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On

Mohawk word order

by

Adriana Chamorro

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Abstract

This thesis examines the influence of definiteness and movement on Mohawk free word order from the perspective of Government and Binding Theory. On the one hand, Mohawk data show that the relative order of NP's with respect to the verb does not determine definiteness and that the particle *ne* is not a definite determiner, the language lacking this type of "pure" marker for this feature, all of which contradicts previous claims. It is argued that pragmatic considerations will determine the interpretation of nominals. On the other hand, the evidence shows that there is no movement operation in the production of free word order in Mohawk, unlike in other scrambling languages. The evidence is accounted for by the fact that NP's are base generated in adjunct position (Baker 1991a) and coindexed with *pro*'s in argument position which are licensed by the rich agreement morphology on the verb.

Sur l'ordre des mots en Mohawk

Résumé

Dans ce mémoire de maîtrise, nous examinons le rôle du trait semantique [± défini] des syntagmes nominaux, ainsi que du mouvement, sur l'ordre relativement libre des mots en Mohawk, dans le cadre de la théorie du gouvernement et du liage. D'une part, les données du Mohawk démontrent que l'ordre relatif des syntagmes nominaux par rapport au verbe n'est pas affectée par la nature définie des SNs. De plus, la particle *ne* du Mohawk ne semble pas être un article défini, cette langue n'ayant pas de marker de ce type. Ces faits vont à l'encontre des analyses antérieures. Nous démontrons plutôt que ce sont des facteurs pragmatiques qui déterminent l'interpretation des syntagmes nominaux.

D'autre part, notre analyse montre que le mouvement n'est pas en cause dans l'ordre relativement libre des mots du Mohawk, contrairement à ce qui se passe dans les langues impliquant le «scrambling». Cette propriété du Mohawk est expliquée par l'analyse de Baker (1991a), qui propose que les syntagmes nominaux du Mohawk sont générés en position d'adjoint dans la base et coindicés à des *pros* occupant la position argumentale. Ce dernier est identifié par l'accord morphologique riche du verb.

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***

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***

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Chapter I

About free word order in Mohawk

1. Introduction

Mohawk belongs to the Northern branch of the Iroquoian family, together with Seneca, Cayuga, Onondaga, Tuscarora and Oneida and is spoken in Quebec, Ontario and New York State. It is a polysynthetic language, with a complex word structure presenting a high level of morpheme fusion,[1] and is syntactically categorized as non-configurational. It is very strict in the ordering of the morphemes within the word, but very liberal in the ordering of the constituents at the syntactic level, which allows for great pragmatic flexibility in the use of word order.

Postal (1962:410) notices that "it has been mentioned several times that in full sentences with transitive verbs all six orders are possible, given, of course, certain obligatory additions of junctures and *ne* particles ...".

The following paradigm (Baker 1991a) illustrates this point:

(1) a. SOV Sak ako-atya'tawi ra-nuhwe'-s.
Sak FsP-dress MsS/NsO-like-hab
Sak likes her dress

b. SVO Sak ra-nuhwe'-s ako-atya'tawi.
Sak MsS/NsO-like-hab FsP-dress

c. OSV Ako-atya'tawi Sak ra-nuhwe'-s.
FsP-dress Sak MsS/NsO-like-hab

d. OVS Ako-atya'tawi ra-nuhwe'-s ne Sak.
FsP-dress MsS/NsO-like-hab NE Sak

e. VSO Ra-nuhwe'-s Sak ako-atya'tawi.
MsS/NsO-like-hab Sak FsS-dress

f. VOS Ra-nuhwe'-s ako-atya'tawi ne Sak.
MsS/NsO-like-hab FsP-dress NE Sak

The subject, object and verb may thus freely appear in any of the six logical possibilities in simple sentences. It can be noticed that the S-structure does not indicate the grammatical relations between the constituents of the clause neither by means of the word order nor by case markers.

Baker (1991a), based on ideas from Jelinek (1984), accounts for free word order in Mohawk within a more general theory of non-configurationality, developed in the framework of the Government and Binding (GB) Theory. He argues that this freedom of word order is a consequence of the syntactic structure of the language, in which overt NP's appear in adjunct position coindexed with empty pronominals, which are the true arguments of the verb. Baker's claim constitutes the theoretical basis adopted in this thesis, which aims to contribute further evidence from the examination of Mohawk word order against other claims about constituent ordering. Those aspects of his proposal which are relevant to word order, together with an outline of the morphology of the language, will be reviewed in this Chapter.

Several authors in the linguistic literature, with different points of view and basing their analysis on unrelated languages, have been interested in various aspects of the order of constituents across languages. Some of the conclusions of two of these proposals will be discussed in this thesis and considered in the light of data from the Mohawk language.

The first issue to be examined will be the role played by definiteness in the determination of the word order. Mithun's (1987) analysis of the factors that influence word order in polysynthetic languages such as Cayuga, Ngandi and Coos will be reviewed in Chapter II, in particular that part of it that refers to definiteness. She proposes a Newsworthiness Principle, by which "newsworthy" elements, such as indefinite, contrastive, emphatic or new NP's are placed first in

the sentence. Within the framework of generative grammar, Heim (1982) proposes a Novelty Condition on indefinites that parallels Mithun's principle, requiring that an indefinite appear first in the clause. Inspired by the role attributed by Mithun to indefinites in the ordering of constituents and by Heim's Novelty Condition, Baker (1991b) proposed a constraint in word order for Mohawk. Heim's (1982) work on definiteness will also be revised in Chapter II, to determine definiteness in Mohawk in the light of her analysis. This will show that Mohawk data do not support Mithun's Principle or Baker's Constraint, but Baker's proposal will be rescued with a minor modification along the lines of the suggestions in Reinhart's (1983) analysis of backward pro-nominalization in English.

The second aspect to be considered is the role of movement in word order. Chapter III will be devoted to Mahajan's (1990) analysis of "scrambling". Based on his observations of Hindi data, Mahajan suggests that movement, whether A or A', is involved in the order of constituents in the so-called scrambling languages such as Hindi, Japanese or German. He further suggests that by considering free word order to be a result of scrambling, a typology of free word order across languages could be established. Mohawk data will be submitted to some of the syntactic tests used by Mahajan to prove the presence of A movement in short distance scrambling. The results will indicate that there is no movement operation in Mohawk free word order, further supporting Baker's (1991a) claim that the source of free word order in Mohawk is the base generation of NP's in adjunct position. A comparison of Mohawk with Clitic Left Dislocation in Italian as analyzed by Cinque (1990) will show that the Mohawk type of free word order is not language specific but is shared with a particular structure in a completely unrelated language like Italian, which invalidates a typology of free word order based on movement. This

similarity may suggest that there is a more abstract way to account for free word order across languages, but this point falls outside of the scope of this thesis.

2. The Mohawk language

2.1. Outline of Mohawk morphology

A brief review of Mohawk morphology will be presented here, in the hope that it will help the reader to understand the data. The ground-breaking work about the morphology of Northern Iroquoian languages is Lounsbury's (1953) description of Oneida verb morphology. The fact that Oneida and Mohawk are closely related languages allows one to use his research as the basic source in the review of Mohawk morphology. As well, the Mohawk grammars by Bonvillain (1973) and Deering and Delisle (1976) and the Mohawk dictionary by Michelson (1973) were consulted for this purpose.

The language has three distinct parts of speech: verbs, nouns and particles. They are formed by morphemes which are specific to each part of speech and which occupy a fixed location within the word. The most complex type of word is the verb, which contains four different classes of affixes. Nouns have three different types of prefixes and suffixes, while the particles are structurally simple.

2.1.1. Verbs

A single Mohawk verb may represent a whole sentence in English. The following examples illustrate this:

(2) Ya'-t-v-ye-ani-hsnuhs-ohw-e-'.
trans-dup-fut-FsS-srfl-fingers-put.in.water-ø-punc
She will put her hands in water.

(3) V-ku-ya't-hah-uny-v-'.
fut-1sS/2sO-body-road-make-ben-punc
I shall make a path for your body.

The four types of constituents that form the verb are: (1) the pre-pronominal prefixes, (2) the pronominal prefixes, (3) the verb base and (4) the inflexional suffixes. The chart in (4) shows the ordering of the constituents of the verb:[2]

pre-pron. prefixes	pron. prefixes	verb base					inflex. suffixes
		reflexive	Noun incorp.	verb root	case	purp.	
Tense:	*3 series:*	semi-refl.	Noun	verb root	Instr.	*-hs(r)-*	*Aspects:*
Future,	Subjective	*-at-*	or		I&II,	*-'n-*	Punctual,
Factual,	Objective		nomin.	inchoative,	Ben.,	*-hn-*	Serial,
Optative	Transitive	reflexive/	or	causative,	Dist.	*-h-*	Habitual
		reciprocal *-atat-*	verb root plus nomin.	infective			Stative
Iterative							Remote past
Cislocative							Former past
Translocative							Continuative
Duplicative							Progressive

The main affixes appearing in these positions are the following:

Pre-pronominal prefixes: These are optional and consist of one or more morphemes conveying meanings such as tense, negation, location, coincidence, contrast, etc., or a combination of these. They appear at the beginning of the verb, occupying the first position in the verbal morphological structure.

Pronominal prefixes: These prefixes are obligatory and occupy the second position after the pre-pronominal prefixes. They indicate the agent/subject and the patient/object[3] of the verb and the transitive relation between them as well as the person, number and gender of each. Lounsbury (1953) distinguishes first, second and third person, first inclusive (first plus second), first exclusive (first plus third) and zero person (lack of subject or object in intransitives). As for gender within the

third person, these comprise neuter, feminine-zoic, masculine and feminine indefinite. Number discriminates between singular, dual and plural. Only subjects can be discriminated as inclusive or exclusive.

All this results in a very complex system of 58 pronominal pronouns in which the morphemes are highly fused.

Verb base: This includes one (or occasionally more) verb roots and optionally the reflexive morpheme, a noun that can be incorporated into the verb and what Lounsbury calls case suffixes. The first position is that of the reflexive *-atat-* and the semireflexive *-at-*. There is no distinct reciprocal morpheme in Mohawk. The second position may be occupied by a noun stem, which may be a noun root, a semantically empty morpheme required by some verbs to fill the noun position or a verb plus a nominalizing suffix. These two first positions are not always filled. The verb root follows in the third position, which is obligatory and may also present a variety of possibilities, such as two verb roots, a verb root with an inchoative, causative or reversive suffix, etc. The next position is that of the case morphemes, such as the allomorphs of the instrumental I, *-t- ,-'t-, -ht-, -st-*, and instrumental II, *-hkw-*, the distributive, *-nyu-*, and the dative, *-'se-, -ni-, -v(ni)-*, or a combination of these. Finally, the purposive morpheme with its allomorphs *-hs(r)-, 'n-, -hn-,* and *-h-* is the last one to be optionally filled in the verb base.

Inflexional suffixes: These suffixes mark the three aspects which show the duration of an action or state over time: the perfective aspect suffix, *-'-, -u-, -v-*; the serial aspect suffix, *-ha('), -he(')-, -(h)s-, -a(h)s-, -(h)se(')-, -'s-(h)e(')-*, which cannot co-occur with the perfective; and the punctual aspect suffix, -'-, which may co-occur with the two others. The perfective aspect describes states. The serial aspect refers to repeated actions and is usually compared with the English present. The punctual aspect appears in the last position and signals that a single

event has taken place at some point in time. It is combined with the pre-pronominal prefixes related to tense that determine the specific location in time. The continuative suffix *-k-*, the remote past, *-'n(e'), -hne'-*, the former past, *-kwe'-*, and the progressive, *-([h])atye-*, may be added to the serial or perfective or even to both aspects to further determine the interpretation of the verb.

2.1.2. Nouns

Noun structure is simpler. It consists of three positions: (1) the nominal prefix, (2) the noun stem and (3) the nominal suffix. The latter is the only optional one.

Nominal prefixes: They are of two types: *a-* prefixes and *o-* prefixes. The selection of these affixes is lexically determined by the noun stem and is not predictable in general. They represent the gender of the noun and the number if it is animate (Baker 1989:11)

Noun stems: These are formed by a noun root. They are divided into three noun stem classes which define the phonological form of the possessive pronouns: (1) consonant-initial stems, (2) *a*-initial stems and (3) *u*-initial stems.

Nominal suffixes: There are three suffixes, also determined by the noun stem and unpredictable: *-'*, *-a'*, *-u'*.

These basic positions of the noun may be supplemented by possessive prefixes. When a possessive appears, it replaces the nominal prefix. Attributive suffixes may further be attached to the noun complex, such as the augmentative *-kowa*, the characterizer *-haka*, the locative *-ke* or *-ne*, and the pluralizer *-shu'a*, among others.

2.1.3. Particles

Particles do not share the formal characteristics of noun and verbs. The verbal and nominal affixes cannot be attached to them. In general they occur as free forms. They may indicate spatial and temporal relationships between words such as *uwa* 'now' or *inu* 'far' and also grammatical relations, as in the case of *tsi* 'when', a relativizer. The function of some of them, such as *ne,* has not yet been established.[4]

2.2. A theory of Mohawk word order

In contrast with the strictness of the rigidly fixed positions at the morphological level, the language exhibits a very free order of constituents at the surface syntactic level.

Mohawk presents the three properties defined by Hale as characteristics of non-configurational languages (Hale 1983, cited in Baker 1990c):

1. *Free word order:* As shown in (1a-f) above, the six logical word order possibilities may appear in a sentence when subject, object and verb are present.

2. *Argument drop:* An inflected verb can stand by itself as a full clause, in what appears to be a violation of the Theta Criterion because the verb does not seem to discharge its arguments. Consider the following example:

(5) ra-atorat-s.
MsS-hunt-hab
He hunts (it).

3. *Discontinuous expressions:* Baker (1990b) provides examples of demonstratives and adjective expressions separated from the head noun:

(6) ase'tsi khok ke-nuhwe'-s ne rao-'sere.
new only 1sS/NsO-like-hab NE MsS-car
I like only his new car.

Possessors can also appear separated from the possessed noun:

(7) Yah, Uwari khok ke-nuhwe'-s ne akotya'tawi.
No, Uwari only 1sS/NsO-like-hab NE FsP-dress
No, I like only Uwari's dress.
(esp. in reply to "You like everyone's dress, don't you?")

In (6) the adjective 'new' appears at the beginning of the clause while the head noun 'car' occurs after the verb, and in (7) 'Uwari' and 'dress' are also separated. Again, the Theta Criterion seems to be violated here because there are two elements that apparently share the same role of object in different locations within the clause.

Within a GB framework, Jelinek (1984), basing her study on Warlpiri data from Hale, proposes that the source of free word order in non-configurational languages resides in the particular structure of the languages: NP's are in non-argument positions optionally adjoined to the clause. They are then related to argument positions represented by the agreement morphology in the verb.

Baker (1991a) further develops Jelinek's proposal with the analysis of the syntactic structure of Mohawk. He observes that the idea of considering the verbal inflectional morphology as pronominal was already implicit in the terminology used by several Americanists including Lounsbury (1953), who refers to the morphology in the verb as "pronominal prefixes" (Baker, 1991a:548). In his discussion about some subject-object non-asymmetries found in simple clauses in the language, Baker develops a theory of non-configurationality that accounts for free word order.[5] As mentioned in section 1 above, only what is relevant to account for the issue of word order will be reviewed here.

2.2.1. The structural motivation for free word order in Mohawk

Baker (1991a) assumes that overt NP's appear in adjunct position in Mohawk, coindexed with phonologically null pronouns that act as objects and subjects of the verb. These in turn are licensed by the rich agreement morphology in the verb. The NP's may then appear optionally and in any location within a simple clause just as adjuncts do in English. Not being complements subcategorized by the verb, they do not have the burden of indicating grammatical relations within the sentence. To support his claim Baker – among other evidence – looks for disjoint reference effects in Mohawk.

Reinhart (1976, 1983) proposes the following condition on NP interpretation:

(8) A given NP must be interpreted as non-coreferential with any distinct non-pronoun that it c-commands[6] (Reinhart 1983:43, cited in Baker 1991a).

(This condition is also known as Condition C of the Binding Theory (Chomsky (1981).)

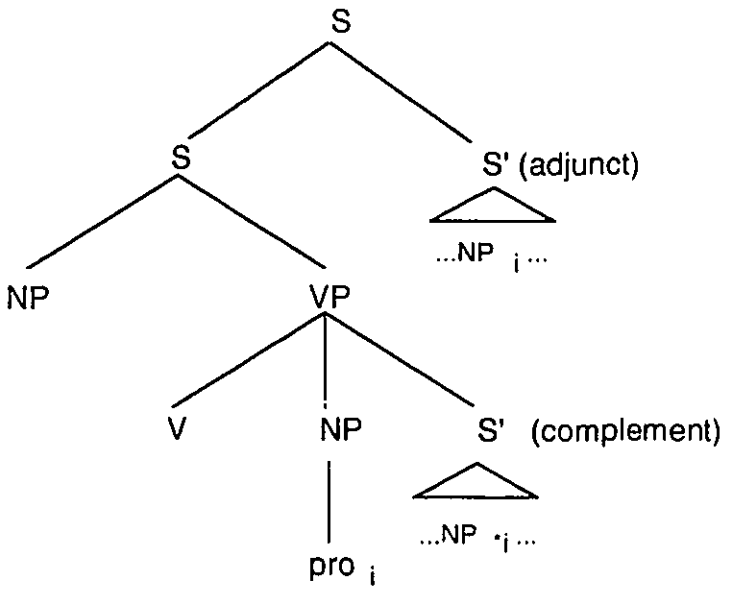
Thus, in English a pronoun in object position can be coreferent with an NP in subject position because the object does not c-command the subject but a pronoun in the subject does c-command the object and coreference with an NP within the object would therefore constitute a violation of Condition C. The following two examples from Baker show that Condition C holds for Mohawk as well:

(9) Wa-hi-'nha'-ne' ne tsi
fact-1sS/MsO-hire-punc NE because
Sak ra-yo'tv-hser-iyo.
Sak MsS-work-nom-be.good
I hired him$_i$ because Sak$_j$ is a good worker. (Coreference OK)

(10) * Wa-hi-hrori-' tsi Sak ruwa-nuhwe'-s.
fact-1sS/MsO-tell-punc that Sak FsS/MsO-like-hab
I told him$_i$ that she likes Sak$_i$. (Disjoint only)

Baker argues that in both cases there is a name inside an embedded clause and an agreement morpheme on the matrix verb matching the name in gender and number. In (9), the pronominal object can be interpreted as coreferring with a noun embedded in an adjunct clause, but not in (10), where the embedded clause is a complement of the verb.[7] From this difference it can be assumed that the structure is as follows:

(11)



This structure obeys the Projection Principle, "which requires that all and only the phrases subcategorized by a head be in the first projection of that head" (Baker 1991a:542). Baker adopts for Mohawk the assumption that adjunct clauses are adjoined to S. Thus, the pronominal in the object position c-commands an NP embedded within the complement clause in (10) but it does not

c-command an NP in the adjoined clause in (9). Coreference is therefore possible in the former but not in the latter, just like in English.[8]

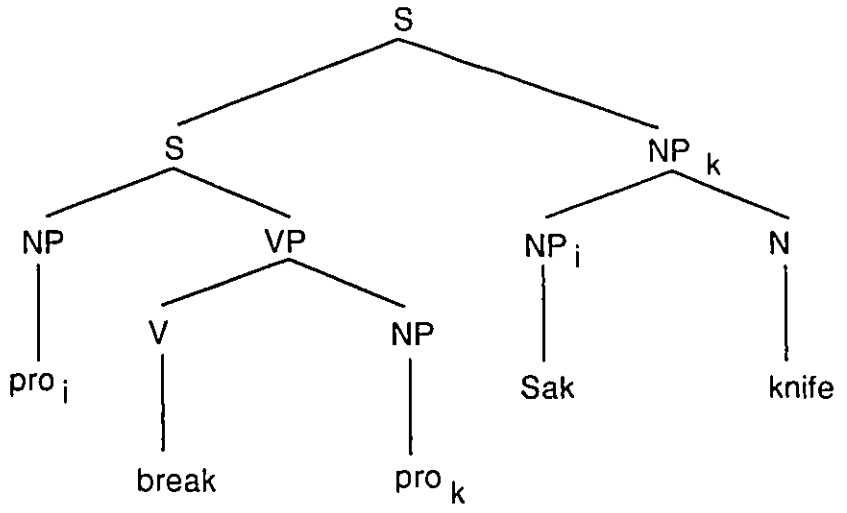
Nevertheless, and in spite of the fact that Condition C holds in Mohawk as shown above, in simple clauses coreference is acceptable in all cases. In the following examples, the verbal agreement shows that the post-verbal NP is the object in (12) and the subject in (13). Unlike in English, the possessor can be coreferent with the pronoun in both sentences:[9]

(12) Wa'-t-ha-ya'k-e' Sak rao-a'share'.
fact-dup-1sS/NsS-break-punc Sak MsP-knife
He$_i$ broke Sak's$_i$ knife. (Coreference OK)

(13) Ro-ya'takehnha-s Sak rao-a'share'.
NsS/MsO-help-hab Sak MsP-knife
Sak's$_i$ knife helps him$_i$. (Coreference OK)

Baker argues that this is evidence of the fact that the object is outside the c-commanding domain of the subject. Assuming a structure similar to the English one, the only place for the object to be is adjoined to S, in the position typically reserved for adjunct modifiers. Since the overt NP does not occupy a complement position, the object position, subcategorized by the verb and required by the Projection Principle, is filled by the phonologically null pronoun licensed by the agreement on the verb (Baker 1991a:547). The structure of (12) and (13) is represented in (14):

(14)



The NP may be adjoined to the right of the verb as well as to the left, without producing a violation of Condition C. [10]

Another type of syntactic evidence produced by Baker (1991a) to support the claim that overt NP's are in adjunct position is the extraction of possessors from NP. In English there is an asymmetry between subjects and objects in terms of the extraction of an element. It is possible to extract out of an object but not out of a subject. This asymmetry is accounted for by Huang's (1982) Condition of Extraction Domains (CED), as follows:

(15) A phrase A may be extracted out of a domain B only if B is properly governed. (Huang 1982:505, cited in Baker 1991a:551)

where "properly governed" means governed by a lexical category. Baker observes that c-command is a condition for government. Extraction from the object is possible because it is governed by the verb, a lexical category, but an extraction from the subject is not possible because it is not c-commanded –therefore not governed – by the verb.

Baker proves that the CED is obeyed in Mohawk. It is possible to extract from complement clauses but not from adjunct clauses:

(16) Uhka i-hs-ehr-e' v-ye-atya'tawi-tsher-a-hninu-' ?
Who Ø-2sS-think-punc fut-FsS-dress-nom-buy-punc
Who do you think will buy a dress?

(17) * Uhka wa'-te-s-ahsvtho-' ne tsi wa'-e-ihey-e' ?
who fact-dup-2sS-cry-punc NE because fact-FsS-die-punc
Who did you cry because (she) died?

The extraction in (16) is grammatical while the extraction from the adjunct in (17) is not, because the embedded clause is governed by the verb but the adjunct is not.

Again, this contrast does not appear in simple sentences[11]. Consider the following examples from Baker (1991a):

(18) * Uhka se-nuhwe'-s ne ako-kara'?
who 2sS-like-ha NE FsP-story
Whose story do you like?

(19) * Uhka we-sa-tsituni-' ne ako-kara'?
who fact-2sO-make.cry-punc NE FsP-story
Whose story made you cry?

Whether the possessed noun is a dependent of the subject or of the object, extraction is not possible in (18) and (19). Baker argues that this follows from the CED: extraction from the subject is as bad as in English but, unlike in English, it is not possible to extract from the object either. The ungrammaticality of (18) further supports the claim that the NP's are in adjunct position in Mohawk: being in adjunct position, the object is not governed by the verb. From this evidence Baker concludes that:

(20) Overt NP's can only be in adjunct position, coindexed with a null pronoun which is the true subject or object of the verb.
(Baker1991a:554)

He defines an "overt NP" as one "whose head is phonetically realized (i.e. an NP other than a trace or *pro*)" (Baker 1991a:555).

A final piece of evidence is given by Baker (1991d:9) with the following comitative construction:

(21) Sak {i} [S [S pro {i,k} wa'-t-hni-nunyahkw-e'] ne Uwari {k}]
Sak *fact-dup-MdS-dance-punc* *NE* *Uwari*
Sak danced with Uwari.

Both NP's *Sak* and *Uwari* are coindexed with the same *pro* in subject position, forming two chains. [12] Assuming that both are moved to their S-structure positions from the site of *pro,* which is an argument position, a violation of the Theta Criterion as formulated by Chomsky (1986a)[13] would follow. Baker claims that this demonstrates that the NP's must have been base generated in adjunct position.

2.2.2. Conclusion

It is assumed that pragmatic factors rather than syntactic ones play the main role in determining the order of constituents in Mohawk. Thus, Deering and Delisle (1976) point out that the language requires the most important element of the utterance to occur early in the clause, while Mithun (1987) claims that the most newsworthy element appears first in Cayuga. However, the flexibility exhibited by Mohawk with respect to word order is rooted in the structure of the language.

It may be concluded that free word order in Mohawk is structurally derived from the fact that NP's are optionally base generated in non-argument positions.

They can be adjoined to S either to the right or to the left, coindexed with *pro*'s in argument position which are licensed by the rich agreement morphology in the verb. The three properties mentioned above as characteristic of Mohawk as a non-configurational language are accounted for: NP's are adjuncts and not arguments and benefit from the optionality and freedom characteristic of adjuncts.

Notes to Chapter I

1 This situation is reflected in the great number of morphophonemic rules in the language, which govern the phonological combination of morphemes. The transcription used in this thesis is closer to the underlying representation in some cases and to the surface representation in others.

The examples in Mohawk are transcribed following Deering and Deliste's (1976) orthography, with the following changes: a) the middle unround nasal vowel is written [v] instead of [en]; b) the back round nasal vowel is written [u] instead of [on]; c) [y] is distinguished from [i]; and d) stress and vowel length are not marked, being predictable.

The following abbreviations are used in the glosses: *fact*, factual mode; *fut*, future mode; *punc*, punctual aspect; *hab*, habitual aspect; *rev*, reversive; *stat*, stative aspect; *cont*, continuative; *pst*, past tense; *for. pst*, former past; progr, progressive; *srfl*, semi reflexive; *nom*, nominalizer; *inst*, instrumental; *purp*, purposive; *caus*, causative; *ben*, benefactive; *dup*, duplicative; *cis*, cislocative; *trans*, translocative; *iter*, iterative; *sim*, simultaneous; *opt*, optative; *part*, partitive; *neg*, negative;*contr*, contrastive; *Q*, question particle; *prt*, particle. Glosses of agreement include indication of person/ gender (*1,2*, *M*(asculine), *F*(eminine), *N*(euter)), number (*s*(ingular), *d*(dual) or *p*(lural)) and series *S* (roughly subject), O (roughly object) or P (possessor).

2 Bold characters indicate the obligatory constituents, while regular characters indicate the optional ones.

3 These prefixes are also called A-prefixes and O-prefixes after the vowel found in the masculine form of each (Baker 1989).

4 See Chapter II, footnote (3).

5 Jelinek (1984) proposes that the pronominal agreement morphology directly receive the thematic roles and the case features from the verb. Baker (1991a) considers instead that the true arguments are phonologically null pronouns, whose presence was already suggested by Postal (1962), licensed by the agreement on the verb. Contrary to Jelinek, he proposes that "the Case features

of heads are absorbed by agreement morphemes in Mohawk" (Baker 1991a:571). He proposes that a Case Filter is operative in the language:

(i) The Generalized Visibility Condition

An NP X can be interpreted at a level a only if X receives Case at a level a (Baker 1991a:570).

Thus, this filter will allow only S's and empty NP's in argument position at S-structure (or PF), while overt nominals will be ruled out at this level. At LF "the agreement morphemes are deleted and Case is reasigned to the pro and trace arguments, making them visible for θ -role assignment". (Baker 1991a:571) For a detailed account of the structure of Mohawk, see Baker (1991a) and Baker in preparation.

6 Reinhart's definition of "domain" and "c-command" are as follows:

Domain: The domain od a node A consists of all and only the nodes c-commanded by A". Reinhart 1983:19)

C-command: "Node A c-commands node B iff the branching node a_1 most immediately dominating A either dominates B or is immediately dominated by a node a_2 which dominates B and a_2 is of the same category type as a_1" (Reinhart 1983:19)

7 Coreference possibilities of pronominals in the matrix subject are discussed by Baker (1991), section 4.3, pp. 571.

8 Baker also notices that this contrast proves the presence of null pronouns in Mohawk. In order to account for the ungrammaticality of (10), a null pronoun must be posited. Otherwise, there would not have been a violation of Condition C.

9 Baker points out that it is possible to analyze *Sak* as the postverbal subject and a null pronoun *pro* as the possessor of the head noun, which would disqualify the example as relevant for the purpose of the argumentation (Baker,1991a:544). He claims that the possessor and the possessed noun form a single constituent.

To do this, he shows that the demonstrative *kv'ikv* in Mohawk precedes the modified noun in a single constituent:

(i) Wa'-k-yena-' kv'ikv kweskwes
fact-1sS-catch-punc *this* *pig*
I caught this pig.

(ii) * Wa'-k-yena-' kweskwes kv'ikv
fact-1sS-catch-punc *pig* *this*
I caught this pig.

This being the case, he argues that in the examples below *Sak* is included within the same NP, being the possessor of the head noun and forming a single constituent with it :

(iii) Wa'-t-ha-ya'k-e' ne thikv Sak rao-a'share'
fact-dup-1sS-break-punc *NE* *that* *Sak* *MsP-knife*
He$_i$ broke that knife of Sak$_i$. (Coreference OK)

(iv) Ro-ya'takehnha-s ne thikv Sak rao-a'share'
MsO-help-hab *NE* *that* *Sak* *MsP-knife*
That knife of Sak$_i$ helps him$_i$. (Coreference OK)

10 Baker shows that the same pattern may be found with overt pronouns, which are mainly used for emphasis or contrast. For details see Baker (1991a).

11 Baker points out that the only type of element that can be extracted is the possessor of the head noun, because Mohawk nouns almost never take complements (Baker 1991a:553).

12 For a discussion of this situation in which two chains are originated in the same argument position, see Baker (1991c).

13 A CHAIN has at most one θ -position; a θ -position is visible in its maximal CHAIN (Chomsky, 1986a:135).

Chapter II

The Role of Definiteness in Free Word Order in Mohawk

1. Introduction

The relevance of definiteness in the determination of the order of the constituents in a language has been viewed from different perspectives. Three proposals are of interest for this thesis and will be considered in this chapter: Mithun (1987), Heim (1982) and Baker (1991b).

From a pragmatic point of view, Mithun (1987) argues that in the polysynthetic type of languages word order is purely pragmatically determined by "the relative newsworthiness of the constituents to the discourse" (Mithun 1987:304). Paralleling the concept of "new" with "indefinite", she postulates the "Newsworthiness Principle", a principle describing the fact that new or indefinite elements tend to appear early in the sentence, before the verb, while old information tends to appear later or after the verb.

In her dissertation on definiteness, Heim (1982) discusses the semantics of NP's and defines the properties that differentiate definite from indefinite nominals. One of the conditions obeyed by indefinites as proposed by Heim can be compared to Mithun's Newsworthiness Condition in that its effects are reflected in the order in which the NP's appear in the clause. This is the Novelty Condition, which rules out an indefinite NP coindexed with a definite NP to its left.

Inspired by Mithun's and Heim's observations about the order of occurrence of definite and indefinite NP's and based on his analysis of the structure of Mohawk, Baker (1991b) proposes a constraint on word order for Mohawk that would also structurally account for the order of NP's in Mithun's Cayuga data. Given that in Mohawk adjunct NP's are coindexed with definite referential *pro's* in argument positions and considering that an indefinite NP cannot be coindexed to its left with

a definite, it follows that in Mohawk indefinite NP's or, in Mithun's terms "new" NP's, must appear before the verb. This conclusion seems to confirm that definiteness plays a determinant role in the constitution of word order in Mohawk.

Nevertheless, a careful analysis of noun phrases in Mohawk in the light of Heim's criteria characterizing definiteness shows that, in fact, the order of constituents is not influenced by definiteness considerations; rather, it is determined by the structure of the language, in which the NP's in adjunct position benefit from the freedom typical of adjuncts. Baker (1991b) suggests examining Reinhart's (1983) account of backward pronominalization with indefinites in English, a construction that presents a similar pattern to that incorrectly ruled out by the constraint on word order in Mohawk. This analysis will lead to the proposal of a modification of Heim's Novelty Condition, allowing it to account for Mohawk free word order as well.

Mithun (1987), Heim (1982) and Baker's (1991b) proposals will be reviewed in the following sections.

2. Mithun (1987)

2.1.Discussing the universality of a syntactically defined word order

Mithun (1987) discusses from a discourse perspective a proposal from the literature about syntactic typology suggesting that there is a basic, syntactically defined universal word order which may be altered by pragmatic factors and from which other structural features of the language can be predicted. In languages such as English, the factor that determines word order is clearly syntax, while in languages like Russian and Czech pragmatic factors, such as emphasis, contrast, etc., also play an important role. In the latter case, an interaction between basic word order and a pragmatic ordering is proposed, defined through

the concepts of "theme" and "rheme", which describe old or new information in a discourse. A common ordering tendency of "theme, rheme" is found in languages that make use of pragmatic considerations in the determination of word order.

Mithun (1987) points out that this typology cannot be forced upon all languages because a significant number of them, of different genetic origins, are very unlike that model. To support her arguments, she analyses discourse and narrative data from three unrelated languages, Cayuga, Ngandi and Coos, having similar surface order patterns of constituents, which constitute counterexamples for the proposed basic universal order. She concludes that "the assumption of any syntactically defined word order is unmotivated and misleading, as is the assumption of theme/rheme pragmatic reordering" (Mithun 1987:283). She concludes therefore that the recognition of pragmatically based languages is crucial.

Cayuga is particularly relevant because it is closely related to Mohawk, both languages belonging to the Iroquoian family. The discussion of Mithun's work will be mainly focused in the description of her Cayuga data and on her analysis of the role of definiteness in what she calls the pragmatically based type of languages.

2.2. Cayuga, Coos and Ngandi evidence

Mithun's (1987) data is from three highly polysynthetic languages, Cayuga, an Iroquoian language, Ngandi, an Australian aboriginal language, and Coos, a language of Oregon. All of them have obligatory pronominal prefixes on the verb identifying agent and patient. Moreover, Ngandi and Coos also have case marking morphology on the nouns. In all three languages an overt nominal can further identify the arguments, and in this case the prefixes on the verb remain

unchanged. Thus the constituents may appear in any of the six logically possible word orders: SOV, SVO, OSV, OVS, VSO and VOS.[1]

Mithun resorts to several strategies in order to determine if one of the orders could be considered basic, analyzing data from spontaneous speech and from narratives, finding out that any order is equally unmarked for the native speaker. Thus, a Cayuga speaker may place the subject before or after the verb, as in (1) and (2).[2]

				S			*V*
(1)	ne:'	ki'	kwáhs	**ts'inOwahe'tá'**	ahsO	hne:'	**kaná:kre'**.
	it-is	*just*	*most*	*fishworm*	*still*	*contr*	*dwell*

There are still plenty of fishworms around...

		V			*S*
(2)	...thE'	**thEshatiyÉ:ti:**	wa'ne:'	**hEnO:kwe'tase'shÓ:'Oh**.	
	not	*they-don't-know*	*today*	*young-men*	

The young men of today do not seem to know how to do it.

The same is true of objects:

					O		*V*
(3)	ne:'	ne'	nE:kyÉ	ne'	**kwa'yÓ'**	kE:s	**akwa:to:wá:s**
	it-is	*the*	*this*	*the*	*rabbit*	*used-to*	*we-hunted*

tshike:ks:'ah.
when-I-was-a-child

This is how we used to hunt rabbits when I was a kid.

						V
(4)	ne:'	s'ekÉ:s	ne'	swe'ké:ha	**henatEhni:nÓ**	
	it-is	*usually*	*the*	*long-ago*	*they-sell*	

		O	
kE:s	ne'	**kwa'yO'**.	
usually	*the*	*rabbit*	

A long time ago, they used to sell rabbits.

Other constituents such as time or manner adverbials and locatives can also appear on either side of the verb. Mithun (1987) argues that no evidence of any basic word order can be found in this data, and turns to the issue of definiteness.

2.3. The relation between definiteness and word order

Mithun observes that thematic information has been described as the information that is already known or implied in the situation being referred to and that it has been noticed that in many languages this information appears before the rhematic information in a sentence. While themes are considered as the predictable or given elements in the discourse, rhemes are the unpredictable or new ones. Due to the fact that definites also refer to predictable entities, those that are already known by the participants in the discourse, while indefinites refer to new entities, she proposes to parallel these concepts in the hope that this procedure will make it possible to identify a basic pragmatic word order (Mithun, 1987:292).

In this connection, Mithun (1987) mentions that, in languages such as Russian and Mandarin definite nominals do indeed tend to appear before the verb and indefinite nominals after the verb in what seems to be a "widespread tendency among languages to put old information near the beginning of the sentence and new information near the end of the sentence" (Li and Thompson 1976, cited in Mithun 1987:292).

In her analysis of definite markers in Cayuga, Coos and Ngandi, Mithun points out that none of the three languages obligatorily marks definiteness. Nevertheless, the definite interpretation of a nominal may be signaled by means of a nominalizer particle or a determiner. In Cayuga, she mentions the particle *ne* which optionally precedes definite nominals, including proper and possessed nouns, arguing that the inclusion of this particle in a sentence shows the relation

between definiteness and word order. Consider the following examples, elicited by Mithun, in which the presence of *ne* before the verb renders a sentence ungrammatical:

(5) a. * *ne'* John shakonOhwé's Mary. (* *ne'* SVO)
the *John* *he-likes-her* *Mary*

b. * *ne'* Mary shakonOhwé's John. (* *ne'* OVS)
the *Mary* *he-likes-her* *John*

c. * John *ne'* Mary shakonOhwé's . (* S *ne'* OV)
John *the* *Mary* *he-likes-her*

d. * Mary *ne'* John shakonOhwé's. (* O *ne'* SV)
Mary *the* *John* *he-likes-her*

John likes Mary.

In the following, Mithun shows that *ne* can follow the verb in grammatical sentences:

(6) a. John shakonOhwé's *ne'* Mary. (SV *ne'* O)
John *he-likes-her* *the* *Mary*

b. Mary shakonOhwé's *ne'* John. (OV *ne'* S)
Mary *he-likes-her* *the* *John*

c. shakonOhwé's John *ne'* Mary. (VS *ne'* O)
he-likes-her *John* *the* *Mary*

d. shakonOhwé's Mary *ne'* John. (VO *ne'* S)
he-likes-her *Mary* *the* *John*

e. shakonOhwé's *ne'* Mary *ne'* John. (V *ne'* O *ne'* S)
he-likes-her *the* *Mary* *the* *John*

John likes Mary.

Mithun argues that the above examples show that the position of the definite marker *ne* does indeed play a role in the well-formedness of the sentences, which exhibits the definite/indefinite order.

Nevertheless, overt marking of indefinites being optional, Mithun (1987) also analyses a large corpus of data from spontaneous discourse, looking for evidence of the pattern indefinite-definite when the definite marker is not present.

She found that several other considerations may also determine the order of the constituents. In the first place, new information tends to appears first while old information is more likely to appear after the verb, as shown in the two following examples:

	Indef	*V*
(7)	**katsihwa'**	**kihsa:s.**
	hammer	*I-seek*

I am looking for a hammer.

			V		*Def*
(8)	to:	ti'	**nika:nO:'**	nE:kyE	**katsihwa'** ?
	how	*then*	*so-it-costs*	*this*	*hammer*

How much does this hammer cost?

Moreover, when two constituents provide equally new or old information, their relative importance in the sentence determines the order in which they will appear. Consider the next two examples:

				New V		*New O*
(9)	ni:	kE:	théone:'	**OkahtÓ:'**	ne'	**akétkw'Eta'.**
	just	*here*	*there*	*I-lost-it*	*the*	*my wallet*

Mind you, I lost my wallet.

					New O	*New V*
(10)	thréhs	kyE:'Ó		to:kÉhs	**wahtahkwatÉ:s**	**tewakÉ:sO:.**
	because	*just-suppose*		*really*	*thick-shoes*	*I-wear*

I guess because I had really thick shoes on.

In (9) and (10) the important elements are the loss and the thickness of the shoes respectively. Both items are at the beginning of the sentences.

Another factor determining the order of nominals identified by Mithun (1987) is the shift of topic. In the following situation, a man and his wife were talking until they heard a car. The following is a piece of a dialogue:

		V	S
(11)	kwé:	**sakáeyO'**	**thó:kyeh.**
	well	*they(F)-arrived again*	*that*

Well, they are back.

			V	S
(12)	o:nÉ	ki' key:'	**sakáeyO'**	**kashehawáhkshO'.**
	now	*just then*	*they-returned*	*your-daughters*

Yes, your daughters have returned.

The daughters are a new element in the conversation but they are not introduced as a new topic and therefore they appear after the verb. The verb appears first because it provides the important information in the sentence, the daughters being expected.

Finally, contrast is another consideration taken into account by Mithun in the determination of word order. In the sentences below, there is a change in the order of the constituents in (14) to emphasize the contrast between the speaker and *Pete*. In (13) there is no contrast but the use of an independent pronoun results in emphasis:

				V	S
(13)	thE'	t'a:ke:ká's	ohya',	**kehswahéhs**	**ní:'.**
	not	*do-I-like-it*	*fruit*	*I-hate-it*	*I*

I don't like fruit, I hate it.

				S		V
(14)	thE'	ní:'	t'a:ke:ká's	ohya',	**Péte**	hne:'	**hó:ka's.**
	not	*I*	*do-I-like-it*	*fruit,*	*Pete*	*contr*	*he-likes-it*

I don't like fruits, Pete does.

2.4. The Newsworthiness Principle

On the basis of the above evidence, Mithun (1987) concludes that the principle underlying Cayuga, Coos and Ngandi word order is based "on the relative news-worthiness of the constituents of the discourse. An element may be newsworthy

because it represents significant new information, because it introduces a new topic or because it points out a significant contrast" (Mithun 1987:304).

Considering that Mithun has paralleled "theme" with "old" and "rheme" with "new" information, the predominant order in polysynthetic languages, "new/old", seems to be the opposite of that found in Indo-European languages, "old/new". She points out that this is not strictly the case. Old information or themes are considered to be the point of departure of a message and as such they naturally appear at the beginning of the sentence. Mithun argues that Cayuga, Ngandi and Coos are no less natural than the Indo-European languages in spite of the fact that "new" appears first. On the one hand, the establishment of the topic of discussion occurs early, themes being in this case new information. On the other hand, continuing or "old" topics are indicated by the pronominal prefixes attached to the verb and need not appear independently. Finally, other indicators that may constitute new or old information, such as time and location, appear as bound affixes in the polysynthetic languages.

Mithun observes that the pragmatic type of word order is used by several distinct languages, both Indo-European and polysynthetic. The common feature that they all have is a fairly well developed morphology to mark the syntactic relations of the constituents. Latin, Sanskrit, Czech and Russian have case marking on nominals while Cayuga has rich inflectional morphology on the verb; Ngandi and Coos have both case marking and pronominal prefixes. She also observes that in languages with pronominal prefixes "it is the pronouns which bear the primary case relations of arguments to the predication, not external noun phrases" (Mithun 1987:324), suggesting that this may constitute the main characteristic of languages that have only pragmatic word order.

Given that her analysis is based on the study of polysynthetic languages, mainly Cayuga, a close cousin of Mohawk, it may be assumed that her conclusions are also relevant for Mohawk word order.

3. Heim (1982)

3.1. The semantics of definite and indefinite noun phrases

Another proposal in which a relationship between definiteness and word order is suggested is Heim's (1982) work. On the basis of her analysis of the semantics of definite and indefinite nouns, Heim (1982) proposes a Novelty Condition on the interpretation of indefinite nominals. This condition, which has consequences on the linear order of constituents, is similar to Mithun's (1987) Newsworthiness Principle.

Heim (1982) considers two main issues related to the semantics of noun phrases. The first refers to the definition of "the semantic characteristics, if any, that definites or indefinites share with each other, but not with other NP's" (Heim 1982:264) and the second is related to the "semantic interpretation of the definite-indefinite contrast" (Heim 1982:126). She proposes a major classification as an answer to the first point, considering the quantificational force of a nominal as the distinctive feature. She assumes that indefinite NP's lack quantificational force; rather, "what appears to be the quantificational force of an indefinite is always contributed by either a different expression in the indefinite's linguistic environment or by an interpretive principle which is not tied to the lexical meaning of any particular expression at all" (Heim 1982:122). This assumption groups together indefinite and definite NP's into the class of quantifier free (or variable-like) NP's, which includes NP's such as *the cat, a cat, it, Felix*. The second main class is made up of quantifying NP's such as *no cat* or *every cat*.

Since this classification does not distinguish between definite and indefinite NP's it is necessary to identify the features that render them contrastive, accounting for their different behavior in the semantics of the language. To solve this problem, Heim (1982) proposes a cluster of properties that would differentiate definite from indefinite NP's:

Indefinites are distinguished by the following properties:

(15) a. They act as variables bound by overt or invisible quantifiers having scope over them.

b. They are subject to a novelty condition.

c. An indefinite nominal asserts its descriptive content.

Definites have the three opposite properties:

(16) a'. They are free variables, not bound by quantificational operators.

b'. They are not subject to the Novelty Condition

c'. A definite nominal presupposes its descriptive content.

Particularly important here is the Novelty Condition, which governs the position of the indefinite NP in the sentence and rules out structures that are both well formed at the syntactic level and interpretable at the logical level but that do not have a grammatical reading.

This is illustrated by the following examples from Heim (1982):

(17) He likes /the cat_j but she hates a cat_k. * i=k
/it_j

(18) He likes a cat_j but she hates /the cat_k. i=k
/it_k

The NP's are coindexed, meaning that they refer to the same cat. This interpretation is not possible in (17), while it is possible in (18). Heim proposes a

well-formedness constraint to rule out not only the cases of coindexation between indefinites but also those where an indefinite is coindexed with a definite to its left. She formulates this condition as follows:

(19) An indefinite NP must not have the same referential index as any NP to its left.

"In other words, an indefinite must always carry a 'new' referential index, i.e., one that has not yet been used as the referential index of any other NP earlier in the same text" (Heim 1982:151).

As the value that will be linked to the variable of an indefinite is not furnished by the context, the NP must refer to a new participant in the discourse. Contrarily, in the case of a definite noun, the value of the variable is represented by an entity supplied by the context and the NP refers to a participant which is already known.

The crucial point here is that a new participant in the discourse is represented by an indefinite nominal while an old one is referred to by a definite nominal. Thus, the Novelty Condition postulates a somewhat similar restriction on word order to Mithun's Newsworthiness Principle in the sense that new/indefinite NP's in the discourse must precede old/definite NP's.

4. Baker (1991b)

4.1. Constraint on Mohawk word order

It will be recalled that Baker (1991a) argues that full NP's in Mohawk are coindexed with phonologically null pronouns in argument positions licensed by the agreement inflection on the verb. This allows subjects and objects to be omitted or to appear in almost any location in the sentence because the semantic content of *pro* is recovered through rich agreement. Infl, the licensing head, has features of agreement, tense and mood, the former being coindexed with the *pro*.

Through this coindexation "*pro* is allowed to have specifications of person, gender and number (0 - features) which allow it to function as a definite pronoun" (Rizzi 1986:520). The null element *pro* of a NP-*pro* chain in Mohawk is therefore referential and definite (Baker 1991a).

Considering this fact, Baker (1991b) observed the situation illustrated below:

(20) a'share' wa'-t-ha-ya'k-e'.
knife$_i$ *[pro fact-dup-MsS/NsO-break-punc pro$_i$]*
A knife (he) broke.

The NP 'knife' is coindexed with a referential definite null pronoun and it constitutes the first occurrence of the nominal in the clause which is assumed to be a text . It can be either a definite or an indefinite NP; in the latter case it will not be ruled out by the Novelty Condition. Compare it with (21):

(21) wa'-t-ha-ya'k-e' ne a'share'.
[pro fact-dup-MsS/NsO-break-punc pro$_i$] *NE* *knife$_i$*
(He) broke *the* knife.

In this case, the NP 'knife' is coindexed with a definite pronoun to its left; according to the Novelty Condition, this NP can only be a definite one, a nominal that refers in some way to an entity pre-established in the discourse or present in the mind of the speakers. The crucial point is that, in this post-verbal position, it cannot be an indefinite nominal in Mohawk. If this were the case, it would have been coindexed with a *pro* (a definite NP) to its left at LF and therefore it would have been ruled out by Heim's constraint.

Based on these structural facts from Mohawk, Baker (1991b) makes the following predictions about Mohawk word order:

(22) a. A new /indefinite NP must precede the clause (i.e. the verb).

b. An old/definite NP may precede or follow the clause; and probably speakers prefer for it to follow to emphasize its definiteness.

In this way, Baker seeks to derive an important part of Mithun's Newsworthiness Condition from Heim's Novelty Condition, plus special properties of clause structure in Mohawk.

These assumptions seemed to be confirmed by a set of data from stories told by native consultants that allow one to examine the behavior of NP's in a context:

(23) **Kikv r-ukwe'** ohnakv **wa-ho-yatarahkw-e'**
this MsS-person late fact-MsO-became.late-punc
ne tsi wa-ho-ra'shvtho-'.
because fact-MsO-oversleep-punc
This man is late because he overslept.

(24) Tsi yu-t-v-hninu-t-ha' n-yaha-hr-e-' tanu
where FsS-srfl-ø-buy-instr-hab part-trans-MsS-go-punc and
ka-rahkw-a-ka'vyu-t-ha' ka-hwis-t-a'ek-s
ZsS-sun-ø-examine-caus-hab NsS-metal-caus-strike-hab
wa-ha-hninu-'.
fact-MsS-buy-punc
He went to the store and bought an alarm clock.

(25) **...wa-ha-kwatako-'** ***ne*** **ka-rahkw-a-ka'vyu-t-ha'**
fact-MsS-fix-punc NE ZsS-sun-ø-examine-inst-hab
a-ho-ye-ht-e' o-rhuke-ne.
opt-NsS/MsO-wake-caus-punc NsO -become.day -loc
...he set the clock to wake him in the morning.

(26) **...wa-ha-ye-'** ***ne*** **r-ukwe'.**
fact-MsS-wake-punc NE MsS-person
...the man woke up.

(27) Tsi onv o-rhuke-ne **wa-ka-hwist-a'ek-e'**
when NsO-become.day-loc fact-NsS-metal-strike-punc

ne **ka-rahkw-a-ka'vyu-t-ha' ...**
NE ZsS-sun-ø-examine-inst-hab

When it was morning the clock rang ...

(28) ...wa-ho-nakhwv-' kikv r-ukwe' sok **atkusera**
fact-MsO-get.angry-punc this MsS-person then pillow

y-a-ho-ati-'...
trans-fact-MsO-throw-punc

...the man got mad and threw a pillow (at it)...

In (23), (24) and (28) the NP's representing new information appear before the verb and are given an indefinite interpretation. In (25), (26) and (27) the nominals appearing in post-verbal position and preceded by *ne* were already present in the discourse and are interpreted as definite by the speakers.

However, in other stories some apparently contradictory evidence is found. Consider the following text:

(29) Uwari **wa-huwa-na'tuh-a-hs-e'** ne Shawatis
Uwari fact-FsS/MsO-show-ø-ben-punc NE Shawatis

tsi **t-ka-tsi'nahkw-a-her-e'**
that cis-NsS-nest-ø-lie-punc

okwira-ke....
tree-loc

Uwari showed Shawatis a nest on the tree...

(30) ...tanu **kuti-ya't-itary-u** ***ne*** **otsiten'a.**
...and ZpS-body-be.inside-stat NE bird

...and the birds were in it.

(31) Sotsi ro-ya't-a-kst-e-' ne Shawatis
too.much MsO-body-ø-be.heavy-ø-stat NE Shawatis

t-a-w-at-ya'k-t-e' ***ne*** **onhahte'**
trans-fact-NsS-srfl-break-caus-punc NE branch

nuwe ra-ratv-'.
now MsS-climb-punc

Shawatis was too heavy and the branch broke.

(32) ...tanu **wa-hu-at-kv-s-e'** ***ne*** **ru-atesv't-s** ne
...and fact-MpS-see-ben-punc NE MpS-cure-hab NE

Shawatis ra-hshin-a-ke.
Shawatis MsS-leg-ø-loc

... and the doctors looked at Shawatis' leg.

In (29) the new object 'nest' occurs in post-verbal position, while in (30), (31) and (32) new elements in the discourse such as 'branch', 'doctors' and 'birds' appear not only after the verb but also preceded by *ne*, in contradiction to the Constraint on Word Order and challenging the idea that the particle *ne* might be a definite determiner.

In order to account for the interpretation of the "novel" definite NP's whose referential indices did not appear earlier in the context, Heim (1982) proposes a mechanism discussed by Lewis (1979), called accommodation or "bridging" in the psychological literature. According to the principles discussed above, a definite NP must be linked to a value already present in the context. If this is not the case, as in examples (29) to (32) above, the utterance is infelicitous but it can be made felicitous by accommodation, a mechanism by which the novel NP is linked by crossreference to the discourse referents already established (Heim 1982:373). The new referents must be "implied" in the old ones in some way. In the examples above the NP's 'birds', 'branches' and 'doctors' were implied by 'nest',

'tree' and 'ambulance' respectively (the last of which appears immediately before the text transcribed above).

Even though accommodation could solve some problems, the data given above raise questions about the validity of the Constraint on Word Order as it was formulated and suggests that it needs revision. However, as the correspondence between definites and word order does not seem very easy to establish in Mohawk, a careful analysis of Mohawk NP's is required to shed some light on this matter.

5. The identification of definiteness in Mohawk

Before proceeding to analyse further material it is necessary to determine how definite and indefinite NP's can be identified. One way of identifying definiteness – and the main one proposed in Mithun's analysis – is by the position occupied by the NP's with respect to the beginning or the end of the clause or, in other words, with respect to the verb. Recall Mithun's (1987) conclusion, expressed in the Newsworthiness Principle, that there is a correlation between indefinite versus definite and new versus old information and that indefinite NP's carrying new information tend to appear at the beginning of sentences, while definite NP's tend to appear at the end.

Another way of establishing the difference is to look for definite markers. The existence in Mohawk of overt markers like the articles *a* and *the* in English is mentioned in the literature. It will be recalled that Mithun (1987) observed that, even when Cayuga does not mark definiteness obligatorily, the presence of a nominalizing definite particle *ne*[3] or a demonstrative can optionally signal the definiteness of a nominal.

If these two observations with respect to the identification of definiteness were accurate, it could be expected that the particle *ne* would be found only before a definite NP and that an indefinite NP may appear only before a verb. Consequently, an indefinite NP preceded by *ne* or following a verb should not be possible. However, the sentences in (33) to (39) below do not exhibit this pattern. Indeed, the position of the NP and the presence of the particle do not seem to affect the interpretation of the clause. All of these sentences were judged in isolation.

(33) a. Sak te-ho-atvhutsoni-ø a-ha-yena -' *ne* otsiten'a.
Sak dup-MsO-want-stat opt-MsS-grab-punc NE bird

b. Sak te-ho-atvhutsoni-ø otsiten'a a-ha-yena-'.
Sak dup-MsO-want-stat bird opt-MsS-grab -punc
Sak wants to grab the/a bird.

(34) a. Te-wak-atvhutsoni-ø *ne* erhar.
dup-1sS-want-stat NE dog

b. Erhar te-wak-atvhutsoni-ø.
dog dup-1sS-want-stat
I want the/a dog.

(35) a. Yahtv nuwa te-wak-e-nohare-' *ne* ka'sere'.
not now neg-1sS-ø-wash-punc NE car

b. Yahtv nuwa ka'sere' te-wak-e-nohare-'.
not now car neg-1sS-ø-wash-punc
I didn't wash the/a car today.

(36) a. Sak wa-ha-tshvri-' *ne* a'share'.
Sak fact-MsS-find-punc NE knife

b. Sak a'share' wa-ha-tshvri-'.
Sak knife fact-MsS-find-punc
Sak found the/a knife.

(37) a. V-ha-atorat-e' *ne* ohkwari.
fut-MsS-hunt-punc NE bear

b. Ohkwari v-ha-atorat-e'.
bear fut-MsS-hunt-punc

He will hunt the/a bear.

(38) a. Sak Uwari v-shako-nahsh-u-' *ne* otsiten'a.
Sak Uwari fut-MsS/FsO-animal/pet-give-punc NE bird

b. Sak Uwari otsiten'a v-shako-nahsh-u-'.
Sak Uwari bird fut-MsS/FsO-animal/pet-give-punc

Sak will give the/a bird to Uwari.

(39) a. Ye-wak-enu-hne' tsi nuwe
trans-1sO-go-pst the place where

wa-k-kv-' *ne* otsitha.
fact-1sS-see-punc NE bird

b. Ye-wak-enu-hne' tsi nuwe
trans-1sO-go-pst the place where

otsitha wa-k-kv-'.
bird fact-1sS-see-punc

I went to the place where I saw a /the bird.

The next example is from Deering and Delisle (1976):

(40) a. S-hninu *ne* atya'tawi!
2sS-buy NE dress

b. Atya'tawi s-hninu!
dress 2sS-buy

Do buy the/a dress!

The following is the Mohawk version of the Cayuga sentence in (7) above from Mithun (1987):

(41) a. K-ehsak-s *ne* yene'kurehstha.
1sS-seek-hab NE hammer

b. Yene'kurehstha k-ehsak-s .
hammer 1sS-seek-hab
I am looking for the/a hammer.

All of these examples were taken from isolated phrases or stories told during fieldwork and the speakers were asked whether the definite or indefinite readings were possible. On the one hand, and with respect to the presence of *ne*, in all cases the NP's were interpreted as ambiguous between a definite or an indefinite reading for both a) and b) versions of the sentences. This was so in spite of the fact that the article in the a) sentences should force a definite reading if it is assumed that it behaves as a definite determiner. In fact, *ne* seems to precede NP's in both the definite and the indefinite interpretations when it appears after the verb. On the other hand, one can make the same observation with respect to the place that the nominal occupies. Whether the nominal is in pre- or post-verbal position, the interpretation can be either definite or indefinite.

In the following examples, taken from spontaneous texts, the NP's have neither been mentioned before nor implied in the context. In other words, they obey the Novelty Condition. Thus, the nominal should be classified as indefinite. Nevertheless, they appear after the verb:[4]

(42) Tsi onv s-a-ra-w-e' kikv erhar
when iter-fact-MsS-arrive-punc this dog
ro-hut-atye w-asheriye'-t-owanv .
NsS/MsO-have.in.-mouth-progr NsS-rope-instr-be.big
When he got back this dog had in his mouth a big rope.

(43) Wahunise' o'ser-uny-'uwe ronutyio
long ago axe-make-genuine king

wa'-shako-rhara'tstv-'
fact-MsS/MpO-promise-punc

Ka-hnawa-ke-hronu tsi **v-shako-y-u-'**
NsS-rapids-loc-resid that fut-MsS-MpO-ø-give-punc

ye-wist-aek-st-ha'.
FsS-metal-strike-caus-hab

Long ago the king of France promised the Mohawks
he would give them a bell.

(44) **T-a-ha-hnhoh-tu-ko-'** **ro-kstvha** kv-k
cis-fact-MsS-door-close-rev-punc MsO-be.old little-just

ni-ha-hnvy-es.
part-MsS-height-long

A little old man opened the door.

(45) ...khare' onv **v-ho-nyak-e'** **ukwe-huwe.**
until now fut-MsO-marry-punc person-be.native

...until he will marry an Indian.

(46) Wahunise' yakv ka-nat-a-ku **rati-iteru-t-ah-kwe'**
long ago prt NsS-town-ø-loc MpS-live-inst-hab-for.pst

kayeri **ni-hati** **ron-ukwe'**.
four part-MpS MpO-person

Long ago it has been told in this town lived four men...

(47) Tsi i-hn-e-' **t-a-hon-ahsit-ya'k-e'**
as ø-MdS-go-punc cis-fact-MpO-foot-cross-punc

w-ahkwari-'t-a-rakv.
NsS-bear-nom-ø-white

As they walked, they fell over a white bear.

(48) **S-a-ha-ko-ha-'** **asherye** tanu
iter-fact-NsS-pick-purp-punc *rope* *and*

yu-s-a-ha-hawv-'.
trans-iter-fact-MsS-bring.back-punc

He went to get a rope and he came back.

(49) ...**wa-ha-ya't-a-tshvri-'** **kvtsu** ka-ya't-i
fact-MsS-body-ø-find-punc *fish* *ZsS-body-be.in*

ne o-yvt-a-ku.
NE NsS-wood-ø-loc

...He found a fish within the wood.

(50) ...e'tho **ye-itskot-e'** **ye-kowanv** **ako-skstvha.**
there *FsS-sit-punc* *FsS-be.big* *FsP-be old*

...there she sits a fat old woman.

(51) ...kwa kv ni-ka-riw-es ats-akta
....prt *small* *part-NsS-matter-be.long* *river-loc*

ye-keni-t-e' **ty-atat-e-re-'a....**
trans-ZdS-stand-stat *ZdS-refl-ø-grand.child-be.a*

...sometime later a grandmother and her grandchild were standing by the riverside...

It is evident from these examples that an indefinite may occur after the verb.

The data presented above show that the particle *ne* may appear after the verb, preceding not only definite but also an indefinite NP's, as was shown in (33) to (41). The presence of the particle does not prevent the ambiguity that exists in most of the examples between a definite and an indefinite interpretation; this shows that the particle *ne* is not a definite determiner after all.

Furthermore, the fact that in almost all of the sentences presented above the NP after the verb may have either a definite or an indefinite interpretation also contradicts the assumption that definiteness determines word order. In fact, the

interpretation of an NP seems to be relatively independent of the position that it occupies in relation to the verb.

However, if the language does not have overt indicators to unambiguously determine the definiteness of the nominal after the verb, it is necessary to test the behavior of the NP's in order to clearly recognize the contribution of definiteness to the meaning of the sentence and its role in the order of the constituents, if any. The analysis of the properties of definites and indefinites identified by Heim (1982) will further confirm that NP's are ambiguous between a definite or indefinite interpretation regardless of word order.

6. The properties of definite and indefinite NP's

As mentioned in section 3. above, Heim (1982) proposes a typology of Noun Phrases that includes two main types: quantifier-like and variable-like (or quantifier free) NP's. The first type is represented by NP's that include quantifiers such as *no cat* or *every cat* while the second group is formed by NP's such as *the cat*, *a cat*, *it*, *Felix*, in other words, definite or indefinite NP's. Heim (1982) allows for a third type of NP's which is not marked for definiteness, such as the articleless Latin NP's that may function as either [+def] or [-def], defining these as "ambiguous" NP's.

Definites and indefinites "are alike in every respect except for the feature [±definite] and their behavior with respect to rules and principles that make reference to that feature" (Heim 1982:229). The following properties are the crucial ones for distinguishing the [+def] from [-def] NP's :

As we saw, indefinites are distinguished by the following properties:

(52) a. *Quantifier indexing*: the quantificational-like interpretation of indefinites originates in the fact that they act as variables bound by overt or invisible quantifiers having scope over them.

b. *Novelty Condition:* an indefinite nominal cannot be coindexed with a definite nominal to its left.

c. *Descriptive content:* an indefinite nominal asserts its descriptive content.

Definites present the three opposite properties:

(53) a'. *No quantifier indexing:* definites are free, they are not directly bound by quantificational operators.

b'. *Novelty Condition:* Definites are not subject to this condition

c'. *Descriptive content:* a definite nominal presupposes its descriptive content.

Heim hypothesizes that there may be a language universal by which a nominal in any natural language may present all of the properties that characterize the feature [+def], all of the ones that characterize the feature [-def] or it may have both occurrences with all of the definite properties and occurrences with the indefinite properties. This typology would account for both languages with articles and for articleless languages. The three properties mentioned in (52) will be tested on Mohawk data and it will be proposed that Mohawk NP's belong to the latter group. The property (52b) referring to the Novelty Condition has been already discussed in section 3.1 above. In sections 6.1 and 6.3 the two remaining properties will be considered.

6.1 Indefinites as free variables

In order to determine the origin of the quantificational-like interpretation of indefinites, Heim considers the following examples:

(54) If a man owns a donkey he always beats it.

(55) Sometimes, if a cat falls from the fifth floor, it survives.

(56) If a person falls from the fifth floor, he will rarely survive.

Heim notices that the indefinites can be replaced by quantified NP's in (54) to (56) above, as follows:

(57) For every man and every donkey such that the former owns the latter, he beats it.

(58) Some cats that fall from the fifth floor survive.

(59) Very few people that fall from the fifth floor survive.

On comparison of the two sets Heim concludes that the indefinite nominals "have no quantificational force of their own but are rather like variables which may get bound by whatever quantifier is there to bind them" (Heim, 1982:127).

Heim (1982) adopts the semantic analysis of quantificational adverbs of Lewis (1975), according to which the adverb is the main operator in the sentences above. In order to include negation operators in her analysis she replaces "quantifiers" by "operators", a term that includes not only all quantifiers but also negation, temporal and modal operators. She assumes that if an operator takes two sentential arguments, the first one – the if-clause – restricts the domain of quantification and the other – the nuclear scope – is the remainder of the matrix clause. If an operator takes only one argument it is the nuclear scope and there is no restrictive term.

The logical form of (54) above can be represented as follows:

(60) Always ((x is a man and y is a donkey and x owns y), (x beats y))

The two free variables contained in sentence (54) are represented as follows:

(61) a man owns a donkey

(62) man (x) and donkey (y) and own (x,y)

Both variables are bound by the adverb *always*, which is responsible for the quantificational force of the sentence. The lexical meaning of the indefinite is responsible for the free variables, this being its only contribution to the

interpretation of the sentence. In (55) and (56) the adverbs *sometimes* and *rarely* are what give the quantificational reading to the sentences.

Furthermore, not only an adverb but also a quantificational determiner such as 'every' can also bind an indefinite:

(63) Every man who owns a donkey beats it.

An indefinite NP may also appear in a simple conditional sentence with no universal quantifier in it and yet the indefinite seems to have universal force:

(64) If a man owns a donkey, he beats it.

Heim claims that the indefinite NP is a variable in this case as well, bound by a morphologically unrealized operator, which she calls an "invisible necessity operator".

Finally, the existential reading of the following example must be attributed to Heim's rule of Existential Closure, a construal rule that applies obligatorily in certain cases and will be discussed below:

(65) A man came in.

To account for the interpretations of these sentences, Heim proposes a system of rules of construal that will determine the mapping of the syntactic form onto the logical form. These rules are developed in some detail in the following section.

6.2. Logical forms with indefinites and quantifiers

6.2.1. The construal rules

Heim argues that logical forms consist of disambiguated representations of sentences which are not ambiguous at a syntactic level but still allow more than one interpretation. This ambiguity may be due to the presence of more than one possible antecedent for an anaphoric element or to the underdetermination of the scope of a quantifier. To solve this problem Heim adopted a representation

proposed in the literature by which the anaphor-antecedent relationship is marked by numerical coindexation and the scope of an operator is configurationally defined as the structure that the operator c-commands. Operators include quantifiers, negation, temporal and modal operators, as well as certain morphologically unrealized operators.

Heim proposes that the logical form of a sentence derives from the syntactic form by means of rules of construal. There are also well-formedness conditions that ensure the acceptability of the interpretation of the derived structures. The rules can be summarized as follows:

1. **NP-Indexing:** Each NP will be assigned a numerical index.[5]

2. NP-Prefixing: Every nominal (except any pronoun)[6] is adjoined to S, leaving behind a coindexed empty NP. Quantifier NP's such as those with *every* are themselves attached to an adjoined S:

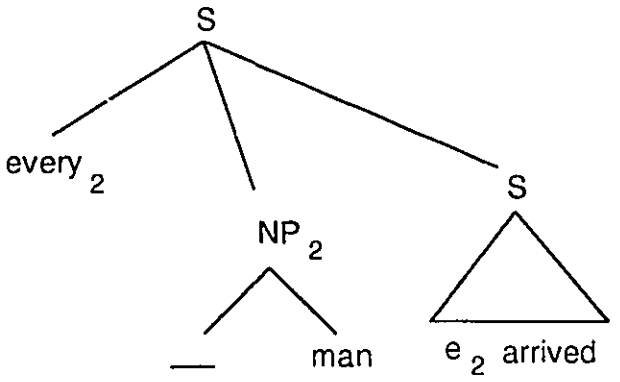
(66) a. He arrived.
b. [S he_3 arrived]

(67) a. A man arrived.
b. [S a man_1 [S e_1 arrived]]

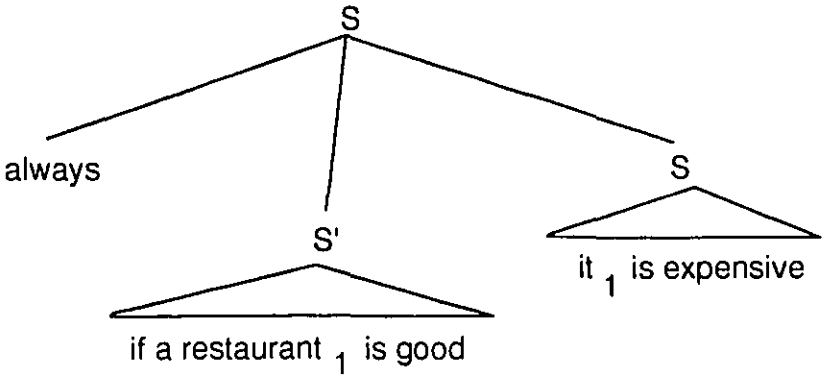
(68) a. Every man arrived.
b. [S every man_2 [S e_2 arrived]]

3. Operator Construal: Every operator must be attached as the leftmost immediate constituent of S as shown in the structure corresponding to (69) below. If it is an NP quantifier like *every,* the quantifier must be adjoined to S after the NP to which it belongs undergo NP- Prefixing. In the case of adverbial quantifiers such as *always* in (70) below, a well-formedness rule is added requiring that the 'if-clause' must appear between the adverb and the nuclear scope at LF:

(69) Every man arrived.



(70) If a restaurant is good it is always expensive.



It must be noted that when a quantifier is moved out of an NP it will take the referential index of that NP as its selection index, as shown in the structure in (69). This point is further developed below.

4. Operator-Indexing: Quantifiers, including adverbial ones, are selective: they do not bind[7] all of the variables within their scope. To account for this, Heim includes in her analysis the notion of "selection indices". These are numerical subscripts appearing on all operators, whether quantifier, adverb, negation operator, existential operator and so on, and counting as part of them.

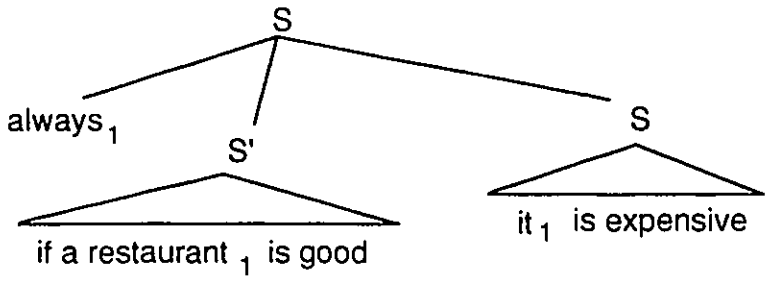
The selection indices can be assigned in two ways: 1) when the operator moves out of an NP it carries the referential index of the NP, as shown in (69) above and 2) by the rule of Operator-Indexing, a rule of construal applying to all

operators whereby the referential index of every *indefinite* NP is copied onto the lowest c-comanding quantifier. There may appear more than one index on each node. Only those variables whose selection indices match the one or ones that the operator carries will be eligible to be bound.

Heim excludes pronouns and other definite NP's from the Operator-Indexing rule. The only case in which a pronoun can be bound by an operator is indirectly when it is coindexed with an indefinite NP that is itself eligible to the rule of Operator-Indexing.

Sentence (69) above shows a quantifier moved outside the NP carrying its referential index while (70) will be as in (71) below after the application of the rule of Operator-Indexing:

(71)



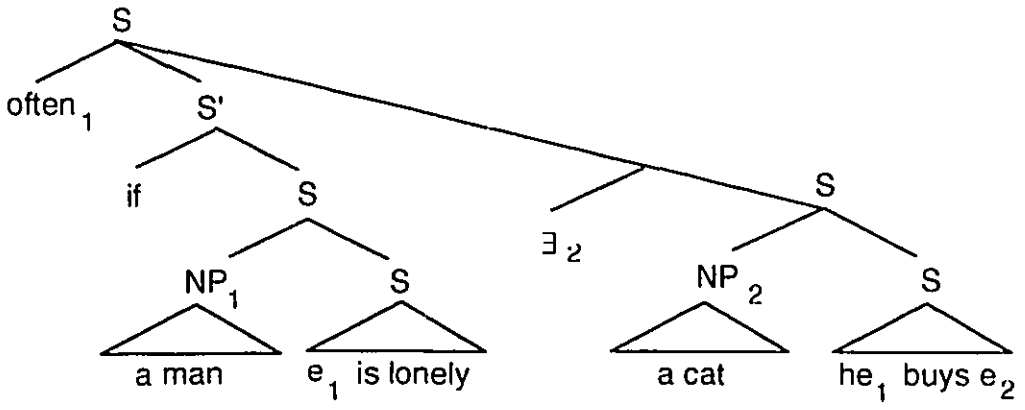
5. Existential Closure: When the indefinite is in an unembedded sentence or within the nuclear scope of a tripartite structure, it gets an existential reading. The following example illustrates some of the rules of construal involved:

(72) If a man is lonely, he often buys a cat.

The existential quantification over *cat* has a narrower scope than the operator *often* in the preferred reading of this sentence but the clause does not exhibit any element to which this interpretation can be attributed. Heim proposes the rule of Existential Closure to account for this interpretation.

This rule has two subcases: The first one obligatorily adjoins a quantifier ∃ to the nuclear scope of every quantifier.[8] The representation of (72) would then be:

(73)



A quantifier ∃ is adjoined to the nuclear scope of *often*, assigning an existential reading to the lower S. Moreover, the operators *often* and ∃ have the indices assigned by the rule of Operator-Indexing. *Often* carries the index of *a man*, an indefinite that qualifies for Operator-Indexing (Heim 1982:147). The pronoun *he* does not qualify, but it will be indirectly bound by the operator because it is coindexed with NP_1. The second operator ∃ carries the index of NP_2. Operator-indexing insures that *a cat* will be bound only by ∃, which is the lowest c-commanding operator, and that the pronoun will remain free.

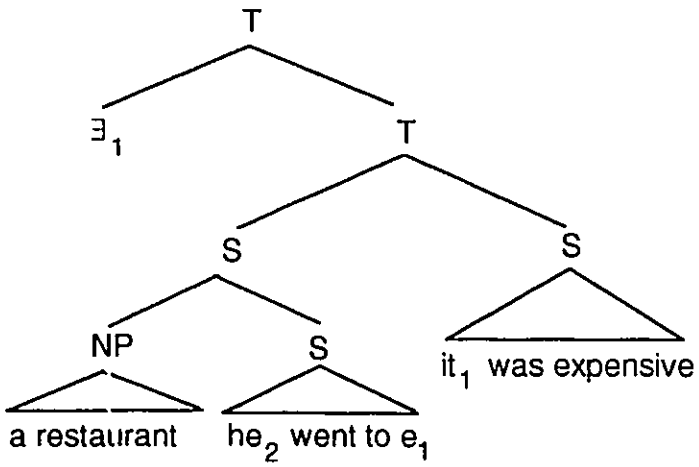
The second subcase, called the Rule of Text Formation, refers to indefinites in unembedded clauses and is designed to account for the interpretation of indefinites anaphorically related to pronouns inter-sententially. Heim proposes to interpret intersentential anaphoric relations between an indefinite NP and a pronoun in the same way as intrasentential ones. Thus, the same treatment will be given to both sentences below:

(74) If a restaurant is good it is always expensive.

(75) He went to a restaurant. It was expensive.

In (74) the indefinite NP *restaurant* and the pronoun *it* are identical variables bound by the operator *always*. Again, the pronoun can be bound by the operator because, being coreferent with the NP, it carries the same selection index as the operator as a result of Operator-Indexing. Heim assumes that a text is a complete logical form and that S's are substructures of it. The Rule of Text Formation says that a sequence of sentences S must be attached under a node T. The structure thus formed must still undergo the first subrule of Existential Closure, which will attach an operator ∃ to T in this case. The representation of (75) will thus be comparable to that of (74), with both free variables being bound by the Existential operator:

(76)



6.2.2. Invisible operators

To account for sentences such as (77) below in which the universal reading cannot be attributed to any obvious quantifier, Heim argues for the existence of an "invisible operator" that is inserted during the course of the derivation between the syntactic input and the logical representation.

(77) If a man is in Athens, he is not in Rhodes.

To justify postulating this invisible operator she appeals to two arguments. The first one is contributed by the research on the semantics of conditionals. The 'if-then' sentence above is not considered as a material implication, in which case it would not have anything to do with the universal force of the sentence. Rather, "the 'then'-clause is read under the scope of a necessity operator, which in turn is restricted by the 'if'-clause" (Heim 1982:170).[9] The second argument comes from the rule of Operator-Indexing, which considers a quantifier as an unselective operator that attracts selection indices from indefinites around it and binds them. By combining these two hypotheses one may claim that the necessity operator in the 'then'-clause will be bound to the indefinite, copying its selection index. Heim reaches the conclusion that "since necessity operators are basically universal in their force (necessity being truth in every possible world), an indefinite thus bound by a necessity operator will itself appear to have universal force" (Heim, 1982:170).

6.3. Definite NP's

Definite NP's, like indefinite NP's, contain a free variable, but they do not get their interpretation by virtue of being bound by an operator because they do not qualify for Operator-Indexing. Consider the following sentences from Heim:

(78) A cat is at the door.

(79) The cat is at the door.

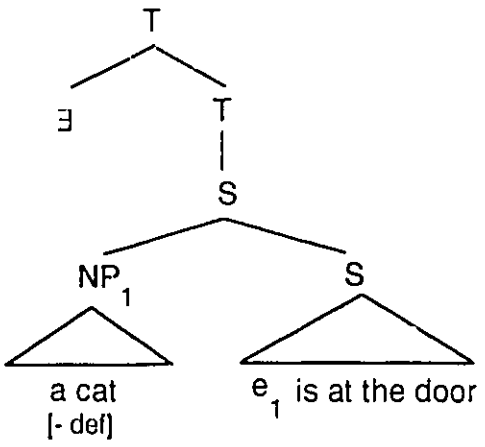
The following are the LF representations of (78) and (79):

(80) $\exists x_1$ (cat (x_1) & at-the-door (x_1))

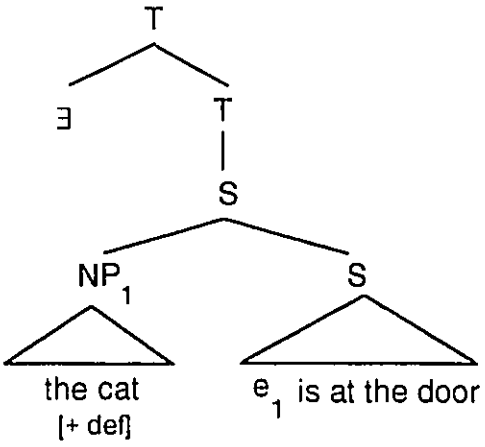
(81) cat (x_1) & at-the-door (x_1)

In (80), *a cat* is existentially bound by an operator, while in (81) *the cat* is not bound. The LF representations of both sentences are:

(82)



(83)



But the difference between definites and indefinites is based on more than Operator-Indexing. Heim notes that the value that will be linked to the variable of *a cat* in (82) is only asserted and not furnished by the context. The result is an ambiguous utterance, because any entity can be assigned as a value of the variable. On the contrary, the definite noun carries a presupposition, and what is presupposed is the descriptive content of the value of the variable. She proposes that a sentence like (83) is felicitous[10] only if the value of the variable is represented by an entity already presupposed to be a cat and supplied by the context. Not only NP's with *the* presuppose their descriptive content, but any non-pronominal definite NP, such as *this cat*, *that dog*, *his father*, and *Felix* has similar presuppositions. All these considerations lead to the conclusion that the referential index of a definite NP cannot be a new one in the discourse.

It is not the aim of this section to further analyse Heim's dissertation on definiteness, but only to summarize the properties of definite and indefinite NP's. Mohawk NP's will now be studied in the light of Heim's criteria. The clear identification of definiteness in Mohawk will allow us to see whether it plays a role in determining the order of constituents in the sentence or not.

7. Definiteness in Mohawk

7.1. The application of the construal rules

Going back to Mohawk data, there is now a way to identify an indefinite NP, even if it is not marked for definiteness by an overt determiner. Due to the fact that quantifiers such as *every* in English do not exist in Mohawk,[11] in comparing Heim's sentences against Mohawk data quantificational adverbs will be used exclusively. Consider the following Mohawk "donkey" sentences, elicited in the field work:

(84) a. Toka ne r-ukwe' a-ho-nahskw-a-yv-'t-a-k-e'
if *NE* *MsS-person* *opt-MsO-pet-ø-have-caus-ø-cont-punc*
ne te-w-ahut-es tyotku a-ha-ryo-s-hek-e'.
NE *dup-NsS-ear-be.long* *always* *fact-MsS-beat-hab-cont-punc*

b. Toka te-w-ahut-es a-ho-nahskwa-yv'tak-e'
if *dup-NsS-ear-be.long* *opt-MsO-pet-have-punc*
ne r-ukwe' tyotku a-ha-ryo-s-hek-e'.
NE *MsS-person* *always* *fact-MsS-beat-hab-cont-punc*
If a man owns a donkey he always beats it.

(85) a. Toka ne r-ukwe' t-v-ha-yv-'
if *NE* *MsS-person* *dup-fut-MsS-gamble-punc*
ne ye-nvst-a-her-ha' shewatyervhs te-ha-atvtsha-s.
NE *FsS-corn-ø-fill-hab* *sometimes* *dup-MsS-win-hab*

b. Toka t-v-ha-yv-' ne ye-nvst-a-her-ha'
if *dup-fut-MsS-gamble-punc* *NE* *FsS-corn-ø-fill-hab*
ne r-ukwe shewatyervhs te-ha-atvtsha-s.
NE *FsS-corn-ø-fill-hab* *sometimes* *dup-MsS-win-hab*
If a man plays bingo sometimes he wins.

As opposed to the examples in (33) to (41), which could be ambiguously interpreted as having either *the* or *a* NP's, the only interpretation spontaneously

assigned to the NP's in these sentences in isolation is the indefinite one, again irrespective of the presence or absence of *ne* and the position of the nominal in the sentence as can be seen in a) and b) versions of each sentence. The difference between these sentences and the ambiguous ones is the presence of the adverbs *tyotku* 'always' and *shewatyervhs* 'sometimes'. In Heim's terms, the adverbs bind the free variables represented by the NP's giving them the universal reading that they exhibit in the sentence. It is possible to represent this interpretation by applying Heim's rules of construal, as shown below.

In English, the NP's will undergo 1) the rule of NP-Indexing and then 2), the rule of NP-Prefixing. In Mohawk the NP's are already adjoined to S (see Chapter 1) and coindexed with a *pro* NP; therefore these rules apply vacuously.

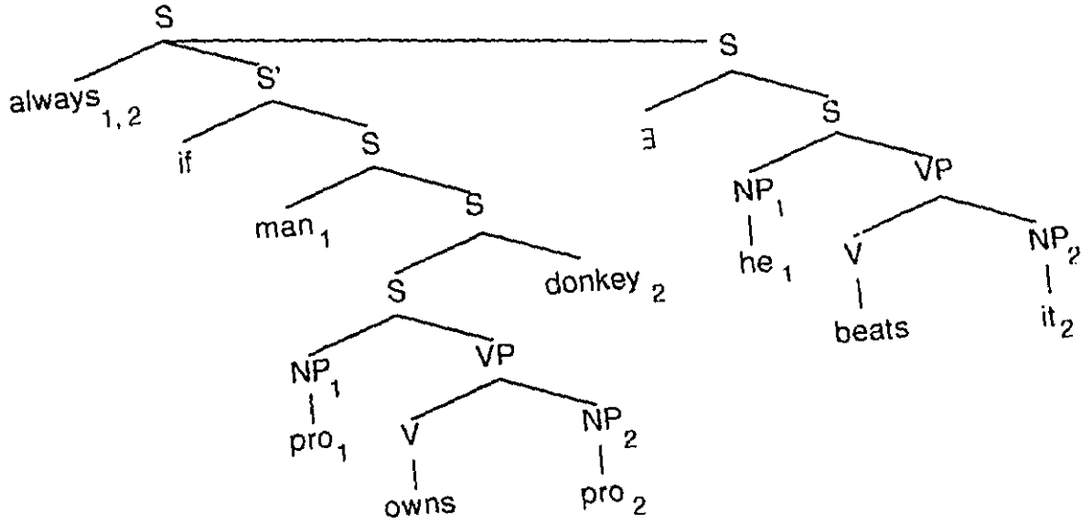
By the rule of Operator Construal the operators must then be attached as a leftmost immediate constituent of the S and the 'if-clause' must appear between the adverb and the nuclear scope at LF. By the Rule of Existential Closure, an ∃ operator is adjoined to the nuclear scope of every quantifier. Finally, the operators must also undergo the rule of Operator-Indexing, the rule by which they acquire the indices of the indefinite NP's.

The LF interpretation of (84) is the following:

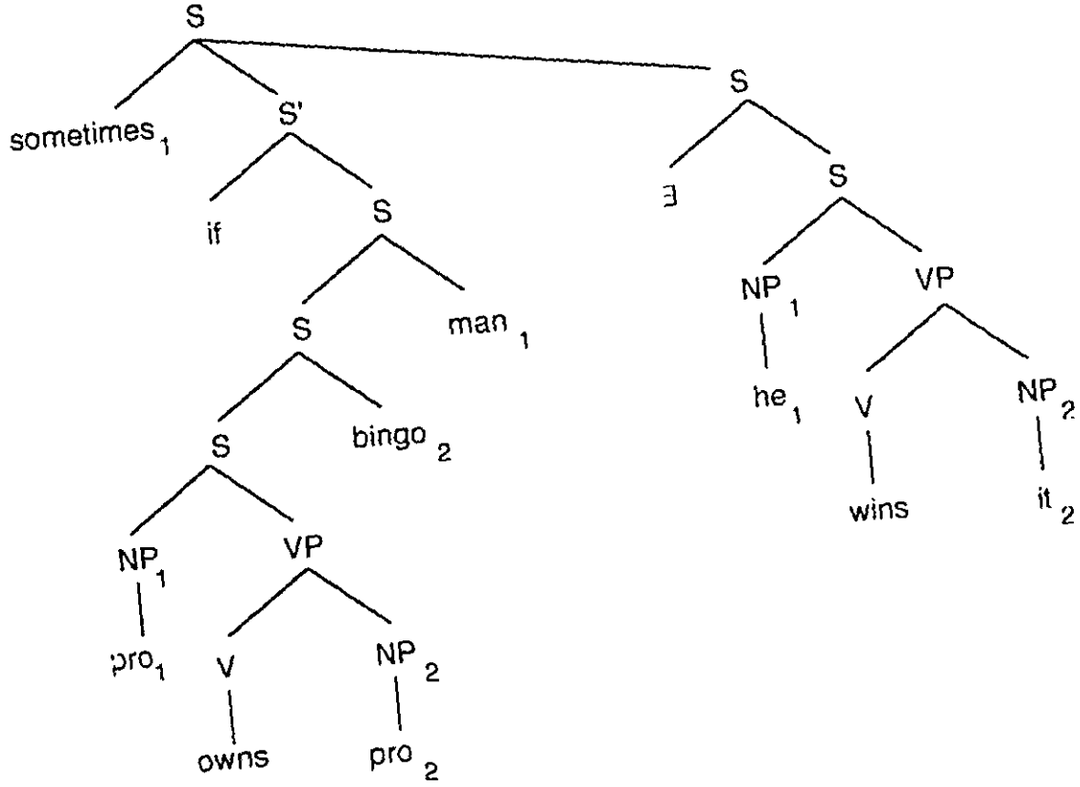
(86) For every man there is a donkey such that if a man owns a donkey he beats it.

The adverb *tyotku* 'always', has scope over the two NP's *man* and *donkey* in (84) and over *man* in (85). This reading is well represented by the following structure, resulting from the application of the rules mentioned above to (84) and (85):

(87)


S
always 1, 2
S'
if
S
man 1
S
S
donkey 2
NP 1
pro 1
VP
V
owns
NP 2
pro 2
S
∃
S
NP 1
he 1
VP
V
beats
NP 2
it 2

(88)


S
sometimes 1
S'
if
S
S
man 1
S
bingo 2
NP 1
pro 1
VP
V
owns
NP 2
pro 2
S
∃
S
NP 1
he 1
VP
V
wins
NP 2
it 2

It should be noted that in these cases there is no ambiguity in the reading of the nominals. The interpretation by native speakers of these sentences in isolation is the indefinite one. This does not mean, however, that a definite reading is impossible. In order to force the definite interpretation, such as "there is only one particular man who plays bingo and he sometimes wins" the sentence would have to be modified as follows:

(89) Toka t-v-ha-yv-'
if dup-fut-MsS-gamble-punc
ne ye-nvst-a-her-ha' shewatyervhs te-ha-atvtsha-s.
NE FsS-corn-ø-fill-hab sometimes dup-MsS-win-hab
Sometimes if he plays bingo he wins.

(90) Toka thikv r-ukwe' t-v-ha-yv-'
if this MsS-person dup-fut-MsS-gamble-punc
ne ye-nvst-a-her-ha' shewatyervhs te-ha-atvtsha-s.
NE FsS-corn-ø-fill-ha sometimes dup-MsS-win-hab
Sometimes if this man plays bingo he wins.

In (89) the NP *rukwe'* 'man' has been dropped and in (90) the determiner *thikv* 'this' has been added. Recall that Heim argued that *this NP* presupposes the descriptive content of the nominal. In (89), the NP has been dropped, leaving the verb with its bound pronoun prefixes alone. It seems to be the case that in order to make an NP unambiguously definite, Mohawk must use this type of determiner if there is an adverb in the sentence.

The following examples will illustrate the point:

(91) Nonv ka-nat-a-ku y-v-k-e' tyotku ...
when NsS-town-ø-loc trans-fut-1sS-go-punc always

a. ... i-k-kv-hs erhar
ø-1sS/ZsO-see-hab dog

b. ... erhar i-k-k-v-hs.
dog ø-1sS/ZsO-see-hab

c. ... i-k-kv-hs ne erhar
ø-1sS/ZsO-see-hab NE dog

When I go to town I always see a dog.

(92) Tyotku ne ahsv-hatu ni-w-vniser-otv-s....
always NE three-ordinal part-NsS-day-kind.of-hab

a. ... k-e-nohare-s atya'tawi.
1sS-ø-wash-hab dress

b. ... atya'tawi k-e-nohare-s.
dress 1sS-ø-wash-hab

c. ... k-e-nohare-s ne atya'tawi.
1sS-ø-wash-hab NE dress

I always wash a dress on wednesdays.

(93) Nonv ka-nat-a-ku y-v-k-e' tyotku
when NsS-town-ø-loc trans-fut-1sS-go-punc always

thikv erhar i-k-kv-hs.
that dog ø-1sS/ZsO-see-hab

When I go to town I always see that dog.

(94) Tyotku ne ahsv-hatu ni-w-vniser-otv-s
always NE three-ordinal part-NsS-day-kind.of-hab

a. ...k-e-nohare-s ako-atya'tawi
1sS-ø-wash-hab FsP-dress

b. ...thikv atya'tawi k-e-nohare-s.
this dress 1sS-ø-wash-hab

I always wash my/the (this) dress on Wednesdays.

In (91) and (92), the adverbial operator affects the interpretation of the NP which is within its scope. Hence, the rule of Operator-Indexing applies and the NP must be indefinite. In (93) and (94) the particle *thikv* and/or the presence of a possessor are used to give a definite interpretation to the nominal. The bare NP, however, is only interpreted as indefinite. In other words, the influence of a quantifier adverbial over a bare NP in Mohawk renders the NP indefinite. This is

true whether the NP is before or after the verb and with or without *ne*. This constitutes a further evidence that definiteness does not correlate with word order in Mohawk.

Another case analysed by Heim was simple conditional sentences. In these constructions, an invisible operator is responsible for the universal force of the indefinite in the sentence. Consider the following sentences collected during the fieldwork:

(95) Toka ne r-ukwe'
if NE MsS-person
v-s-ha-at-e-rihw-a-tewaht-e'
fut-iter-MsS-srfl-ø-matter-ø-misbehave-punc
onvk tsi v-ha-at-hrewaht-e'.
must that fut-MsS-srfl-punish-punc
If a man does something wrong, he must be punished.

(96) Toka ro-nuhwhaktani-ø ne r-ukwe' ra-atetsvt-s
if MsO-be sick-stat NE MsS-person MsS-cure-hab
a-ho-at-kv-tsher-a'.
opt-MsS/MsO-srfl-see-purp-hab
If a man is sick, he should see a doctor .

(97) Toka ro-'sere-ht-a-yv-ø ne r-ukwe'
if MsO-car-inst-ø-have-stat NE MsS-person
tyotku ra-nohare-s.
always MsS-wash-hab
If a man has a car, he always washes it.

In these examples, the interpretation is not ambiguous between a definite and an indefinite reading. The presence of Heim's invisible necessity operator disambiguates the NP, binding the free variable that it represents. The NP will then acquire the universal force that the semantics of the sentence exhibits. It is evident again that the NP's are indefinite both before the verb, as in (95), and

after the verb, as in (96), (97). In order to get a definite reading for the NP, the particle *thikv* must be added, or the NP must be dropped, as is shown in the following examples:

(98) Toka ro-'sere-ht-a-yv-ø tyotku ra-nohare-s.
if *MsO-car-inst-ø-have-stat* *always* *MsS-wash-hab*
If he has a car, he always washes it.

(99) Toka ro-nuhwhaktani-ø thikv r-ukwe' ra-tetsvt-s
if *MsO-be sick-stat* *this* *MsS-person* *MsS-cure-hab*
a-ho-at-kv-tsher-a'.
opt-MsS/MsO-srfl-see-nom-hab
If this (the) man is sick, he should see a doctor.

The influence of an adverb in the interpretation of an NP is clear, then, in sentences in isolation. Nevertheless, this situation changes when the sentence containing the adverb occurs within a richer context. Consider the next piece of data where the sentence in (85), here appearing as (101), is part of a longer discourse:

(100) Kikv r-ukwe' eso tsi ro-aterashw-iyo nek
this *MsS-person* *a.lot* *that* *MsO-luck-be.good* *but*
tsi ne rone yahtv ne'e te-yako-aterashw-iyo.
that *NE* *wife* *not* *she* *neg-FsO-luck-be.good*
This man is very lucky but his wife is not lucky.

(101) a. Toka ne r-ukwe' t-v-ha-yv-'
if *NE* *MsS-person* *dup-fut-MsS-gamble-punc*
ne ye-nvst-a-her-ha tyotku te-ha-atvtsha-s.....
NE *FsS-corn-ø-fill-hab* *always* *dup-MsS-win-hab*

b. Toka ne ye-nvst-a-her-ha t-v-ha-yv-'
if *NE* *FsS-corn-ø-fill-hab* *dup-fut-MsS-gamble-punc*
ne r-ukwe' tyotku te-ha-atvtsha-s.....
NE *MsS-person* *always* *dup-MsS-win-hab*
If the man plays bingo he always wins...

(102) nek tsi ne rone yahtv ne'e
but NE wife not she

nuwvtu tha'-te-yu-atvtsha-s.
ever contr-dup-FsS-win-hab

...but his wife never wins.

The NP *ne rukwe'* in (101) is now understood as definite, regardless of whether it occurs before or after the verb. Therefore, it does not undergo Operator-Indexing, or show any influence from the adverb. The following example, which integrates sentence (96) above (here (104)) into a context, will provide further evidence.

(103) Ka-riw-es onv s-hir-uh-aksv- ø
part-NsS-matter-be.long now iter-MsO-feel-be.bad-stat

ne Uwari rone.
NE Uwari husband

Uwari's husband has felt bad for a long time.

Thetvre wa'-khe-rori-'
yesterday fact-1sS/FsO-tell-punc

I told her yesterday that...

(104) ...toka ro-nuhwaktani-ø r-ukwe' ra-atetsvt-s
if MsO-be.sick-stat MsS-person MsS-cure-hab

a-ho-at-kv-tsher-a'.
opt-MsS/MsO-srfl-see-purp-hab

...if the man is sick he should see a doctor.

The context supplies the value that will be linked to the NP, giving it a definite interpretation. The presence of the invisible operator, significant in the sentence in isolation in (96), does not necessarily influence the interpretation of the NP within a larger context. The contrast shown between (85)/(101) and (96)/(104) reveals that bare NP's are always ambiguous with respect to definiteness in Mohawk.

8. The Novelty Condition and the descriptive content of an NP

Further evidence for the claim that neither the order of the NP with respect to the verb nor the presence of *ne* determines definiteness is provided by the Novelty Condition. Textual examples relevant to this were discussed in section 5. In this section, more closely controlled examples are added, based directly on Heim's (1982) discussion. The examples presented as (17) and (18) above are repeated here for convenience as (105) and (106):

(105) a. * He likes the /cat$_i$ but she hates a cat$_k$ * i=k
/it$_i$

(106) b. He likes a cat$_i$ but she hates /the cat$_k$ i=k
/it$_k$

In (105) coreference is impossible between an indefinite NP and a definite to its left, whereas the reverse situation in (106) is grammatical. Compare similar Mohawk examples:

(107) ? Uwari **kuwa-swv-hs** **ne** **ohkwari$_i$**
Uwari *FsS/ZsO-hate-hab* *NE* *bear*
tanu Shawatis **ra-nuhwe-'s** **ne** **ohkwari$_k$.**
and *Shawatis* *MsS/ZsO-like-hab* *NE* *bear*

(108) ? Uwari **ohkwari$_i$** **kuwa-swv-hs**
Uwari *bear* *FsS/ZsO-hate-hab*
tanu Shawatis **ohkwari$_k$** **ra-nuhwe-'s.**
and *Shawati* *bear* *MsS/ZsO-like- hab*
Uwari likes a/the bear and Shawatis hates a/the bear.

The grammaticality judgement refers to coreferentiality.[12] The NP's, showing no such evident contrast as the one expressed by the English determiners in the glosses, are interpreted as ambiguous between definite and indefinite. Irrespective of the position of the nominals and the presence or absence of *ne*, the sentences are grammatical but awkward; the order of the NP's with respect to

the verb does not disambiguate them. However, the second clause can be disambiguated by adding a demonstrative or by dropping the NP, in which case the sentence is assigned an interpretation in which the NP's can be coreferent. (Note, though, that the first NP is still interpreted ambiguously as definite or indefinite, independently of word order and the presence of *ne*.)

(109) Uwari **kuwa-swv-hs** **ne** **ohkwari$_i$**
Uwari FsS/ZsO-hate-hab NE bear
tanu Shawatis **ra-nuhwe-'s**.
and Shawatis MsS/ZsO-like-hab

(110) Uwari **ohkwari$_i$** **kuwa-swv-hs**
Uwari bear FsS/ZsO-hate-hab
tanu Shawatis thikv **ohkwari$_k$** **ra-nuhwe-'s**.
and Shawatis this bear MsS/ZsO-like-ø-hab
Uwari hates a/the bear and Shawatis likes /it.
/this bear.

Finally, one might hope to get a third test for definiteness from Heim's observation that only definites presuppose their descriptive content. This proves difficult to use in practice, however. Indeed, the fieldwork has shown that there seems to be a preference for placing a definite after the verb when the situation is forced, e.g. when a native speaker is presented with the following context:

You are with your sister and you tell her:

(111) **erhar** uk-kari'.
dog NsS/1sO-bite
A dog bite me

(112) wa-wak-kari' **ne** **erhar**.
fact-*NsS/1sO-bite-punc NE dog*
The dog bite me

(111) tends to be used to assert that the biting was done by a dog, while (112) was interpreted by a native speaker as implying an entity already known to be a

dog by the sister. Thus, the position of the NP may be a resource to identify a nominal as definite in very specific pragmatic contexts.

The application of Heim's principles and rules of construal to Mohawk shows that the ambiguity between definite/indefinite that almost always appears in isolated phrases is usually cleared up by the presence of an operator having scope over the NP. This encourages a quantificational reading of the sentence in the absence of a determiner such as *thikv* or a possessive or when the NP has not been dropped. The NP in this situation will be interpreted as indefinite whether it is preceded by *ne* or not and whether it occurs before or after the verb. Nevertheless, when the NP appears within an appropriate context, it may be assigned a definite interpretation even in the presence of an operator. Again, this is independent of its location in the sentence.

This evidence confirms on the one hand that *ne* is not a definite determiner and that the language lacks this type of "pure" marker for definiteness. On the other hand, it also confirms that the order of the constituents is not determined by definiteness either. Indefinite nominals may appear before and after the verb in perfectly grammatical sentences.

Mohawk NP's would thus fall into the "ambiguous" type in Heim's terms, having definite as well as indefinite occurrences with respect to the cluster of properties by means of which definiteness is defined. Pragmatic considerations will determine the interpretation of the NP's. If indefinite, they will obey the rules of construal proposed by Heim. If definite, they will not obey those rules and their interpretation will depend on the context. The relative order of the nominals with respect to other constituents of the clause does not play a role in the determination of definiteness. There is nevertheless a preference for post-verbal definite nominals and pre-verbal indefinite nominals which is apparently not

related to syntactic principles but to pragmatic factors such as style, emphasis, contrast or the need for disambiguation.

9. Revising the Constraint on Word Order (Baker 1991b)

Baker's (1991b) claim that Mohawk free word order is conditioned by a constraint on definiteness is not confirmed by the analysis of the data. It was concluded that an indefinite NP may appear after the verb in Mohawk, coindexed with a definite *pro* to its left, as represented in the following structure:

(113) NP_i [pro_i V pro_k] NP_k indefinite

This is the configuration that is supposedly ruled out by Baker's (1991b) and Heim's (1982) proposals but which is in fact quite common in Mohawk. It can be compared with backward pronominalization of indefinites in English, and it was suggested by Baker (1991b) that an analysis of this structure could be useful in accounting for the apparent Mohawk apparent violations of the Constraint on Word Order in Mohawk.

9.1. Backward pronominalization

Several studies in the linguistic literature bear on backward pronominalization, e.g. Kuno (1972), Bolinger (1979), Carden (1982), Mittwoch (1983), and Reinhart (1983). Of all of these, Reinhart's (1983) approach is of interest for this thesis and her account of backward pronominalization of indefinites will be very briefly reviewed in this section.

Backward pronominalization with indefinite NP's is very restricted in English. Reinhart (1983) formulates the following condition on bound anaphora:

(114) Quantified NP's and *wh* -traces can have anaphoric relations only with pronouns in their c-command syntactic domain.[13]

The restriction in (114) blocks coreference when the pronoun is not c-commanded by the indefinite NP but allows it when the c-command condition is respected, thus accounting for the rare cases of backward pronominalization with indefinites in English. Most of the examples are from clauses with preposed constituents. In these cases the pronoun precedes the NP in the clause at the surface structure but the condition requires it to be c-commanded by the NP in order to form a grammatical sentence,

Consider the following sentences from Reinhart (1983:129):

(115) Thinking about his$_i$ problems, a student$_i$ got depressed.

(116) For his$_i$ birthday, an employee$_i$ received a Mercedes.

In all of these cases, the pronoun is in the c-commanding domain of the indefinite after the constituent that contains it was preposed and therefore backward anaphora is not ruled out. Contrarily, in the next set of clauses the pronoun is not c-commanded by the antecedent after the preposing of the constituent and the sentences are ruled out by the above mentioned condition (Reinhart 1983:129):

(117) * Thinking about his$_i$ problems, I pitied a student$_i$.

(118) * For his$_i$ birthday we bought an employee$_i$ a Mercedes.

These examples show the effect of the subject/object asymmetry that can be observed in English. When the antecedent is in the subject position, it will always c-command the pronoun, which is not the case when it is in the object position.

The cases discussed above prove that the structure *pronoun$_i$ - indefinite NP$_i$* is possible under certain circumstances in English. This structure would, strictly speaking, violate the Novelty Condition, which rules out an indefinite NP coindexed to its left with a definite NP. The Novelty Condition could be modified as follows in order to allows for this possibility:

(119) An indefinite NP must not have the same referential index as any NP to its left unless it c-commands that NP.

By incorporating Reinhart's (1983) clause about c-command, Heim's Novelty Condition can account for backward pronominalization with indefinites in English.

As for Mohawk, the fact that indefinite NP's appear almost anywhere in the sentence is now accounted for because the NP's adjoined to S always c-command the *pro's* in argument position with which they are coindexed. Thus, while this version of the Novelty Condition does not restrict Mohawk word order in any way, it is at least consistent with the clause structure proposed by Baker (1991b).

10. Conclusion

The data discussed in this chapter confirm that word order in Mohawk is not based on definite/indefinite distinctions. The coindexation between NP's in adjunct position with *pro's* licensed by the rich agreement on the verb, forming a referential chain (Baker, 1991b) is the structural configuration that allows the NP's to freely appear in any location in the sentence, like adjuncts. It follows from this that those NP's always c-command the *pro's* by which they are licensed. Heim's (1982) Novelty Condition modified along the lines suggested above, may then account for the apparent violations in Mohawk of the principles that govern definiteness.

Notes to Chapter II

1 Nevertheless, the simultaneous occurrence of both subject and object is very rare in these languages (Mithun, 1987).

2 The orthography used in the Cayuga sentences is from Mithun (1987).

3 The role of the particle *ne* is not clear in Mohawk. Postal (1962) states that *ne* "apparently represents several different grammatical morphemes and in some cases does not represent any morpheme at all" (Postal, 1962:412). It may appear before nouns, verbs, pronouns, demonstratives, adverbials and locatives (Bonvillain (1985:349). Its use is often optional but also often obligatory. In general, it has been considered as a definite determiner, a nominalizer and a complementizer: Deering and Delisle (1976) consider it to be a definitizer particle sometimes translated as 'the' or 'who' but often without an equivalent in English. Michelson (1973:78) renders the meaning of this particle as 'the, that or who'.

4 Examples (43) to (47) inclusive were taken from *Kanien'kéha' Okara'shón:'a. Mohawk Stories* (Williams,1976) and examples 49 to 51 inclusive are from *The Legend of Teharahsahkwa* (Michelson 1976).

5 This subscript does not refer to anything. Heim suggests that NP's may even be already indexed at the syntactic level (Heim 1982:132).

6 Heim considers that "pronouns and empty NP's are the only NP's that occur in the minimal S constituents of interpretable disambiguated representations" (Heim 1982:134). Therefore, they are not subject to NP-prefixing.

7 Heim points out that what she calls "binding" must not be understood in the Chomskyan sense. She argues that "binding" as she uses the term is a case of non-argument binding in Chomsky's terms but not vice-versa. "Anaphoric relatedness" is also a notion that does not correspond to Chomsky's. Unlike in Chomsky, it does not require any c-command condition.

8 Heim argues that, when an operator takes two formulas, the first one is the restrictive term and the second one the nuclear scope. If it takes only one, she assumes that it is the nuclear scope and that there is no restrictive term. The

scope of a quantifier in a tripartite structure will include both its restrictive term and its nuclear scope.

9 The Fregean tradition considers the if-then clause as a truth-functional connective, with no involvement in the universal force of the sentence. Stalnaker (1968), Lewis (1973, 1975) and Kratzer (1978, 1981) argue that the only function of an if-clause is that of restricting an operator, which can be represented by a quantifying adverb, a modal or a morphologically unrealized operator (Heim 1982).

10 The following is Heim's definition of the notion of context-relative felicity (Heim 1982:165):

a) A formula f is felicitous with respect to a context C and a model $<A, Ext>$ only if C furnishes a unique individual $a_{C, i} \in A$ for each number i which is the index of a variable free in f.

11 This point will be discussed in Chapter III, section 3.1.

12 Note that in Mohawk, as in English, the repetition of the NP's is not stylistically felicitous.

13 It must be taken into account that with the term "quantified NP's" Reinhart groups together what have been referred to until now as "indefinite and quantified NP's" in Heim's proposal. For Reinhart's definition of 'domain' and 'c-command', see Chapter I, footnote 6.

Chapter III

The Role of Movement in Free Word Order in Mohawk

1. Introduction

The term "scrambling" is used to characterize the process by which a canonical word order is altered; it has been applied in particular to word order in languages like Japanese, Hindi and German. For a long time it was mainly considered as a Phonetic Form (PF) operation conditioned by pragmatic or stylistic considerations. However, during the last decade, several researchers have proposed that this particular type of constituent movement was in fact, in part, "a systematic syntactic operation which is subject to regular syntactic principles" (Mahajan 1990:8).

An analysis of the recent literature on this topic (Hoji 1985, 1986; Hoji, Miyagawa and Tada, 1989; Saito 1985, 1986, 1989, 1990; Saito and Hoji 1983; Besten and Webelhuth 1987; Webelhuth 1989; Mahajan 1990) shows that the different hypotheses proposed agree on the fact that scrambling crucially involves movement. The discrepancies involve on the nature of the movement, whether to an A or A' position or to a mixed position. On the one hand, based on Hindi data, Mahajan (1990) proposes that scrambling[1] is not merely an instance of A' movement but that it is divided into two different types of movement, either towards an A or an A' position, depending in part on whether it is short distance or long distance scrambling. On the other hand, Webelhuth (1989) argues that in German scrambling is an adjunction operation and that the landing site of the moved constituent is neither an A nor an A' position but a non-A or non-operator position that behaves as both an A and A' one with respect to the Binding Theory (Saito 1990). Saito and Hoji (1983), Saito (1985) and Hoji (1986) propose that the type of movement involved is A' movement both in clause internal and clause external scrambling. Saito (1990), however, revises his analysis on the basis of

Hindi and German data from Mahajan and Webelhuth, concluding that the hypotheses tested with these languages can be satisfactorily applied to Japanese sentences in different environments, which suggests that Mahajan's and Webelhuth's theories are not contradictory.

What is relevant to this thesis is that all of the hypotheses agree that a certain type of scrambling can be accounted for as a syntactic process involving movement. Mahajan (1990) in particular proposes that his analysis may lead towards a unified theory of scrambling accounting for the different types of free word order languages: languages that have one type of scrambling movement, both types or no scrambling. As for Japanese, Hindi, German and Dutch, they all fall into the class of languages having both types of movement, A and A'.

Mohawk has very free word order, but it is argued by Baker (1991a) and assumed here that the language does not resort to movement for this purpose. This being the case, the Mohawk type of language is not included in Mahajan's hypothesized typology of free word order.

It will be argued in this chapter that Mahajan's (1990) proposal to account for free word order does not represent the facts in languages like Mohawk. It is accurate for certain languages, in particular those that rely to a greater or lesser degree on case morphology to show grammatical relations but it does not include languages of the Mohawk type with rich agreement morphology even though these languages have the same surface pattern of free word order.

To clarify this point a comparison of some aspects of word order in Hindi and Japanese as opposed to Mohawk is in order. The main similarities and differences between them are described in the following sections.

1.1. Hindi and Mohawk word order patterns

Hindi and Mohawk have a similar pattern on the surface. The two languages present the same six word order possibilities in simple sentences:[2]

In Hindi, (Mahajan 1990):

(1) a) SOV Raam-ne kelaa khaayaa.
Ram-erg(SUB) banana(DO) ate
Ram ate a banana.

b) SVO Raam-ne khaayaa kelaa.
Ram-erg(SUB) ate banana(DO)

c) OSV kelaa Raam-ne khaayaa.
banana(DO) Ram-erg(SUB) ate

d) OVS kelaa khaayaa Raam-ne.
banana(DO) ate Ram-erg(SUB)

e) VSO khaayaa Raam-ne kelaa.
ate Ram-erg(SUB) banana(DO)

f) VOS khaayaa kelaa Raam-ne.
ate banana(DO) Ram-erg(SUB)

(2) a) SOV Sak ako-atya'tawi ra-nuhwe'-s.
Sak FsP-dress MsS-like-hab
Jim likes her dress.

b) SVO Sak ra-nuhwe'-s ako-atya'tawi.
Sak MsS-like-hab FsP-dress

c) OSV ako-atya'tawi Sak ra-nuhwe'-s.
FsP-dress Sak MsS-like-hab

d) OVS ako-atya'tawi ra-nuhwe'-s ne Sak.
FsP-dress MsS-like-hab NE Sak

e) VSO ra-nuhwe'-s Sak ako-atya'tawi.
MsS-like-hab Sak FsP-dress

f) VOS ra-nuhwe'-s ako-atya'tawi ne Sak.
MsS-like-hab FsP-dress NE Sak

Hindi is fundamentally an SOV language. "The unmarked word order in ditransitive sentences is SUB-IO-DO-V... Auxiliaries normally follow the verb. The

language is strictly postpositional ...the word order in Hindi is however somewhat free" (Mahajan 1990:19). It has been proposed that scrambling follows from movement, with the consequence that the D-structure and the S-structure will be different. The D-structure is basically as follows:

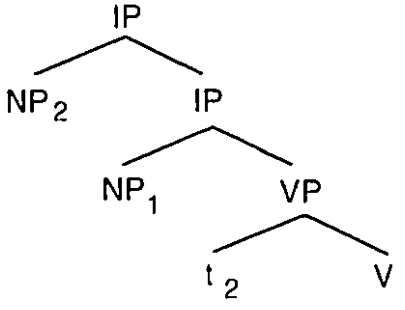
(3) $_{IP}$ [NP_1 $_{VP}$ [NP_2 V]]

and the S-structure with a scrambled object will show a trace of movement:

(4) $_{IP}$ [NP_2 $_{IP}$ [NP_1 $_{VP}$ [t_2 V]]

This structure is represented in (5).

(5)

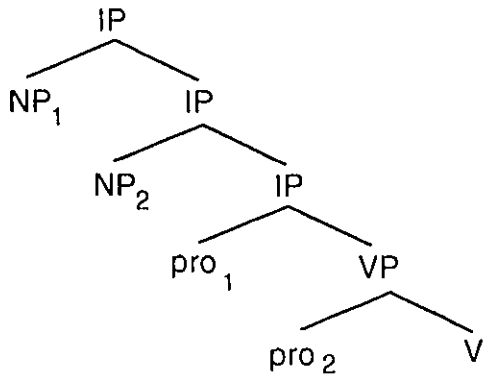


In Mohawk, the fact that the true arguments of the verb are non-phonetic *pro's* coindexed with overt NP's base generated in adjunct position (Baker 1991a) makes it very difficult to know which is the basic word order, if there is one, but for purposes of comparison the SOV order will be assumed here. Assuming that the NP's are base generated in adjoined position, we would expect that the D-structure and S-structure would be the same for any configuration:

(6) $_{IP}$ [NP_1 $_{IP}$ [NP_2 $_{VP}$ [pro_1 pro_2 V]]]

The representation of this structure is as in (7):

(7)



This structure shows no trace of movement. A chain is formed by the coindexation of null *pro's* in argument positions with subject and object NP's in adjunct position.

The structural differences between (4) and (6) would be expected to show up in different empirical properties.

As discussed in the first chapter, Baker (1989,1991a), based on Jelinek (1984), proposes that free word order in Mohawk is not the result of movement but of the particular structure of the language, whose NP's present the freedom characteristic of adjuncts. In the following sections Mohawk will be compared with Hindi to illustrate the differences in the two languages with respect to the relevant points. Finally, two Italian constructions described by Cinque (1990) will be discussed: Clitic Left Dislocation, which will be compared with Mohawk, and Topicalization, which may be paralleled to Hindi and Japanese. This will show that the forces underlying the Mohawk type of free word order are not language-specific but an expression of universal principles of the grammar, and for this reason it is not included in Mahajan's suggested typology of free word order.

2. Some basic concepts

Before we discuss the matter some basic concepts must be taken into account. First, certain theoretical assumptions about the Binding Theory must be briefly established. Second, some details of the Mohawk language such as the lack of quantifiers and reflexive anaphora must be analysed in order to explain why the languages treated here are not fully comparable.

2.1. The Binding Theory

Nominals are divided into three types: anaphors (including reflexives and reciprocals), pronominals and R-expressions. To each of these types corresponds an empty category: NP-traces, *pro* and Wh-traces respectively. The interpretation of the nominals included in these three categories is ruled by the Binding Theory by means of the following principles or conditions, where "bound" or "free" must be understood as A-bound or A-free:

(8) Condition A: an anaphor is bound in its governing category.
Condition B: a pronominal is free in its governing category.
Condition C: an R-expression is free.

The definition of governing category as formulated by Chomsky (1981) is the following:

(9) *a* is a governing category for *b* iff *a* is the minimal category containing *b* and a governor of *b* and a SUBJECT accessible to *b*.

In (8) binding means local A-binding, A-binding being the relation established between an NP and an antecedent in an argument position. A final requirement that must be taken into account is that A-binding means c-command and coindexing, according to Chomsky (1981:184):

(10) *a* is A-bound by *b* if and only if *a* and *b* are coindexed, *b* c-commands *a*, and *b* is in an A-position.

A'-binding is the relation established with an antecedent in a non-argument position, such as COMP (Spec of CP). The local binder is the closest binder: *a* locally binds *b* if *a* binds *b* and there is no *g* such that *a* binds *g* and *g* binds *b* (Chomsky 1986b:165). The concepts above are illustrated by the following example from Chomsky (1981:184):

(11) who [$_S$ *t* seemed [$_S$ *t'* to have been killed *t* "]]

t is a variable because it is A'-bound and locally A-bound by the operator *who*, while *t'* and *t"* are anaphors, the former being A'-bound by *who* and locally A-bound by *t* and the latter being A'-bound by *who*, A-bound by *t* and also locally A-bound by the intermediate trace *t'*.

3. The lack of certain elements in Mohawk

Mohawk and Hindi or Japanese are not directly comparable. Some of the elements that can be found in Hindi or Japanese are lacking in Mohawk, but even the analysis of these missing elements will illustrate the difference between both languages with respect to the nature of free word order.

In the first place, Mohawk lacks true quantifiers, unlike Hindi. Consequently, in the analysis of weak crossover only Wh-traces will be taken into account. Secondly, Mohawk lacks reflexive anaphors, again unlike Hindi. However, the absence of these two elements in Mohawk in itself constitutes evidence for the claim in Baker (1989, 1991a) that the empty category in argument position coindexed with the base generated NP in adjunct position is a *pro*, as will be shown in this section.

3.1. Quantifiers

Non-referential quantifiers such as the English *everybody* or *nobody* do not exist in Mohawk. Baker (1990a) claims that the lack of quantifiers in the language is due to the pronominal character of its arguments. The strong agreement morphology on the verbs licenses *pro's* in argument positions, allowing them to have person, gender and number specifications matching the governing head (Rizzi, 1986). These empty pronominals are referential and definite. The *pro's* enter into a binding relation with the NP's coindexed with them in adjunct position. This implies that both members of the chain must be referential, since only elements with reference can be coreferent. Quantifiers do not refer and therefore cannot corefer with *pro's* in argument position. The cases where a quantifier can be coindexed with a pronoun are limited. Rizzi (1986) proposes that a quantifier must bind a variable at logical form (LF) to be licit. Baker (1990a) suggests the following version of this principle:

(12) Quantified NP's (and Wh-traces) can have anaphoric relations only with pronouns that they A-bind at S-structure.

The meaning of the quantifier *every* in English is generally rendered in Mohawk by *akweku*. While it is tempting to assign to the Mohawk nominal the same meaning carried by the English one, Baker (1990a) shows that this is not correct through the analysis of several differences in the behavior of the two types of phrases. For example, in Mohawk *akweku* shows plural agreement, as in (13), just like the universal *all* in the English sentence in (15). *Every* in English, on the contrary, triggers singular agreement on the verb in (14). The following examples from Baker (1990a) illustrate the point:

(13) Akweku wa-hoti--yeshu-'. (*wa-ho-yeshu)
all *fact-MplO-laugh-punc* *(all fact-MsO-laugh-punc)*
Everybody laughed.

(14) Every man loves football. (*Every man love football.)

(15) All men love football. (*All men loves football.)

Thus, *akweku* is interpreted as 'all' with a collective meaning, while the true quantifier *every* has a distributive meaning (Vendler, 1967, cited in Baker, 1990a:6). This situation can be accounted for by assuming that overt nominals are base generated in adjunct position. As such, they A'-bind the *pro's* with which they are related and therefore do not obey (12). From this it follows that there cannot be quantificational phrases in the language.

On the contrary, quantifiers do exist in Hindi and Japanese. Consider the following Hindi (Mahajan 1990) and Japanese sentences:

(16) sab-ko$_i$ uskii$_j$ bahin (Hindi)
everyone(DO) *his* *sister(SUB)*

[t_{SUB} t_{DO} pyaar kartii] thii]
loves *do-imp-f* *be-pst-f*

His$_j$ sister loved everyone$_i$.

(17) daremo$_i$-ni [*pro*$_j$-koibito$_j$-ga [t_i kisu-sita] (Japanese)
everyone-acc *(his)-lover-nom* *kissed-pst*

(His$_j$) lover kissed everyone$_i$.

In both cases the object has been fronted. The empty category is a trace locally bound by its antecedent in A position, so (12) is not relevant. This difference shows that the empty category in argument position is pronominal in Mohawk but not in Hindi.

3.2. Reflexive anaphora

Considering the structure of Mohawk proposed by Baker (1989, 1991a) and assumed here, the absence of overt reflexives in the syntax of the language is accounted for by the Binding Theory.

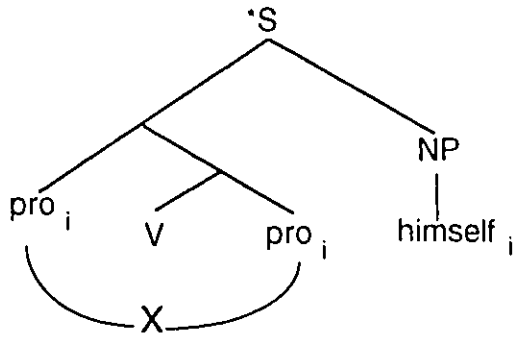
In Mohawk, the reflexive function occurs at the morphological level, unlike in English, where it occurs at the syntactic level. Both the reflexive and reciprocal meanings are conveyed by means of affixes that behave like verb morphology, having a fixed place in the structure of the verb.[3] The reflexive element, represented by the full reflexive *-atat-*, the semireflexive *-at-* and their allomorphs, appears between the pronominal prefixes and the verb base when they are present, as illustrated by the following sentences from Baker's (1989-1990) field notes:

(18) R-*atat* -e-nuhwe'-s.
3sS-refl-ø-like-hab
He likes himself.

(19) Wa'-k-*atat* -ya't-ohare-s.
fact-1psS-refl-body-wash-hab
I wash myself.

An independent lexical reflexive would have to be adjoined to S as an overt NP, licensed by a *pro* in object position, as shown in the following hypothetical structure:

(20)



'Himself', as an anaphor, must be coindexed with 'he', the subject of its clause. Hence, the *pro* in object position that licenses it is also coindexed with the subject. The resulting structure violates Principle B of the Binding Theory: the pronominal is not A-free in its governing category. This situation rules out reflexive anaphora from the syntax of the language.

On the contrary, the following examples show that reflexive anaphors exist in Hindi (Mahajan, 1990) and Japanese:

(21) apne aap-ko Raam pasand kartaa hE. (Hindi)
himself(DO) Ram(SUB) likes
Ram likes himself.

(22) Sono syonen-ga karezisin-o aisiteiru. (Japanese)
the boy-nom he-self-acc likes
The boy likes himself.

The anaphor in (21) and (22) is coindexed with its antecedent in the subject rendering grammatical sentences.

This difference between Hindi and Japanese and Mohawk again constitutes evidence of the different structure of the languages and will show up in the strategies that the grammar uses to implement free word order. While languages like Hindi and Japanese resort to movement (whether A or A'), in Mohawk free

word order is achieved in the absence of movement by base generation of the overt nominal elements which are coindexed with *pro's* in argument position. The lack of quantifiers and anaphoric elements in the language is consistent with this fact.

Having thus established a brief theoretical background together with certain differences between the languages which are relevant to the subject, we will return to the main topic of discussion in the following sections.

4. Mahajan (1990)

4.1. Scrambling as a movement rule

A brief review of the main aspects of Mahajan's (1990) analysis of Hindi will be useful for comparison purposes. He proposes that there are two[4] distinct operations characterizing scrambling or free word order, both of them implying movement:

(23) Argument shift, in which the movement is to an A-related position;[5]

(24) Adjunction to XP, a rule similar to Topicalization, Wh-movement or focusing, in which the movement is to a non-A-related position.

He assumes, like Chomsky (1989), that there are at least two types of positions, described in (25) and (26):

(25) A-related positions constituted by "the specifier and complement positions of a lexical item and functional heads projected from it" (Mahajan; 1990:10).

In the highly articulated IP structure that he adopts, which includes TP, AGRoP, AGRsP and AUXP, these positions are Spec and complement positions of V, AGR and T.

(26) Non-A-related positions, which include Spec of CP and adjunction positions.

Chomsky (1989) defines A-related positions as follows:

(27) *x* is A-related to *y* if *y* is a lexical category and *x* is related to a projection of *y*.

Mahajan (1990) assumes that "relate" means to "include in a projection of" within the framework of the X' Theory. Chomsky (1989) distinguishes between "narrowly A-related" and "broadly A-related" positions, corresponding to Mahajan's (1990) two categories, A-related and non-A-related, or A'-related.

One type of movement takes place in clause internal scrambling and implies substitution into an A-position i.e. the specifier of one of the functional categories. It is similar to passivization or NP raising, and includes the operation that yields subject and object agreement in Hindi. Mahajan suggests that object shift in the Germanic languages also belongs to this type of movement. This process creates an A-chain in which all of the links are in A-positions with the tail in a θ - position with no structural case while the head is assigned structural case (Mahajan 1990:13). He assumes that all of the arguments of V are generated inside the VP and one of the reasons for their movement outside the VP is the need for case (Mahajan 1990).

The second type of movement that takes place in sentence internal scrambling is adjunction to TP, AGRoP, AGRsP, AUXP and, as Mahajan suggests, probably also VP. These landing sites are considered A'-positions.

Mahajan's (1990) main point is to show that both types of movement are present in scrambling and not only A' movement, as previously assumed. To test his claim and determine the nature of the position moved to, he analyses the types of traces left behind by the moved constituents and whether or not the movement is subject to binding conditions. Weak Crossover effects, anaphoric binding and reconstruction are the processes chosen to support his hypothesis. He concludes that the two types of movement operating in scrambling have opposite properties that can be summarized as follows (Mahajan 1990):

Short distance scrambling (Argument Shift)

- does not create weak crossover effects
- provides antecedent for reflexive binding
- cannot reconstruct

Long distance scrambling (Adjunction to XP)

- produces weak crossover effects
- does not provide antecedent for reflexive binding
- can reconstruct

Mahajan argues that Argument Shift, being a substitution operation, presents properties that are typical of A movement while Adjunction to XP, which is an adjunction operation, shows characteristics associated with A' movement. German data from Webelhuth (1989) and Japanese data from Saito (1990) show that scrambling in these languages has similar properties. Based on this analysis, Mahajan (1990) proposes a typology of free word order in which the following types of languages are possible:[6]

(28) A. + Argument Shift
- Adjunction to XP

B. - Argument Shift
+ Adjunction to XP

C. + Argument Shift
+ Adjunction to XP

D. - Argument Shift
- Adjunction to XP

He suggest that these operations may be constrained by language specific properties such as verb movement, case assignment or extended chain formation in the case of Argument Shift, or no adjunction to arguments, directionality of head movement, subjacency and the ECP in the case of Adjunction to XP. But he argues that this system will account for the variety of scrambling types in terms of how the landing positions chosen by scrambling behave in each language (Mahajan 1990).

4.2. Clause internal scrambling

Clause internal scrambling[7] is characterized by Mahajan (1990) as an NP movement rule. A pronoun can be bound from the derived position. As mentioned before, three of Mahajan's tests to determine the nature of the empty category and of its landing site will be taken into consideration here. They involve the weak crossover effect, reconstruction and Condition C.

4.2.1. The Weak Crossover Filter

A brief summary of the background is needed before analysing the weak crossover effect in Hindi and Japanese data. Consider the following examples (Mahajan 1990):

(29) * Who$_i$ did his$_i$ mother see t_i ?

(30) * His$_i$ mother saw someone$_i$.

The pronoun in sentences (29) and (30) cannot be interpreted as coreferent with the Wh-word, the trace and the quantifier. This so called weak crossover

effect has been accounted for in the literature in several ways. Inspired by Reinhart (1983), Mahajan (1990) proposes the following version of the Weak Crossover Filter,[8] which is essentially a rephrasing of (12):

(31) To be construed as a bound variable a pronoun must be c-commanded by a binder and its variable (if there is one) at S-structure.

In (29) the Wh-word c-commands the pronoun at the s-structure but the trace in object position does not, nor does the quantifier in object position in (30). On the other hand, when the Wh-trace or the quantifier is in subject position thus c-commanding the pronoun, the sentence is grammatical:

(32) Who$_i$ t_i saw his$_i$ mother?

(33) Someone$_i$ saw his$_i$ mother.

Mahajan points out that the traces left by NP-movement such as raising or passivization do not produce weak crossover effects:

(34) [Who$_i$ t_i seems to his$_i$ mother [t_i' to have come]]

(35) Someone$_i$ seems to his$_i$ mother [t_i' to have come]

The Wh-word and the variable t_i in (34) and the quantifier in (35) c-command the pronoun, thus satisfying the requirement in (31). The NP-trace t_i, on the contrary, does not c-command the pronoun in either of the sentences, but the sentences do not show weak crossover effects. This proves that the landing site for NP movement is a position from which the binding of a pronominal does not violate the Weak Crossover Filter.

4.2.1.1. Weak Crossover in Hindi and Japanese

Due to the fact that Wh-words are in situ in Hindi and Japanese, simple clauses do not show Wh-movement. However, fronting of the question word is

possible and in fact all the possible word orders in Hindi are also allowed with Wh-sentences or quantifiers, while Japanese presents the restriction caused by having the verb in a fixed final position. The following example with a Wh-phrase in situ shows weak crossover effects in Hindi (Mahajan 1990), parallel to (29) and (30):

(36) * uskii$_i$ bahin kis-ko$_i$ pyaar kartii thii.
his sister(SUB) who(DO) love do-imp-f be-pst-f
Who$_i$ did her$_i$ sister love?

(37) * uskii$_i$ bahin sab-ko$_i$ pyaar kartii thii.
his sister(SUB) everyone(DO) love do-imp-f be-pst-f
His$_i$ sister$_i$ loved everyone.

Consider the same situation in the following Japanese examples:

(38) * Kanozio$_i$-no chichioya-ga dare$_i$-o aisiteiru ka.
her-gen father-nom who-acc love Q
Who$_i$ did her$_i$ father love?

(39) * [*pro*$_i$ koibito]-ga daremo$_i$-ni kisu-sita.
[his$_i$ lover]-nom everyone-dat kiss-past
(His$_i$) lover kissed everyone$_i$.

The Wh-phrases and quantifiers produce a weak crossover effect because they do not c-command the pronoun. However, when they are moved to the front, the ungrammaticality disappears in Hindi:

(40) [kis-ko$_i$ uskii$_i$ bahin [*t$_i$* pyaar kartii] thii]
who(DO) his sister(SUB) love do-imp-f be-pst-f
Who$_i$ did her$_i$ sister love?

(41) [sab-ko$_i$ uskii$_i$ bahin [*t$_i$* pyaar kartiin] thii]
everyone(DO) his sister(SUB) love do-imp-f be-pst-f
His$_i$ sister loved everyone$_i$.

Japanese shows the same pattern:

(42) Darej-o kanozioi-no chichioya-ga aisiteiru ka.
who-acc her-gen father-nom love Q
Whoj did heri father love?

(43) Daremoj-ni [*proj* koibito]-ga kisu-sita
everyone-dat his-lover-nom kiss-past
(Hisj) lover kissed everyonej.

If the movement were to an A' position, the Wh-phrase or quantifier would c-command the pronoun but the Wh-trace in object position would not and the sentences would be ungrammatical. The fact that the sentences are well-formed shows that the trace is not a variable but an NP-trace locally A-bound by the Wh-phrase or quantifier in an A position, a position from which they can bind the pronoun, thus satisfying the WCO Filter in (31).

4.2.1.2. Weak Crossover in Mohawk

It was assumed, following Baker(1989, 1991a) and Jelinek (1984), that NP's appear in adjunct position, coindexed with an empty category in argument position. If Mohawk had the same argument-type movement as Hindi in simple sentences, this empty category should be able to be classified as an NP-trace.

Consider the following paradigm, where (44) and (46) are from Baker (1991a):

(44) [Uhkai [S *ti* wa'-te-shako-noru'kwanyu-' *prok*]
who fact-dup-MsS/FsO-kiss-punc
[NPk *proj* rao-skare']]
MsP-friend
Whoi *ti* kissed hisj girlfriend?

(45) [Uhka$_i$ [$_S$ t_i y-a-ho-tvnyeht-e' ne
who *trans-fact-MsS/MsO-send-punc* *NE*

[$_{NPk}$ *pro$_i$* ro-yv'a]] tsi te-w-at-e-riyo]
MsP-son *the place of* *dual-NsS-srfl-ø-fight*

Who t_i send his$_i$ son to the war?

(46) [Uhka$_i$ [$_S$ *pro$_k$* wa'-te-shako-noru'kwanyu-' t_i]
who *fact-dup-MsS/FsO-kiss-punc*

[$_{NPk}$ *pro$_i$* ako-skare']]
FsP-friend

Who$_i$ did her$_i$ boyfriend kiss t_i ?

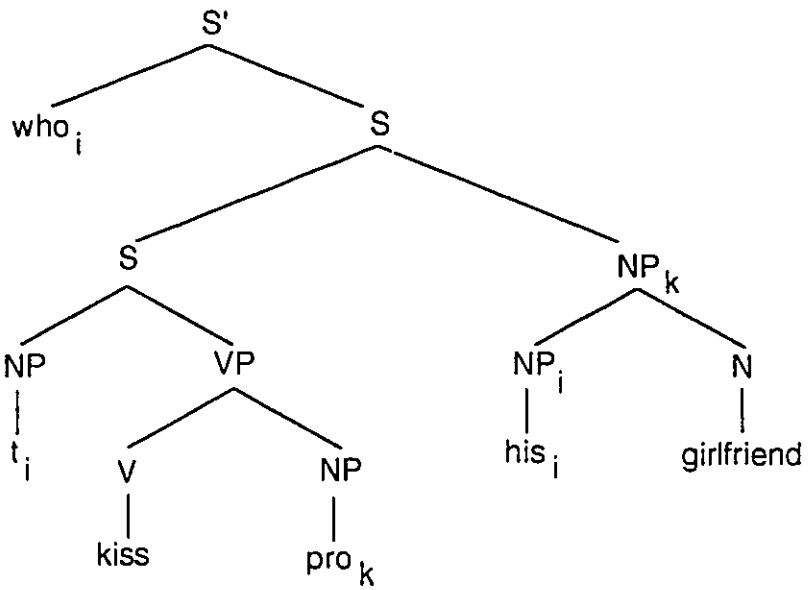
(47) [Uhka$_i$ [$_S$*pro$_k$* wa-hu-waser-e' t_i]
who *fact-FsS/MsO-chase-punc*

ne [$_{NPk}$ *pro$_i$* ro-nisten'a]]
NE *MsP-mother*

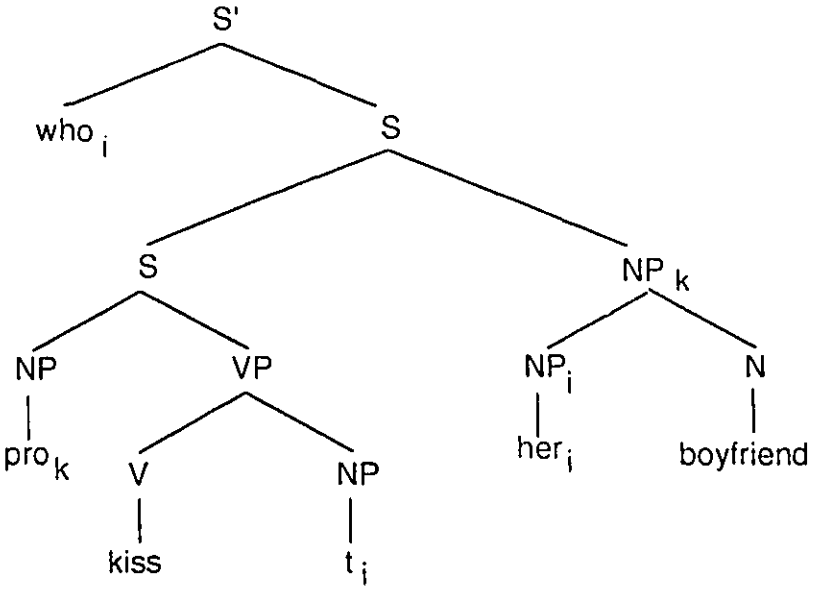
Who$_i$ did his$_i$ mother chase t_i ?

The structures of (44) and (46) are shown in (48) and (49):

(48)



(49)



In both cases a bound interpretation is possible. In English, only (44) and (45) are well formed.

If t_i were a variable in (48), it would not locally A'-bind the possessive pronoun in adjunct position because it does not c-command it. A weak crossover violation would result in ungrammaticality. As the sentence is grammatical, it can be assumed that the trace is not a variable.

If the trace is the result of NP-movement, then it must obey Condition A of the Binding Theory. It must be A-bound within its governing category by its antecedent, the Wh-phrase in this case, which must therefore be in an A-position. The Wh-word will locally A-bind the possessive pronoun, which is free in its governing category, NP_k,[9] respecting Condition B. Coreference is possible and the sentence is grammatical. This looks like evidence for NP-movement that could explain why there does not seem to be any weak crossover effect in Mohawk, paralleling Mahajan's analysis.

It is also possible to account for (36) to (39) as parasitic gap constructions, however (Baker 1991a:560). Chomsky (1986a) argues that parasitic gaps are licensed by the trace of movement and are themselves a result of the movement of an empty operator. This operator lands in a position with scope over the entire NP from whence it can locally A'-bind the parasitic gap. The A'-chain thus formed enters into a compositional chain with the one formed by the real gap and its operator. Chomsky (1986b) claims that the parasitic gap behaves as a variable within its chain. It therefore needs to not be c-commanded by or c-command the real gap in order to obey Condition C, which requires that a variable must be free in the domain of its chain (a kind of "anti-c-command requirement" (Chomsky 1986b:63)[10]). The operator of the real gap must also c-command the parasitic gap.

This type of construction does not show weak crossover effects. Compare the following:

(50) ? What did you file t_i [before reading it]

(51) What did you file t_i [before reading e_i]

In (50) the deletion of the pronoun inside the adjunct suppresses the marginality of the sentence. In the Mohawk sentence (46), repeated here as (52), Baker (1991a) considers the empty category in the adjoined NP to be a trace of Wh-movement bound by a null operator:

(52) [Uhka$_i$ [S *pro*$_k$ wa'-te-shako-noru'kwanyu-' t_i]
who *fact-dup-MsS/FsO-kiss-punc*

[NPk *Op*$_i$ [e_i ako-skare']]
FsP-friend

Who$_i$ did her$_j$ boyfriend kiss t_i ?

The e_i in the possessive phrase is not c-commanded by the t_i within the VP. The Op_i having scope over the adjunct locally A'-binds the e_i and is c-commanded by the Wh-phrase in S'. Finally, the real gap and the parasitic gap are related by coindexation.

Baker (1991a) shows that there are weak crossover effects in Mohawk after all. Consider the following sentences where a relative clause containing the empty category is the complement of the subject in (53) and (54) and of the object in (55) and (56):

(53) * Uhka$_i$ *pro*$_k$ wa-ho-kari' t_i
Who *fact-ZsS/MsO-bite*
erhar thikv e_i wa-ha-rashvtho-' t_k.
dog *that* *fact-MsS/ZsO-kick-punc*
Who$_i$ did the dog that he$_i$ kicked bite t_i?

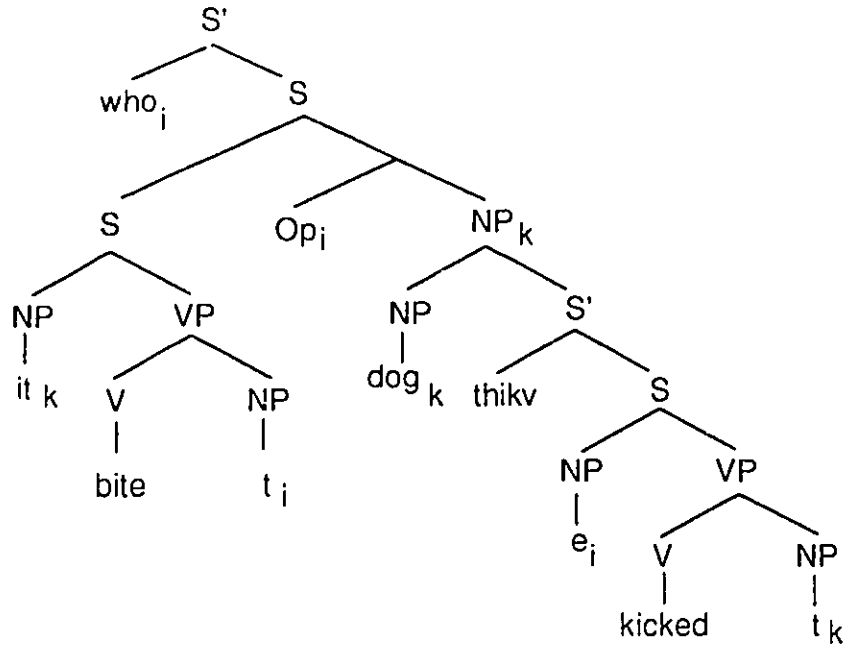
(54) * Uhka$_i$ *pro*$_k$ wa-ho-karehwat-e' t_i
who *fact-ZsS/MsO-hurt-punc*
ohkwari thikv e_i wa-ha-ryo-' t_k.
bear *that* *fact-MsS/ZsO-kill-punc*
Who$_i$ did the bear that he$_i$ killed hurt t_i?

(55) * Uhka$_i$ t_i wa-ha-rashvtho-' *pro*$_k$
who *fact-MsS/ZsO-kick-punc*
erhar thikv t_k wa-ho-kari-' e_i.
dog *that* *fact-ZsS/MsO-bite-punc*
Who$_i$ t_i kicked the dog that bit him$_i$?

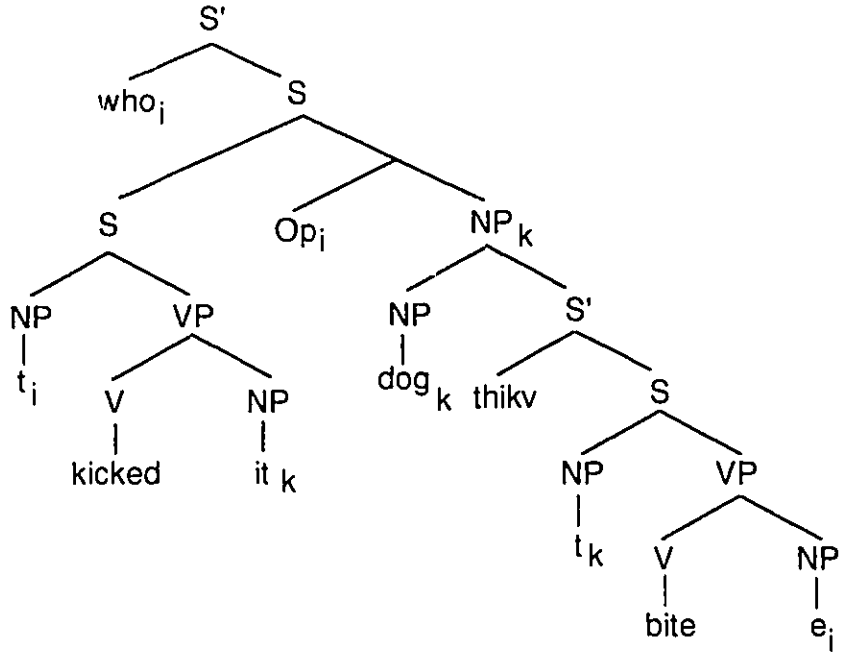
(56) * Uhka$_i$ t_i wa-shako-hrewaht-e' *pro*$_k$
who *fact-MsS/FsO-punish-punc*
eksa'a thikv t_k wa-huwa-rehk-e' e_i.
girl *that* *fact-FsS-MsO-push-punc*
Who$_i$ t_i punished the girl that pushed him$_i$?

The structures of (53) and (55) are as follows:

(57)



(58)



All the sentences are ungrammatical with bound pronoun readings even though coreference is acceptable in the English versions of (55) and (56). The *ei*

cannot be an NP-*t* because it is free in its governing category, in violation of Condition A of the Binding Theory. It cannot be a *pro* variable because it is not c-commanded by t_i, the trace of Wh-movement, in violation of the Weak Crossover Filter. It cannot be a parasitic gap because its operator would be too far away to be able to bind it without producing a Subjacency violation. It must be noted that the gap is inside a complex NP and parasitic gaps are sensitive to island conditions (Chomsky, 1986a, cited in Baker, 1991a). Baker (1991a) concludes that this is a case of weak crossover and that the empty category cannot be interpreted as bound by the Wh-phrase.

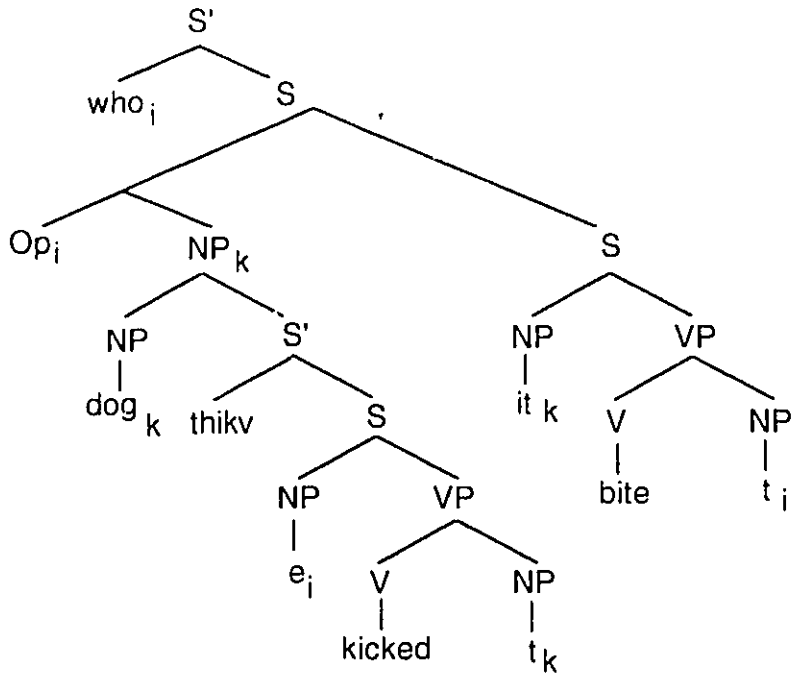
Crucially, in Mohawk, unlike in Hindi, changing the position of the object in (53) does not eliminate the weak crossover effect, as shown in (60) in which coreference is still impossible:

(59) * Uhka wa-ho-kari-'
Who fact-ZsS/MsO-bite-punc
erhar thikv wa-ha-rashvtho-'.
dog that fact-MsS/ZsO-kick-punc
Who$_i$ did the dog that he$_i$ kicked bite?

(60) * Uhka erhar thikv wa-ha-rashvtho-'
Who dog that fact-MsS/ZsO-kick-punc
wa-ho-kari-'.
fact-ZsS/MsO-bite -punc
Who$_i$ did the dog that he$_i$ kicked bite?

The representation of the word order in (60) is shown in (61):

(61)



On the contrary, scrambling the object to the front of the sentence eliminates the weak crossover effect in the parallel Hindi examples (36) and (40), repeated here as (62) and (63) where only the relevant structure is indicated:

(62) * uskii$_i$ bahin kis-ko$_i$ pyaar [t_{DO} kartii thii]
his sister(SUB) who(DO) love do-imp-f be-pst-f
Who$_i$ did her$_i$ sister love?

(63) kis-ko$_i$ uskii$_i$ bahin t_i pyaar [t_{DO} kartii thii]
who(DO) his sister(SUB) love do-imp-f be-pst-f
Who$_i$ did her$_i$ sister love?

Baker (1991a) argues that the ungrammaticality of (59) also constitutes an evidence of the fact that NP's are in adjunct position. If this were not the case, the object would have been inside the c-command domain of the subject and a coreferent reading should be possible (Baker, 1991a:563). Once more, the different behavior of Mohawk and Hindi with respect to WCO proves that the two

languages use different mechanisms to arrive at free word order. In Hindi the constituents are moved while in Mohawk they are base generated[11] in the position in which they appear.

4.2.2. Reconstruction and Condition C

4.2.2.1. Reconstruction and Condition C in Hindi

Reconstruction refers to the fact that in some cases a structure retains its grammaticality status, i.e. good or bad, even when the application of Wh-movement or NP-movement affects the syntactic structure in a way that is relevant to the conditions of anaphora (Belletti and Rizzi, 1988). Consider the following Hindi examples involving anaphoric binding and reconstruction (Mahajan 1990):[12]

(64) Raam-ne$_i$ Mohan-ko$_k$ apnii$_{i/k}$ kitaab lOTaaii.
Ram(SUB) Mohan(IO) self's book-f(DO) return-perf-f
Ram$_i$ return self's$_{i/k}$ book to Mohan$_k$.

(65) Raam-ne$_i$ [apnii$_{i/*k}$ kitaab]$_j$ Mohan-ko$_k$ *t$_j$* lOTaaii.
Ram(SUB) self's book-f(DO) Mohan(IO) return-perf-f

(66) [apnii$_{i/*k}$ kitaab]$_j$ [Raam-ne$_i$ *t'$_j$*
self's book-f(DO) Ram(SUB)
Mohan-ko$_k$ *t$_j$* OTaaii]
Mohan(IO) return-perf-f

The direct object in (64) may be bound by either the subject or the indirect object. In (65) the direct object has been scrambled between the subject and the indirect object but in this position it can be bound only by the former. This means that the reflexive cannot count as reconstructed into its original position. In (66), on the contrary, even when the direct object has been fronted over the subject, it can still be bound by it. Mahajan (1990) concludes that reconstruction is not possible with A-movement while it is operative with A'-movement (unlike Belletti

and Rizzi (1988), who claim that both allow reconstruction). This provides evidence as to the nature of the traces left by scrambling operations.

Condition C is also used to support this assumption about reconstruction, as illustrated here in Japanese. The following ungrammatical sentences show a violation of Condition C due to the fact that an R-expression is bound by a pronoun:

(67) * *pro*$_i$ [John-no$_i$ naifu-o]$_j$ kowasi-ta.
(He) John-gen knife-acc break-pst

(68) * Kare-ga$_i$ [John-no$_i$ naifu-o]$_j$ kowasi-ta.
He-nom John-gen knife-acc break-pst

(69) * [John-no$_i$ naifu-o]$_j$ kare-ga t_j kowasi-ta.
John-gen knife-acc he-nom break-pst
He broke John's knife.

The sentences (67) and (68) are ungrammatical because they violate Condition C; the noun is A-bound. (69) also constitutes a violation of Condition C and shows that reconstruction is obligatory in Japanese. The object NP acts as if it were reconstructed into its base position, in which case the pronoun would bind the possessor in violation of Condition C.

4.2.2.2. Reconstruction and Condition C in Mohawk

As was mentioned above, the absence of anaphoric NP's in Mohawk does not permit a direct comparison with Mahajan's Hindi data. Instead, reconstruction for Condition C will be tested by comparing Mohawk sentences to similar examples in Japanese.

Consider the following sentences:

(70) [*pro* wa'-t-ha-ya'k-e' *pro*$_k$] thikv Sak$_i$ rao-a'share'.
fact-dup-MsS-break-punc *that* *Sak* *MsP-knife*

(He) broke Sak's knife.

(71) Thikv Sak$_i$ rao-a'share' [*pro*$_i$ wa'-t-ha-ya'k-e' *pro*$_k$]
that *Sak* *MsP-knife* *fact-dup-MsS-break-punc*

(He) broke Sak's knife.

(72) Rauha$_i$ Sak$_j$ rao-a'share' [*pro*$_i$ wa'-t-ha-ya'k-e' *pro*$_k$]
he *Sak* *MsP-knife* *fact-dup-MsS-break-punc*

He broke Sak's knife.

(73) Thikv Sak$_j$ rao-a'share' rauha$_i$ [*pro*$_i$ wa'-t-ha-ya'k-e' *pro*$_k$]
that *Sak* *MsP-knife* *he* *fact-dup-MsS-break-punc*

He broke Sak's knife.

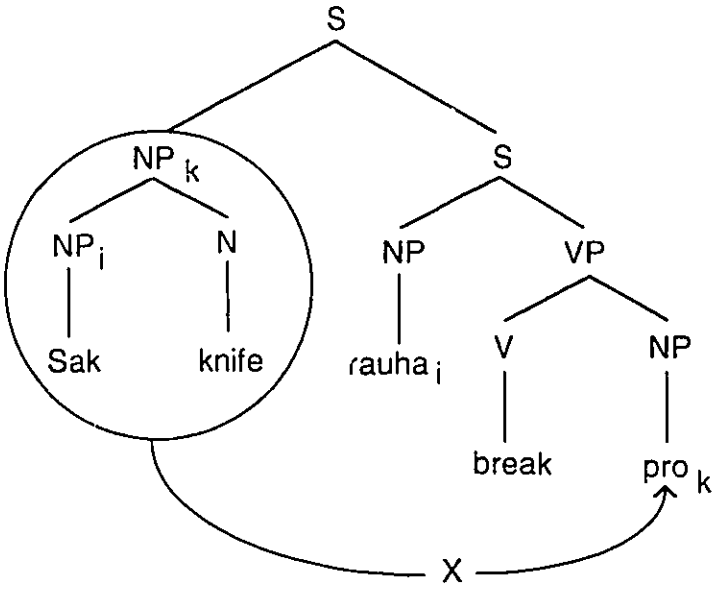
Given that the NP's are adjoined to S in Mohawk, the sentences are grammatical because the *pro* does not A-bind the possessor *Sak* in (70) and (71), unlike in Japanese. Adjunction of NP's also accounts for the grammaticality in (72), in which the subject and the object are realized as overt NP's, base generated in their positions, outside the clause and adjoined to S. Thus, while they may c-command each other, they do not A-bind each other. The R-expression is A-free and Condition C effects are therefore not expected. In (73), assuming that reconstruction is obligatory, a violation of Condition C would follow if the NP's were not base generated in adjunct position (A'-position) but moved there from a D-structure position inside the VP. In that case, the R-expression would act as if it were A-bound by the pronoun. Compare (73) with its parallel Japanese example (69), repeated here as (74):

(74) * [John-no$_i$ naifu-o]$_j$ kare-ga *t*$_j$ kowasi-ta.
John-gen *knife-acc* *he-nom* *break-pst*

He broke John's knife.

In (74), movement has applied and reconstruction is obligatory, resulting in ungrammaticality. On the other hand, the fact that the Mohawk sentence in (73) is grammatical is evidence that movement has not applied because there is no reconstruction. The following structure illustrates this fact:

(75)



If NP_k were moved from a D-structure object position inside VP to the adjoined position shown in (75) it would be subject to reconstruction. In that case it would be c-commanded by *rauha*$_i$ and the sentence would be ruled out by Condition C, the R-expression *Sak* not being A-free. But the sentence is grammatical, thus proving that reconstruction did not operate. The reason is that, since the NP's are base generated in adjunct position there is no movement and reconstruction is not applicable. The noun *Sak* is free because it is neither c-commanded nor A-bound by the pronoun *rauha*$_i$ in the subject position.

Once more free word order shows different behavior in Mohawk and Hindi versus Japanese. It has been shown that reconstruction is obligatory in Japanese with respect to Condition C while it is not applicable in Mohawk, because the chain

which is formed between NP's in adjunct position and *pro's* in argument position does not involve movement. All of the data shown above makes it clear that the analysis of free word order as an instance of movement, particularly NP-movement, in what Mahajan calls Argument Shift or short distance scrambling,[13] does not account for free word order facts in Mohawk simple clauses.

4.3. Mohawk free word order does not involve movement

Having submitted Mohawk to the main tests proposed by Mahajan(1990) to show that short distance scrambling in Hindi is an A-movement operation, we have seen that the data clearly indicate that movement is not involved at all in the production of free word order. Further evidence for this argument is also supplied by the analysis of the elements that are absent in Mohawk. Scrambling as a rule of movement accounts for free word order in languages such as Hindi and Japanese but it does not explain the same facts in Mohawk.

It may be argued that the Mohawk type of free word order is due to language specific factors. If so, a specific explanation for the facts shown in the data must be found and Mahajan's hypotheses can still be considered as a unified account of free word order across languages. But a case similar to Mohawk has been reported in the literature. It is the case of Clitic Left Dislocation (CLLD), a construction found in Italian and studied by Cinque (1990). He claims that, in Italian, clitic pronouns are base generated in a position adjoined to the V, forming a chain with a null pronoun in argument position. The structure is similar to that claimed for Mohawk by Baker (1991a). CLLD can thus be paralleled to NP adjunction in Mohawk with the mention that in Mohawk the "dislocation" can be to the right as well as to the left (Baker 1990a). In the following section, the relevant points of Cinque's analysis of this particular structure will be discussed and compared with Topicalization, a construction derived by means of movement.

CLLD types of constructions will be paralleled with Mohawk to show that the principles underlying this type of free word order are not language specific but part of UG.

5. Cinque (1990)

Cinque (1990) bases his analysis of constituent extraction on a comparison of CLLD and Topicalization in Italian. This reveals that these constructions differ only with respect to the property of movement: Topicalization is a Wh-movement construction while CLLD is not, even though it is sensitive to island effects and connectivity, two properties normally associated with movement. On the basis of these observations, Cinque proposes to dissociate sensitivity to strong islands and connectivity[14] from Wh-movement and to relate it to the more abstract property of entering binding chains (Cinque 1990:56,57). The only aspect of Cinque's work that will be treated here is the description of the data and some basic concepts related to it.

5.1. The concepts of binding and referentiality

In his analysis of the elements that qualify for long[15] Wh-movement, Cinque (1990) refers to Rizzi's (1990) observation that, although complements of verbs are in general supposed to be able to undergo this type of movement, this is not always the case. Only the participants in the event described by the verb, e.g. agent, theme, goal, patient, etc., can be extracted by long movement but phrases that qualify the event, like manner adverbials or idiom chunks, cannot. In other words, only argumental or referential θ -roles can undergo long Wh-movement, while non-referential or quasi-arguments can undergo only successive cyclic movement (Rizzi 1990:86). Rizzi proposes that the reason behind this different behavior with respect to movement resides in the notion of referentiality. A

referential index must be licensed by a referentialθ -role. The concept of coindexing through which the binding relations are defined is expressed by Rizzi (1990:87) in terms of referential indices, as follows:

(76) X binds Y iff
  (i) X c-commands Y
  (ii) X and Y have the same referential index

The effect of (76) is to restrict binding relations to elements associated with referentialθ -roles, which results in a division in the A'-dependencies, as illustrated by the following examples from Rizzi's (1990):

(77) Who$_i$ did you see t_i.

(78) How did you behave *t*.

In (77) the verb assigns a referentialθ -role to its object, which therefore has a referential index which allows it to enter a binding relation with the Wh-phrase. The movement is then free to go long distance. In (78), on the contrary, the *t* cannot have a referential index because it does not bear a referentialθ -role. The interpretation of the Wh-phrase is ensured by government which, unlike binding, is local and permits only successive cyclic movement (Rizzi 1990:87). Cinque (1990) goes further in the analysis of the role of referentiality; he defines this as "the ability to refer to specific members of a set in the mind of the speaker or preestablished in the discourse" (Cinque 1990:16), recalling Pesetsky's (1987) notion of D-linking (discourse linking) which he integrates into referentiality. Pesetsky interprets the difference between certain phrases in situ as a difference in their capacity to refer to an entity previously mentioned in the discourse. Thus, [*which* N'] phrases will be able to refer while [*who* N'], [*what* N'] or [*how many* N'] will not.[16] The former are defined by Pesetsky as D-linked and the latter as non-D-linked Wh-phrases. Assuming that operators must occupy an A' position at LF

and that non-D-linked Wh-phrases are operators, Pesetsky argues that these must move at LF, and hence are sensitive to the usual tests of movement such as subjacency, etc. On the other hand D-linked phrases do not move and are interpreted in situ via "unselective binding"[17] (Cinque 1990:16). Thus, in order to be able to enter into a binding relation, a constituent must not only have a referential θ -role but must also be D-linked or, in other words, have "intrinsic referential properties" (Cinque 1990:19).

As for NP movement, Cinque (1990) argues, following Rizzi (1990), that NP movement such as raising or passivization must constitute an antecedent government chain, even when the moved nominal phrase is assigned a referential θ -role. The reason for this is that these type of movement must involve θ -role transmission, a process which is a property of chains, and chains must comply with antecedent-government requirements. Analyzing A-chains in terms of referentiality, Cinque proposes that no component of the chain is "referentially autonomous" (Cinque 1990:19) but the chain itself has the property of referentiality, therefore not being able to enter into binding relations but only antecedent-government relations.[18]

Cinque claims that "whenever a phrase in A or A'-position is not licensed independently of another A- or A'-position, it must enter a chain with it" (Cinque 1990:20, also cited in Baker 1990a:32). The type of chain, whether a binding chain or an antecedent-government chain, will be determined by the referential nature of the operator and the trace.

5.2. Clitic Left Dislocation versus Topicalization

CLLD is a structure found in Italian and other Romance languages[19] resulting from the presence of a phrase adjoined to the left of IP, optionally coreferent with

a clitic pronoun. This structure is present in Romance languages, as is a very similar one, Topicalization.[20]

Cinque (1990) claims that CLLD and Topicalization present only one point of difference: the former does not involve movement while the latter does, though not overtly. Nevertheless, this is not evident at first glance because CLLD is sensitive to strong islands[21] and displays connectivity, two properties of movement, as mentioned before. Indeed, except for the fact that topicalization does not admit a resumptive clitic and allows only one left-shifted phrase,[22] both constructions look identical. Nevertheless, Cinque (1990) demonstrates that movement is not involved in CLLD.

Consider the following sentences, which illustrate topicalization, Wh-movement and CLLD respectively:

(79) PER QUESTA RAGIONE$_i$, ha detto que se ne andrà t_i.
For this reason (focus) he said that he will leave.

(80) Per quale ragione$_i$ ha detto que se ne andrà t_i?
For what reason did he say that he will leave.

(81) * Per questa ragione$_i$, ha detto que se ne andrà t_i.
For this reason he said that he will leave.

In (79) the Topicalization of the adjunct and in (80) a Wh-construction result in well-formed sentences, while the CLLD case (81) is ungrammatical. Cinque argues that this follows from the fact that in (79) and (80) the trace is antecedent-governed by an intermediate trace[23] left by movement, but in (81) there is no such intermediate trace because there is no movement. This can be seen in the following representations of (79) and (81) (Cinque 1990:65):

(82) [Top PER QUESTA RAGIONE$_i$] [CP O_i [...

...[CP t_i che [IP [VP t_i [VP se ne andrà t_i]]]]]

(83) [Top Per questa ragione$_i$] [CP ha detto [CP che [se ne andrà e_i]]]

The structure in (82) shows the presence of an empty operator, which Cinque claims is a characteristic of Topicalization, unlike that in (83),[24] a CLLD construction. Cinque defines variables and operators as follows:

(84) Variable: def [NP e] in A position, locally A' bound and operator bound.

Following Chomsky's (1981b:102) definition, an operator would be as follows:

(85) Operator: def bare quantifiers, wh-phrases and null NP's in Spec of CP.

Null NP's in Spec positions count optionally as operators, but NP's in A' positions created by scrambling must count as operators.[25]

One of the consequences of this difference is the fact that Topicalization does not allow a resumptive clitic when an object is left dislocated while CLLD requires one.

(86) GIANNI, (*lo) ho visto.
Gianni (focus), (him) I saw.

(87) Gianni, *(lo) ho visto.
Gianni I saw him.

The structure of (86), (87) is the following:

(88) [Top GIANNI] [CP O_i [IP (*lo) ho visto e_i]]

(89) [Top GIANNI] [CP [IP *(lo) ho visto e]]

Cinque argues, following Chomsky's (1977) analysis of topicalization, that in (88) the presence of a clitic binding the empty category produces a violation of

the principle of vacuous quantification, while in (89) the absence of the clitic makes it impossible to identify the empty category, which cannot qualify as any of the four types available: PRO, *pro*, anaphor or variable (Cinque 1990:14).[26]

5.2.1. Bare quantifiers and quantified NP's

Cinque (1990) noticed that when the topicalized object in a CLLD construction is a bare quantifier such as *qualcosa* 'something' or *qualcuno* 'someone', the clitic can be absent, but not when the topicalized phrase is a quantified NP:

(90) Qualcuno, (lo) troveremo.
Someone we (him) will find.

(91) Qualque errore, Carlo *(lo) ha fatto.
Some error Carlo (it) has made.

Cinque argues that this contrast is due to the different referential nature of the quantifiers. Given the considerations about referentiality mentioned above, a bare quantifier $[_{NP}\ Q]$, being non-referential, can act as an operator for the empty category, allowing its interpretation as a variable. On the contrary, a quantified NP [*qualque* N'] or a bare quantifier to which the context gives a specific referential content cannot act as an operator and the clitic becomes obligatory (Cinque 1990:15). He concludes that bare quantifiers acting as operators establish an antecedent-government chain with the empty category, a variable, which is sensitive to weak islands, while quantified NP's must enter into a binding chain.

5.3. Mohawk

Comparing Mohawk with CLLD in Italian, as in Baker (1990a), it is clear that Mohawk is an instance of the type of construction in which an NP adjoined to the clause is coreferent with a null pronoun in argument position licensed by

agreement, this null pronoun acting in a sense as a resumptive clitic (Cinque 1990). The adjoined NP c-commands the null pronoun with which it is related and, while the relation need not be strictly local, the structure, like CLLD, shows standard island effects. In this respect, Baker (1991c) claims that the adjunct island effect is the only one that can be tested in Mohawk, due to the specific characteristics of the language.[27]

Consider the following example (Baker 1991c:20, 21):

(92) Uwari wa'-k-at-hrori-' tsi wa'-t-ye-nunyahkw-e'.
Uwari fact-1sS-srfl-tell-punc that fact-dup-FsS-dance-punc
Uwari, I told that she danced.

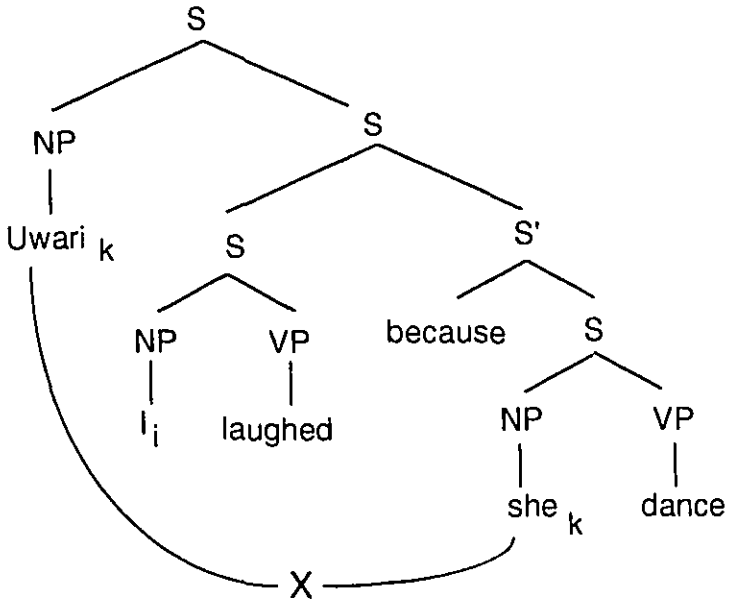
The NP extracted out of a complement clause is licensed by the *pro* within the clause. However, an adjunct NP cannot be licensed by a *pro* within an unselected adjunct:

(93) * Uwari uk-yeshu-'
Uwari fact-1sS-laugh-punc
ne tsi wa'-t-ye-nunyahkw-e'.
because fact-dup-FsS-dance-punc
Uwari, I laughed because she danced.

(94) * Uwari wa'-k-ate-rorok-e'
Uwari fact-1sS-srfl-watch-punc
tsi nikarihwes wa'-t-ye-nunyahkw-e'.
while fact-dup-FsS-dance-punc
Uwari, I watch while she danced.

The structure in (93) is as in (95):

(95)



There is no *pro* in the main S as to license *Uwari* and the NP cannot be licensed by the *pro* in the adjunct, which is not selected as complement.

Baker concludes that the comitative NP-*pro* relation in this construction shows sensitivity to the adjunct island condition, which is also one of the characteristics of CLLD.

The observations about quantifiers in Mohawk are also revealing of the nature of the chain and the constituents that enter into its composition. As was discussed above, only referential phrases that refer to sets pre-established in the mind of the speaker, or D-linked, can enter binding relations. Non-referential intrinsic operators such as left dislocated quantifiers, not receiving referential indexes and not being D-linked cannot enter binding relations. The lack of quantifiers may thus be analyzed in Mohawk in the light of these considerations. *Pro's* in argument positions, being referential and definite, can only enter a

binding chain with referential NP's. Therefore, non-referential elements such as quantifiers are ruled out.

The basic similarities with the CLLD structure are thus established, taking into account that, while in Mohawk left dislocation is the unmarked basic structure of the language, in Italian CLLD is a stylistically marked construction. The chain thus formed in both languages is a "pure representation of binding" (Cinque 1990:57) in the absence of movement.

In Italian, unlike Mohawk, quantifiers are present in the language but their use is restricted in CLLD, a construction which is precisely similar to Mohawk structure. Recall that the meaning of the English quantifier *every* is rendered in Mohawk by the term *akweku* which in fact means 'all'. With respect to this term, it is interesting to notice Cinque's (1990) observation that the only [*quantifier* N'] in Italian capable of undergoing long movement not producing WCO effects is precisely the universal nondistributive [*tutti* N'], 'all' N', which does not have a distributive interpretation, but rather a collective one.

On the basis of the considerations mentioned above, it can be concluded that the non-local type of binding relation between NP's and *pro's* in Mohawk claimed by Baker (1991a) is similar to the CLLD structure in Italian.

6. Conclusion

In the first sections of this chapter, it was demonstrated that movement does not play any role in the free order of constituents in Mohawk, unlike in Hindi and Japanese. The comparison between Mohawk and Italian CLLD proves that the absence of movement is not language specific in Mohawk but that it is also found in Romance. This constitutes support to the claim that the Mohawk type of free word order must be considered a valid instance of UG and, as such, must be

taken into account in the formulation of a typology of word order. An analysis from the point of view of movement, as proposed by Mahajan (1990), may account only for scrambling languages like Hindi or Japanese. With respect to word order, these languages can be paralleled by Topicalization in Italian, i.e. with the presence of chains derived by movement. Nevertheless, Mahajan's analysis excludes languages such as Mohawk, which establishes a binding chain in the absence of movement just as the Italian CLLD construction does. A different theoretical point of view seems to be necessary in order to include base generated free word order. Thus, Cinque's (1990) proposal to look at concepts more abstract than movement such as Chain Theory in order to account for the similarities between CLLD and Topicalization in Italian may be appropriate for the analysis of free word order across languages as well.

Notes to Chapter III

[1] Mahajan (1990) uses the terms "scrambling" and "free word order" indiscriminately, referring only to syntactic operations and excluding PF processes or stylistic considerations that may further alter the order of the constituents. In this thesis both terms will be used, and with the same restriction, but they will be further distinguished as implying movement in the former case and base generation in the latter.

The examples used in this chapter are from Mahajan (1990) and his transcription has been respected. The abbreviations are as follow: *SUB*, subject; *DO*, direct object; *IO*, indirect object; *pst*, past tense; *imp*, imperfect; *f*, feminine. Japanese examples are from fieldwork conducted with Mihoko Zushi. The following abbreviations are used in the glosses: *nom*, nominative; *acc*, accusative; *dat*, dative; *gen*, genitive; *pst*, past tense; *Q*, question particle.

[2] In Japanese the possibilities of word order are more restricted since the language is verb-final. Thus, only SOV and OSV configurations are allowed:

(i) a) SOV John-ga hon-o yonda.
John-nom book-acc read

b) OSV Hon-o John-ga yonda.
book-acc John-nom read

John read a book.

Some non-configurational languages also have this restriction. Lakhota is a polysynthetic language that makes use of pronominal prefixes for first and second person on the the verb, but not for third person and is also strictly verb-final. It exhibits a pattern of free word order similar to Japanese. Consider the following sentences from van Valin (1985):

(ii) a) SOV Wichása ki (hená) mathó wa Ø-kté-pi.
man the those bear a 3sgU-kill-3plA

b) OSV Mathó wa wichása ki (hená) Ø-kté-pi.
bear a man the those 3sgU-kill-3plA

Those men killed a bear.

(Van Valen's glosses are as follows: *A*, actor; *U*, undergoer, *sg*, singular; *pl*, plural; the person is indicated by a number.)

3 The verb morphology is divided into four main parts by Lounsbury (1953): a) pre-pronominal prefixes, b) pronominal prefixes; c) verb base; d) inflectional suffixes, as described in Chapter I.

4 Mahajan also includes a third rule, X shift, a rule of head movement that he does not develop in his paper considering that Travis (1984), Baker (1985) and Yafei (1990) have studied it in detail, clearly showing that it is subject to syntactic constraints (Mahajan, 1990).

5 Mahajan (1990) identifies these positions as L- or non-L-related positions. Following Chomsky (1989) he proposes to drop the notion of "potential θ -position" from the characterization of an A-position.

The discussion is related to the hypothesis that the subject is generated inside the verb that assigns the θ -role to it. This being the case, the IP positions must not beθ -role assigners, because when the NP subject moves to get case it already carries a θ -role. Being an A position, originally defined as a potential θ -position, the Spec of IP should then be an A' position in order to receive the NP, which has already acquired the agent θ-role within the VP, without violating the Theta Criterion (Mahajan 1990:15,16). This argument is complicated by Chomsky's (1989) suggestion that the V cannot assign case. The object itself should have to move outside the VP to get case in IP. But if the Spec of IP cannot be an A position in order not to assign a secondθ -role to the subject, then it cannot receive arguments and consequently it cannot be a case assigner either. This contradiction leads Mahajan (1990) to consider A positions as positions where case is assigned but not as potential θ -role assigners.

6 Mahajan considers this typology too coarse to allow for finer distinctions among languages of the same type.

7 Mahajan discusses only preverbal scrambling. He argues that in cases of post-verbal scrambling it is not clear whether verb movement is also involved.

8 See Koopman and Sportiche (1981) for another version of the WCO effect.

9 Consider the following grammatical sentences from Chomsky (1986b:170):

(i) The children$_i$ like [NP each other$_i$'s friends]
(ii) The children$_i$ like [NP their$_i$ friends]

The anaphor *each other* and the pronoun *their* can both be bound by the NP *the children* in spite of the fact that they must satisfy opposite requirements to comply with the Binding Principles A and B. The embedded NP is a satisfactory minimal governing category (MCG) for the pronoun, because it can be free in a local domain that has a subject (the pronoun itself in Spec of NP), and a governor (the noun). This is not the case for the reciprocal, which must be bound by an antecedent and there is none within the NP. The clause itself is the MGC for the reciprocal. In order to account for this situation, Chomsky (1986b:171) proposes that "the relevant governing category for an expression *a* is the least CFC in which *a* could satisfy the binding theory (BT)... with some indexing (I)...".

10 This anti-c-command requirement can also be derived from Chomsky's (1986b:63) Chain Condition:

(147) A maximal A-chain (a_1....., a_n) has exactly one Case-marked position (namely, a_1) and exactly one θ-marked position (namely, a_n).

Assuming that this is true for any chain in which the links satisfy the c-command condition, this excludes the gap to be c-commanded by the real gap, because in that case a maximal A-chain will be headed by the real gap, in violation of the Chain Condition (147) (Chomsky 1986b:63).

11 Except for Wh-movement in Mohawk. See Baker (1991a) for details.

12 Since Japanese reflexives are subject oriented, they do not allow a direct parallel with Hindi and will not be considered here.

13 The second type of movement, Adjunction to XP, is an A'-movement that operates in long distance scrambling. It will be briefly illustrated here.

Mahajan mentions the observation by Gurtu (1985) (cited in Mahajan 1990:39) that a Wh-phrase must obligatorily move out of a finite clause when the main verb does not subcategorize for a question complement. Consider the following:

(i) * Raam-ne socaa [CP ki Siitaa-ne kis-ko dekhaa thaa]
Ram thought that Sita who seen be-pst
Who did Ram think that Sita has seen?

(ii) kis-ko Raam-ne socaa [CP ki Siitaa-n *t* dekhaa thaa]
who Ram though that Sita seen be-pst
Who did Ram think that Sita has seen?

But this type of movement induces WCO violations. The Wh-phrase cannot bind the pronoun in (iii), thus showing that it has landed in an A' position.

(iii) * Kis-ko$_i$ us ii$_i$ bahin-ne socaa ki
Who$_i$(DO) his$_i$ sister(SUB) thought that
Raam-ne *t$_i$* dekhaa thaa.
Ram(SUB) see be-pst
Who$_i$ did his$_i$ sister think that Ram had seen?

Adjunction to XP can also operate in short distance movement. Consider the next sentence:

(iv) ek duusre-ko Raam Or Siitaa pasand karte hEn.
each other(DO) Ram and Sita like
Ram and Sita like each other.

The anaphor is reconstructed into its D-structure position, which renders the sentence grammatical. The landing site of the fronted constituent is therefore an A' position. Thus, long distance scrambling has different properties from short distance scrambling.

14 It was shown in examples (73) and (75) that Mohawk does not show connectivity, unlike CLLD. Baker (in preparation) explains that this can be

an A' position. Thus, long distance scrambling has different properties from short distance scrambling.

14 It was shown in examples (73) and (75) that Mohawk does not show connectivity, unlike CLLD. Baker (in preparation) explains that this can be derived from the fact that the structure of a possessed NP is significantly different in Mohawk and in Italian.

15 Cinque (1990) distinguishes two different types of movement: successive cyclic movement, typical of adjuncts but shared also by verb complements, and long movement, available only for verb complements. The first one is subject to both strong and weak islands and the second to strong islands only.

16 Mohawk confirms this analysis: *ka nikayv* 'which' is coreferent with a pronoun while *uhka* 'who' is related to a trace. (See Baker 1991a for details, p. 557, footnote 10).

17 See Pesetsky (1987) for details.

18 Cinque proposes to extend the notion of chains to binding chains, arguing that this step is necessary if it is assumed that Reconstruction is a property of chains (Cinque 1990:19).

19 It has also been studied in Romanian (Dobrovie-Sorin 1990), in Greek (Iatridu 1991), and in Chichewa (Bresnan & Mchombo 1987) (cited in Baker 1990a).

20 Cinque considers that the term *Focus Movement* is more appropiate in Italian than *Topicalization* but he continues to use the latter to signal its syntactic identity with the English structure (Cinque 1990:180, f11).

21 Cinque (1990) uses the terms *weak* and *strong islands* to refer to ill-formedness produced by complement or adjunct extraction respectively. He believes that Ross's (1984) terms *island* and *inner island* would be more accurate.

22 The fact that CLLD is not limited to a single phrase is another characteristic that this construction shares with the Mohawk structure. For further arguments on the parallel between CLLD and Mohawk see Baker in preparation.

23 Cinque (1990) argues that this trace is adjoined to VP or to the Spec of the embedded CP.

24 Adjuncts cannot enter a long-distance binding chain, as was mentioned before, because they do not bear referential θ -roles.

25 See Cinque (1990), footnotes 20 and 21.

26 Cinque (1990) adopts the intrinsic definition of empty categories proposed by Chomsky (1982), but he argues that a similar result may also be obtained with a contextual definition.

27 See Baker (1990a) for details.

Conclusion

The cross-linguistic study of the syntactic factors that determine the order of constituents in sentences has been of interest in the linguistic literature for a long time. Several authors, with different theoretical approaches and using data from completely unrelated languages, have tried to discover the universal principles underlying word order. Some of these studies have been considered in the present analysis of aspects of Mohawk word order. Two main issues relevant to the subject of word order were taken into account in this thesis: definiteness and movement. With respect to the former, from a discourse perspective, Mithun's (1987) analysis of the role of definiteness in word order in polysynthetic languages and Heim's (1982) condition on definite-indefinite coreference were examined. In the case of the latter, from a GB framework, Mahajan's (1990) analysis of the role of movement in scrambling in Hindi was discussed. In the light of Mohawk evidence, it has been shown that none of the above mentioned studies can account for the free word order facts in this language.

The relation between definiteness and word order proposed by Mithun (1987) on the basis of the analysis of three unrelated polysynthetic languages was considered in Chapter II. The Newsworthiness Principle postulates that new or indefinite information will precede the verb while old or definite information, optionally preceded by the particle *ne* – which is considered a definite determiner – will follow it. This claim has been contradicted by evidence from Mohawk. It has been shown on the one hand that the location of an NP relative to the verb is independent of definiteness and on the other hand that the particle *ne* is not a definite determiner. Baker (1991a) argues that the structural configuration of the language, with NP's base generated in adjunct position coindexed with *pro's* licensed by rich agreement on the verb, is at the origin of the freedom exhibited by NP's, which may appear nearly anywhere in the sentence. The definite or

indefinite interpretation of an NP will be determined by pragmatic considerations and not by its location in the sentence. Given that NP's are adjoined to S, always c-commanding the *pro's* with which they are coindexed, Heim's (1982) Novelty Condition ruling coreference between definite and indefinite nominals must be modified to include a c-command restriction in order to account for Mohawk evidence.

The role of movement in word order, analyzed by Mahajan (1990) with respect to Hindi scrambling and proposed as the basis for a typology accounting for word order possibilities across languages, was discussed in Chapter III. Mohawk data was submitted to Mahajan's test for A-movement (or Argument Shift) in Hindi, proving that no movement operation at all is involved in the production of Mohawk free word order. Weak crossover, reconstruction, Condition C and the analysis of the lack of reflexive anaphors and quantifiers in Mohawk have shown that the freedom of the NP's stems from the fact that they are base generated in adjunct position, forming a referential chain with the *pro's* with which they are coindexed. Rich agreement morphology and case marking seem to be the crucial features differentiating base generated word order from movement generated word order or scrambling. A comparison with Clitic Left Dislocation, a base generated construction in Italian, shows that the Mohawk structure is not language specific but a valid instance of UG. A typology of word order should therefore have concepts more abstract than movement as its theoretical basis in order to account for word order in Mohawk or the Italian CLLD construction.

The evidence discussed in this thesis show that free word order in Mohawk is determined by pragmatic rather than syntactic considerations. This is possible because the language has a structure allowing the NP's – base generated in

adjunct position, coindexed with *pro's* in argument position – to move with the freedom of positioning which is typical of adjuncts.

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