved? In attempting to answer these questions, we will develop a conception of subject obviation which combines aspects of the analysis suggested for Hopi in Jeanne (1978) and aspects of the theory outlined for switch-reference generally in Finer (1984, 1985).

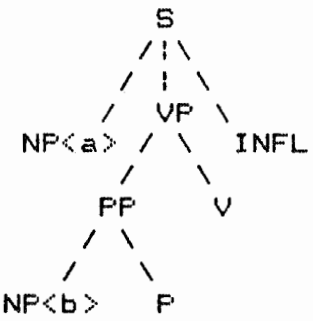
Let us first examine other Hopi constructions in which the Binding Theory appears to apply in the expected way.

The sentences of (8) below each contain a postpositional phrase complement of the main verb *yu'a'ata* (speak). In (8a), the object of the postposition is bound by the subject of the main verb. In (8b), on the other hand, the object of the postpositon is free:

(8) (a) Taqa [ec] naa-mi yu'a'ata.
(Taqa [ec] REFL/RECIP-to speak)
'Taqa is speaking to himself.'
(b) Taqa pu-t 'a-w yu'a'ata.
(Taqa him-ACC 3SG-to speak)
'Taqa is speaking to him/her.'

The structure shared by these two sentences is essentially as follows:

(9)




The CFC for NP<b> is clearly S, since that is the minimal category containing the governor of NP<b> (i.e., P) and a subject (i.e., NP<a>). Therefore, according to the binding theory, anaphoric NP<b> must be bound within S, as is the case in (8a), while pronominal NP<b> must be free within S, as it is in (8b). The sentences of (8) conform perfectly to the Binding Theory.

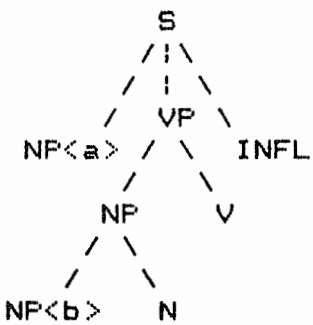
The same can be said of the sentences of (10) below, in which the object of the main verb *kun'tuva* (kick) is a nominal possessive construction:

(10) (a) Taqa [*ec*] moosa-y kun'tuva.
(Taqa [*ec*] cat-ACC:PROX kicked)
'Taqa kicked his (Taqa's) cat.'

(b) Taqa pu-t moosa-y-at kun'tuva.
(Taqa him-ACC cat-ACC-OBV kicked)
'Taqa kicked his/her (not Taqa's) cat.'

The structure involved here is essentially that set out in (11) below:

(11)




The structural relations in (11) are perfectly analogous to those in (9). Accordingly, the CFC for NP<b> is S. Anaphoric NP<b> is bound in S, as in (10a), and pronominal NP<b> is free in S, as in (10b), in conformity with the Binding Theory.

In relation to the Binding Theory, the Hopi structures (5), (9), and (11) all share a common characteristic: The morphological properties of the governor of NP<b> signal the anaphoric status of the latter. Thus, for example, if the verb in (5) is marked with the reflexive/recoprocal prefix *naa-*, then its object, NP<b>, is an anaphor; if the verb is not so marked, then its object is not an anaphor. Similarly, if the postposition in (9) is marked with the prefix *naa-*, its object is an anaphor; otherwise, the object is a non-anaphor. Finally, in the possessive construction of (11), if the head noun is marked with the obviative element *-at* (plural *-am*), the possessor expression governed by the head noun is identified as a non-anaphor; if the obviative element is absent, the possessor is an anaphor. This observation led Jeanne (1978) to propose that a single general principle is at work. Briefly, the principle is as stated in (12) below (slightly modified from the original to conform to the conception of Hopi anaphora being developed here):

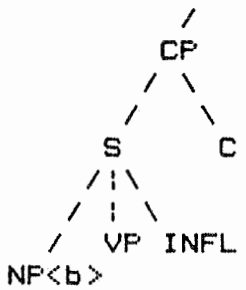
(12) ***The Hopi Rule of Coreference:***
If an $\bar{X}$-structure is identified (by the morphological properties of its head, X) as *a*-proximate, then its principal argument (governed by the head X) is *a*-anaphoric and, accordingly, *bound* (if [+anaphoric]) or *free* (if [-anaphoric]) in relation to the subject of the minimal CFC containing that argument.

The term *proximate* here is borrowed from the original Algonquianist terminology of obviation (see Jeanne, 1978, for discussion). In the Uto-Aztecan usage, adopted by some linguists, the plus, or proximate, value of the opposition (glossed PROX) designates the relation in which one argument is identified as coreferential to another; by contrast, the minus, or obviative, value (glossed OBV) designates the relation in which a particular argument is identified as disjoint in reference to another. In using this terminology here, we posit a feature [proximate] which we claim is generally associated with the heads of syntactic categories (being determinable from the morphological properties thereof) and which serves to identify the anaphoric status (i.e., status as *bound* or *free*) of their arguments.

The Hopi Rule of Coreference, in conjunction with the general Binding Theory (1), correctly accounts for the corefernce facts of the sentences of (2), (8), and (10). It does not, however, immediately account for the coreference facts of subject obviation sentences of the type represented by (6a-c). In particular, we are left with the apparent paradox that the subject of (6a), for example, is necessarily *coreferential* with the matrix subject while not, technically speaking, *bound* to the latter. Our task now is to determine the manner in which the Hopi Rule of Coreference extends to subject obviation.

In each of the sentences of (6), the dependent clause is marked to indicate the coreference relation which its subject must bear in relation to the subject of the matrix clause. This, we contend, is simply an extension of the general Hopi principle of marking the head of a construction for obviation (i.e., for a value of the feature [proximate]), thereby defining the anaphoric status of its complement (i.e., its "principal argument", in the terminology of (12) above). The elements which effect this marking in (6) are the [+proximate] complementizer *-t* (appearing in (6a); this is just one of a larger system of proximate complementizers; cf. Jeanne, 1978, for more detail), and the obviative, or [-proximate] complementizer *-q* (appearing in (6b-c)). We follow Finer (1985) in identifying these elements with the category "complementizer" (COMP, or simply C), and we assume further, as Finer and others have done, that the complementizer fits into the X̄-theory in the usual way. Thus, the category C(OMP) heads a phrasal projection CP, and its complement (i.e., the principal argument of CP) is the sentence, S. These structural relations are included in (7) above; we repeat the essential substructure in (13) below:

(13)




If C is [+proximate] (e.g., *-t*, as in (6a)), then its complement is anaphoric, and therefore *bound* in its CFC. Notice, however, that the complement of C is not the subject of the dependent clause (NP<b>) but rather S, the clause itself. What does it mean to say that the S in a proximate structure is *bound*? This is the key question in arriving at a conception of subject obviation as a natural extension of the Binding Theory, which normally concerns itself with coreference relations among *arguments* in the standard sense (i.e., NP arguments of verbs). The answer lies in the nature of the category S. If, as originally suggested in Jeanne (1978), the head of S is INFL, then, to say that S is bound in a given structure is to say that INFL is bound. But what does it mean to say that INFL is bound? In Hopi, as in most languages in which it is an autonomous category, INFL contains elements identifying certain properties of its two complements, the VP and the NP subject. Thus, it contains an element, sometimes abbreviated Tns, defining the tense category of the verb; and it contains an element, often labeled AGR for "agreement", which identifies one or more (pro)nominal features of the subject. In the Hopi sentences used so far in illustration, the category INFL is, in fact, phonologically non-overt, due simply to the fact that the tense

category of the illustrative sentences is consistently non-future (always marked by zero) and the subjects are consistently singular in number (also marked by zero). There are, however, overt occurences of INFL in Hopi -- e.g., in the category of tense, *-ni* 'future', *-ngwu* 'usitative'. The INFL element which is relevant to our discussion is AGR. In Hopi, the number category of the subject is marked in INFL. Although it has a number of distinct morphophonological realizations (see, for example, Hale, Jeanne, and Pranka, 1984), the regular pattern marks the opposition by means of the suffix *-ya*, for plural, and the zero element, for non-plural, as illustrated in (14) below:

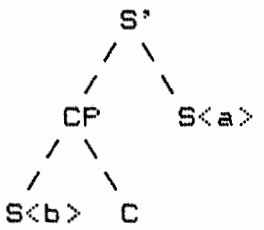
(14) (a) Puma hohonaq-ya.
(they play-PL)
'They are playing.'
(b) Pam hohonaqa.
(he/she play:NONPL)
'He/she is playing.'

We wish to suggest that it is the AGR element in INFL which is identified as *bound* or *free* by the obviation system inherent to the governing C in Hopi. That is to say, if C is [+proximate] in (13), then the AGR component of INFL is [+anaphoric]; and conversely, if C is [-proximate], then AGR is [-anaphoric].

The question now is this: if AGR is bound in a given instance, what is it bound to? And if AGR is free, what is it free in relation to?

The answer to this is relatively straightforward, given a slight, though rather natural, extension of conventional notions. First, the binder of AGR must c-command it, by definition. If we look at the structure given at (7) above, we see that the matrix S stands in precisely the right structural position to bind the subordinate S. The relevant portion of (7) is repeated here for convenience:

(15)




Clearly, S<a> c-commands S<b>. The former could, therefore, *bind* the latter. Of course, we are claiming that the relevant binding relation here involves AGR. But this is a feature of S, by virtue of the fact that S is a projection of INFL, of which AGR is a component. And this is the sense in which we maintain that S<b> is bound (or free, as the case may be) in relation to S<a>. If AGR of S<b> is identified as anaphoric, it is bound to AGR of S<a>; if AGR of S<b> is non-anaphoric, then it is free in

relation to AGR of S<a>.

If this is the correct idea for subject obviation in Hopi, then it will follow automatically from the Hopi Rule of Coreference (12), provided we extend the notion subject to include not only [NP, S] but also AGR (cf. Chomsky, 1981, in which the notion "SUBJECT" (upper case), introduced into the Binding Theory to handle certain problems of English, subsumes AGR as well as the traditional "subject"). This extension is not unreasonable in view of the fact that AGR does, in fact, represent certain features of the subject.

We assume that the agreement relation which holds between AGR and the subject NP is a form of *identification*, of AGR with the subject. It is by virture of this identification that the coreference relations found in sentences of the type represented by (6a-c) are defined. Thus, for example, the subject of the dependent clause of (6a) is necessarily coreferential with the matrix subject because it is identified with the dependent AGR which, in turn, is bound to the matrix AGR with which the matrix subject is identified.

## REFERENCES


Chomsky, N. (1981) *Lectures on Government and Binding*, Foris, Dordrecht.

-----. (1984) *Knowledge of Language: Its Nature, Origins and Use*, MIT unpublished manuscript, Cambridge, Massachusetts.

Finer, D. (1984) *The Formal Grammar of Switch-Reference*, University of Massachusetts, Doctoral Dissertation, Amherst, Massachusetts.

-----. (1985) "The Syntax of Switch-reference," *Linguistic Inquiry*, Cambridge, Massachusetts.

Hale, K., L. M. Jeanne, and P. Franka. (1984) "Where's Suppletion?" Paper presented to GLOW Conference, Copenhagen, 1984.

Jeanne, L. M. (1978) *Aspects of Hopi Grammar*, MIT Doctoral Dissertation, Cambridge, Massachusetts.

Reinhart, T. (1976) *The Syntactic Domain of Anaphora*, MIT Doctoral Dissertation, Cambridge, Massachusetts.