Control and Reconstruction Effects of Adjuncts in Hindi

CONTROL AND RECONSTRUCTION EFFECTS OF ADJUNCTS IN HINDI

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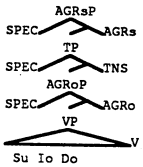
1. Introduction

The reconstruction effects[1] of arguments have been discussed extensively in the literature. The theory developed in Mahajan 1990 addresses Hindi scrambling and accounts for reconstruction effects of arguments. The core of that theory is that scrambling is properly factored into three distinct types of movement: (i) A-movement to the SPEC position of a functional head, called Argument Shift, (ii) A-bar movement to an adjoined position, and (iii) head movement. Argument Shift is not subject to reconstruction effects whereas A-bar movement to an adjoined position is. This theory assumes a highly-articulated IP adapted from Pollock 1989, in particular, the one shown in (1).

(1)



This paper reports on a preliminary investigation that shows that the binding behavior of certain adjuncts requires that they be treated on a par with arguments. For example, when these adjuncts are moved outside of an embedded clause and adjoined to a position in the higher clause, they must be construed in their original D-structure position with respect to binding theory.

What I will show is that a small extension of Mahajan's theory, namely, that adjuncts undergo the same types of scrambling as arguments, will provide an account for the binding and control properties of these adjuncts.

I will briefly introduce the main points of the paper. This discussion will focus on *kar*-phrases (also known as the *conjunctive participial construction* or the *absolutive*), a construction similar to English gerunds which I will consider to be representative of a class of temporal adjuncts in Hindi. I will first discuss the general word order possibilities for *kar*-phrases in order to set the stage for examining which orderings are subject to reconstruction effects. I will show that certain reconstruction effects provide evidence that the D-structure position of the adverbial is between the direct object and the verb.[2] This location follows from the structure of the VP proposed in Larson 1988. Then I will show why *kar*-phrases are clausal, given facts about negative polarity items and anaphoric and pronominal binding. Two minimal assumptions about the nature of a clause – that it contains a subject and tense – make it possible for movement to yield the obligatory subject control of the *kar*-phrase, assuming only a minimal distance theory of control.[3] Following the recent program by Chomsky 1991 of reducing a broad range of syntactic phenomena to morphological relations expressed primarily in the SPEC-head relation, movement of the *kar*-phrase to SPEC of the matrix TNS is forced, assuming that the *kar*-phrase establishes its tense dependency by moving there at LF. That is, the tense dependency is similar to the SPEC-head relation which checks the case of nominal arguments. The reconstruction data locate the *kar*-phrase below the direct object (at some level of representation) and the control facts locate it below the subject, hence above the direct object (again, at some level of representation). Thus the resolution of this paradox is that control is established at the LF position[4] of the *kar*-phrase whereas binding condition C is evaluated with respect to its D-structure position. After the discussion of Hindi, I will show certain similarities in parallel constructions in Japanese. Finally, I will mention some remaining problems to be addressed by further investigation.

The *kar*-phrase, illustrated in (2), is formed by adding *-kar* to a bare verbal stem. It exhibits obligatory subject control. It is similar in meaning to the English gerunds (as in the gloss), that is, the event of the adverbial immediately precedes the event of the modified clause. The event associated with the adverbial has perfective aspect. An important property of the *kar*-phrase is that it is impossible for it to have an overt subject. Furthermore, there is no agreement morphology on the verb.

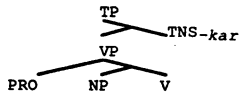
(2)

[PRO$_i$ raam-ko dekh-kar	siitaa$_j$-ne mohan-ko maar-aa
PRO$_i$ Ram-DO see -ing]	Sita$_j$ -ERG Mohan-DO hit -PRF

[PRO$_i$ Having seen Ram], Sita$_j$ hit Mohan.

I propose that *kar*-phrases are bare TP's, essentially the structure[5] shown in (3) below.

(3)



2. Word Order

The *kar*-phrase may appear in any of the positions shown below in (4).

(4) a. [PRO$_i$ raam-ko dekh-kar / PRO$_i$ Ram -DO see -ing] siitaa$_j$-ne mohan -ko maar-aa / Sita$_j$ -ERG Mohan-DO hit -PRF

Sita hit Mohan after having seen Raam.

b. siitaa$_j$-ne [PRO$_i$ raam-ko dekh-kar] mohan-ko maar-aa

c. siitaa$_j$-ne mohan-ko [PRO$_i$ raam-ko dekh-kar] maar-aa

d. siitaa$_j$-ne mohan-ko maar-aa , [PRO$_i$ raam-ko dekh-kar]

e. [PRO$_i$ raam-ko dekh-kar / PRO$_i$ Ram -DO see -ing] , [mary -ne soc -aa ki / Mary-ERG think-PRF that [siitaa$_j$-ne mohan -ko maar-aa / Sita$_j$ -ERG Mohan-DO hit -PRF]]

Mary thought that Sita hit Mohan after having seen Raam.

The examples in (4a) - (4c) require no special intonation. However, the preferred[6] position for both phrases is that shown in (4a). The rightward scrambling of the *kar*-phrase shown in (4d) is fully grammatical but requires special intonation, essentially equivalent to comma intonation in English. Likewise, long distance leftward scrambling in (4e) requires comma intonation.[7]

The same freedom of word order is available when the direct object appears before the subject. The example in (5) corresponds to (4a). The permutations corresponding to (5b)-(5e) are also possible.

(5) [PRO$_i$ raam-ko dekh-kar / PRO$_i$ Ram -DO see -ing] mohan -ko siitaa$_j$-ne maar-aa / Mohan-DO Sita$_j$ -ERG hit -PRF

3. Clausal Nature

Let us now consider evidence from negative polarity items (NPI's) and binding facts which shows that *kar*-phrases are fully clausal. More evidence from binding possibilities will show that *kar*-phrases contain a local PRO subject.

Laka 1990 shows that the licensing of NPI's is clause-bounded. If negation in the main clause does not license a negative polarity item in the *kar*-phrase, it would suggest that *kar*-phrases are clausal. Consider the data in (6).

(6) a. * [PRO kisi -ko bhii dekh-kar] siitaa-ne mohan-ko maar-aa nahiiN
[PRO anyone-DO EMPH see -ing] Sita -ERG Mohan-DO hit -PRF NEG

'Sita didn't hit Mohan having seen anyone'

b. * siitaa-ne [PRO kisii-ko bhii dekh-kar] mohan-ko maar-aa nahiiN
c. * siitaa-ne mohan-ko [PRO kisii-ko bhii dekh-kar] maar-aa nahiiN
d. * siitaa-ne mohan-ko maar-aa nahiiN [PRO kisii-ko bhii dekh-kar]

The NPI *kisii-ko bhii* in the *kar*-phrase is not licensed in any of the configurations in (6). It is plausible in (6a) and perhaps (6b) that the *kar*-phrase has moved outside the scope of negation. However, at least in (6c), it *must* be the case that *nahiiN* c-commands the adverbial. It will be established shortly that the *kar*-phrase is located below the direct object at D-structure. Therefore, we can be certain that the verb *maaraa* c-commands the *kar*-phrase. Assuming that *nahiiN* c-commands *maaraa* in (6c), we may be certain that the *kar*-phrase is within the scope of negation. Why, then, is the NPI not licensed?

Of course it is possible that matrix negation does not license an embedded NPI for some other reason. However, an NPI contained in a more complex noun phrase[8], for example, *is* licensed under matrix negation, as shown in (7).

(7)a. ? siitaa-ne [kisii-ke bhii pitaa]-ko nahiiN dekh-aa
Sita-ERG [any-GEN EMPH father]-DO NEG see-PST

'Sita did not see anyone's father.'

b. * siitaa-ne [kisii-ke bhii pitaa]-ko dekh-aa
Sita-ERG [any-GEN EMPH father]-DO see-PST

'Sita saw anyone's father.'

Thus we have seen that it is not simply the embedding that prevents licensing NPI's in *kar*-phrases. Given that NPI licensing is clause-bounded, we may conclude that the reason that NPI's inside *kar*-phrases are not licensed is that the *kar*-phrases are clausal and therefore NPI's within them are not licensed by matrix negation.

Pronominal and reflexive binding facts also indicate that the *kar*-phrase is clausal. Let us assume a generic binding theory which states the following conditions on anaphors and pronouns.

Generic Binding Theory

BT(A) Anaphors are bound in domain D.
BT(B) Pronouns are free in domain D.
BT(C) R-expressions are free.

D D has a subject and tense.

Although the precise formulation of the binding theory is not crucial for the present discussion, I assume that we may use the binding conditions[9] to test whether the *kar*-phrase has the clausal properties of D. Thus we will test

the clausehood of the *kar*-phrase by examining the possibilities for coreference between anaphors and pronouns embedded in a *kar*-phrase and matrix NP's.

The interpretation of the embedded pronoun in (8) shows that the *kar*-phrase has the clausal properties of D.

(8) siitaa-ne raam$_j$-ko [use$_j$ dekh-kar] maar-aa
Sita-ERG Ram$_j$-DO [3sg$_j$ see-ing] hit-PRF

'Sita hit Ram seeing him.'

If the *kar*-phrase did not contain a domain D, then by BT(B) it would not be possible for *use* to corefer with *raam*, contrary to fact. Thus we conclude that the *kar*-phrase does contain D. However, *use* may not corefer with *siitaa*, as shown in (8)'.

(8)' siitaa$_j$-ne raam$_j$-ko [PRO$_i$ use$_{i/*j}$ dekh-kar] maar-aa
Sita$_j$-ERG Ram$_j$-DO [PRO$_i$ 3sg$_{j/*i}$ see-ing] hit-PRF

'Sita hit Ram seeing him/*her.'

Thus BT(B) captures the possibility of coreference between *use* and *raam*. Furthermore, given the minimal assumption about D that it contains a local subject, which we may assume to be PRO, the reason that *use* may not corefer with *siitaa* is that BT(B) is violated with respect *use* and the local PRO which corefers with *siitaa* by control.

Given the conclusiveness of the BT(B) test, it is not surprising that BT(A) also indicates that the *kar*-phrase contains D and that furthermore it contains a local PRO subject. Consider the data in (9) which shows the possibilities for interpreting the anaphor.

(9) siitaa$_j$-ne raam$_j$-ko [PRO$_{i/*j}$ apne$_{i/*j}$-ko dekh-kar] maar-aa
Sita$_i$ -ERG Ram$_j$ -DO [PRO$_{i/*j}$ self$_{i/*j}$ -DO see -ing] hit -PRF

Sita hit Ram after seeing herself.

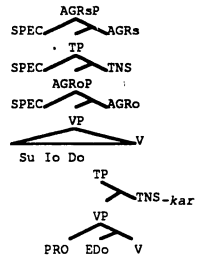
The data in (10) shows that this interpretation is not dependent upon the surface position of the *kar*-phrase in the sentence.

(10) a. siitaa$_j$-ne [PRO$_{i/*j}$ apne$_{i/*j}$-ko dekh-kar] raam$_j$-ko maar-aa
b. [PRO$_{i/*j}$ apne$_{i/*j}$-ko dekh-kar] siitaa$_j$-ne raam$_j$-ko maar-aa
c. siitaa$_j$-ne raam$_j$-ko maar-aa [PRO$_{i/*j}$ apne$_{i/*j}$-ko dekh-kar]
d. [PRO$_{i/*j}$ apne$_{i/*j}$-ko dekh-kar / PRO$_{i/*j}$ self$_{i/*j}$ -DO see -ing] [mary-ne soc -aa ki / Mary-ERG think-PRF that] [siitaa$_j$-ne raam$_j$-ko maar-aa / Sita$_i$ -ERG Ram$_j$ -DO hit -PRF]

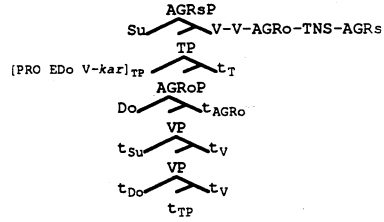
The only interpretation of (9) and (10) is 'after Sita saw herself, she hit Ram.' It cannot be 'after Ram saw himself, Sita hit him'. If the *kar*-phrase did not contain D, the matrix direct object would be a possible antecedent for the reflexive. We still need to account for why this PRO must corefer with the matrix subject.

Following the general program outlined above, I propose that the tense dependency of the *kar*-phrase is established by moving it to be in a SPEC-head relationship[10] with TNS at LF. Recall the assumed structures shown in (1) and (3), merged below in (11) to illustrate a relevant D-structure and the corresponding LF.

(11) D-Structure



LF with movement of *kar*P to [SPEC,TP]



Given that AgrS dominates TNS, a minimal distance theory of control correctly predicts subject control. A minimal distance theory of control simply states that the controller of the empty noun phrase is the closest higher overt NP. Since the closest higher NP to the PRO in the *kar*-phrase is the matrix subject (in [SPEC, AgrS] at LF) we correctly predict subject control of *kar*-phrases. It is crucial that the control relation for *kar*-phrases be established at LF, given that it is the object which c-commands the *kar*-phrase at D-structure, as will be discussed in more detail shortly.

4. Reconstruction

Consider the data in (12), first comparing (a) and (b) with (c).

(12) a. [raam$_j$-ko dekh-kar / Ram$_j$ -DO see -ing] siitaa-ne use$_j$ maar-aa / Sita -ERG 3sg$_j$ DO hit -PRF

Sita hit Ram$_j$ after seeing him$_j$.

b. siitaa-ne [raam$_j$-ko dekh-kar] use$_j$ maar-aa

c. * siitaa-ne use$_j$ [raam$_j$-ko dekh-kar] maar-aa

d. * siitaa-ne use$_j$ maar-aa [raam$_j$-ko dekh-kar]

e. ??[11] [raam$_j$-ko dekh-kar / Ram$_j$ -DO see -ing] [mary-ne soc -aa ki / Mary-ERG think-PRF that [siitaa-ne use$_j$ DO maar-aa / Sita -ERG 3sg$_j$ hit -PRF]]

Mary thought that Sita hit Ram$_j$ after seeing him$_j$.

The examples in (12a) and (12b) are grammatical, as is expected given that the R-expression *raam* is free and the pronoun *use* is free in its binding domain.

(12c) is a straightforward Condition C violation since *use* binds *raam*. I assume that the subject and direct object are in [SPEC, AGRsP] and [SPEC, AGRoP] respectively.[12]

It is surprising that (12e) is bad, given that at S-structure, *raam* is free and *use* is free in its binding domain in the embedded clause. Likewise, *raam* is free in (12d). We can tell that the *kar*-phrase c-commands the object by considering data as in (13).

(13)	*	siitaa-ne	use$_j$	maar-aa	thaa	[raam$_j$-ko	dekh-kar]
		Sita-ERG	3sg-DO	hit	AUX	[Ram-EDO	see-ing]

In (13), an auxiliary intervenes between the matrix verb and the *kar*-phrase. I assume that the auxiliary c-commands the matrix verb, as would follow from the configuration of functional heads in (1). Therefore, since the *kar*-phrase is to the right of the auxiliary, we know that it must c-command the matrix direct object as well.

Recall Mahajan 1990's theory of argument scrambling: A-movement is not subject to reconstruction effects whereas A-bar movement is. Extending this theory to adjuncts accounts for the ungrammaticality of (12d) and (12e).

(12e) is A-bar movement — adjunction to the higher clause — hence it exhibits reconstruction effects. I assume that the rightward scrambling in (12d) is also an instance of A-bar movement. Given the assumption that A-movement must be movement to a SPEC position, it is to be expected that rightward movement is not A-movement. Note that Hindi is nearly uniformly head-final. That is, there are no SPEC positions to serve as landing sites to the right of the VP. Recall from the discussion of word order that the position of the *kar*-phrase in (12d) and (12e) is allowed, even when the scrambled adverbial is understood to modify the embedded clause.

The following data show that *wh*-words behave like R-expressions, as expected.[13]

(14)	a	[PRO kis$_i$ -ko dekh-kar / PRO who$_i$-DO see -ing] siitaa-ne use$_j$ DO maar-aa / Sita -ERG 3sg$_i$ hit -PRF
	b	siitaa-ne [PRO kis$_i$-ko dekh-kar] use$_j$ maar-aa
	c	* siitaa-ne use$_j$ [PRO kis$_i$-ko dekh-kar] maar-aa
	d	* siitaa-ne use$_j$ maar-aa [PRO kis$_i$-ko dekh-kar]
	e	??? [PRO kis$_i$ -ko dekh-kar / PRO who$_i$-DO see -ing] [mary -ne soc -aa ki / Mary-ERG think-PRF that [siitaa-ne use$_j$ maar-aa / Sita -ERG 3sg$_i$ DO hit -PRF]]

The data in (14c) shows a strong crossover violation. The pronoun c-commands the trace of the *wh*- word after it has undergone LF movement. In (14a) and (14b) no such violation arises because the *kar*-phrase c-commands the pronoun. (14d) and (14e) exhibit reconstruction behavior parallel to that of the R-expressions in (12).

Thus, the binding relationships that hold between NP's in adverbial participials and other NP's in the embedded clause must be evaluated as if the adverbial were between the direct object and the verb of the embedded clause. These facts are captured by the D-structure proposed above in (11).

Not surprisingly, both the adverbial and the object may move to their respective SPEC positions, as (15) shows.

(15) a ? [PRO raam$_j$-ko dekh-kar / PRO Ram$_j$ -DO see -ing] use$_j$ siitaa-ne maar-aa / 3sg$_j$ DO Sita -ERG hit -PRF

b * use$_j$ [PRO raam$_j$-ko dekh-kar] siitaa-ne maar-aa

c. * use$_j$ siitaa-ne [PRO raam$_j$-ko dekh-kar] maar-aa

d ??? use$_j$ siitaa-ne maar-aa [PRO raam$_j$-ko dekh-kar]

e ?? [PRO raam$_j$-ko dekh-kar / PRO Ram$_j$ -DO see -ing] [mary -ne soc -aa ki / Mary-ERG think-PRF that [use$_j$ / 3sg$_j$ DO] siitaa-ne maar-aa / Sita -ERG hit -PRF]

However, as we have seen above, adverbials are not always interpreted with respect to the D-structure position. That is to say, they do not always exhibit reconstruction effects. In particular, the data in (12a) and (12b), repeated below, show that the adverbial is interpreted with respect to binding in its surface position.

(12) a. [raam$_j$-ko dekh-kar / Ram$_j$ -DO see -ing] siitaa-ne use$_j$ / Sita -ERG 3sg$_j$ DO maar-aa / hit -PRF

Sita hit Ram$_j$ after seeing him$_j$.

b. siitaa-ne [raam$_j$-ko dekh-kar] use$_j$ maar-aa

Assimilating adjunct scrambling to argument scrambling provides a simple answer. Recall that the *kar*-phrase moves to the SPEC position of the matrix TNS to be in a SPEC-head relationship with it. In this case it is not surprising that the binding conditions apply at the surface position in (12a) and (12b); the adverbial has undergone A-movement. Recall that I am assuming that elements moved to SPEC positions are not subject to reconstruction effects. Given that the *kar*-phrases in (12a) and (12b) are in [SPEC,TP], it follows that the binding conditions are evaluated with respect to the surface positions shown, and not with respect to the D-structure position which would yield a BT(C) violation.

To illustrate the parallel behavior, the data in (16) shows that a surface BT(C) violation involving an NP argument is not saved by a reconstruction effect.[14]

(16) * un$_j$-ko [[siitaa Or raam]$_j$ ke shikSak]-ne maar-aa
they-ACC [[Sita and Ram]$_j$ GEN teacher]-ERG hit-PST
[Sita and Ram]$_j$'s teacher hit them$_j$.

In (16), the pronominal direct object corefers with 'Sita and Ram' embedded in the subject. If BT(C) were evaluated with respect to reconstruction, we would expect no binding violations since 'Sita and Ram' does not in turn c-command the D-structure position of the pronoun.

However, adjuncts and adverbs do not behave alike in an important respect. Mahajan 1990 shows that arguments reconstruct to the SPEC position of the functional head, not to their VP-internal D-structure position. In particular, he shows that no weak crossover effect is induced by scrambling to

pre-matrix sentence position an embedded *wh-* element direct object. The data in (17) illustrates this point:

(17)

kis-koj	raam-ne	socaa	ki	t_1	[uskiij bahin-ne]	t_0 dekhaa thaa
whoj	Ram	thought	that	t_1	[hisj sister]	t_0 seen past
(EDO)	(SU)				(ESU)	

Whoj did Ram think that hisj sister had seen? (61), p. 42.

Notice that if the *wh-* element reconstructed to t_0, then we would expect a weak crossover violation since the trace does not c-command the co-indexed pronoun *uskii*. Therefore Mahajan concludes that the reconstruction site is in fact the SPEC position of AgrO - the position of t_1 in (17).

But recall that the data in (12e) showed that adjuncts are interpreted at their D-structure position when the adjunct is adjoined to a higher clause.[15] Thus it would be incorrect to completely assimilate adjunct and argument scrambling and reconstruction. There may be independent reasons preventing reconstruction effects of the *kar*-phrase in an intermediate [SPEC,TP] position. It is beyond the scope of the paper to settle the matter, but I will suggest an approach.

Chains formed by moving NP's are commonly considered to be fundamentally different from chains formed by moving other elements. Perhaps this fundamental difference is maintained, even though both types of elements are assumed here to move to SPEC positions of functional heads for morphological reasons. Perhaps only the NP's in those SPEC positions can be construed in operator-variable constructions. In these constructions, movement to SPEC produces the variable and the subsequent A-bar movement yields operator scope. We may then say that in (17), t_1 and t_0 constitute one chain (the variable), and *kisko* and (t_1,t_0) constitute an operator-variable construction. The movement to the operator position is the A-bar movement, and reconstruction is with respect to the variable, the chain (t_1,t_0). If the non-NP *kar*-phrase may not enter into an operator-variable relation, it could be the case that only one chain is formed, schematically: (*kar*-phrase, t_1, t_0). Reconstruction is with respect to the origin point of the chain in the D-structure position, t_0. This avenue is only a brief sketch of a possible solution to this difference.

Thus, the relevant distinction between arguments and adjuncts in this respect is that arguments move to SPEC of an AGR head whereas adjuncts move to SPEC of TNS.

5. Postpositional Phrases

The control properties of postpositional phrases are an apparent counterexample to the proposed control theory. Adverbial postpositional phrases formed with the postposition *par*, 'upon' have roughly the same meaning as *kar*-phrases. Consider the data in (18)

(18) [proi/j raam-ko dekh-ne par / proi/j Ram -DO see -ing upon] siitaaj-ne mohanj-ko maar-aa / Sitai -ERG Mohanj-DO hit -PRF

'Sitaj hit Mohan upon herj having seen Raam.'
or 'Sita hit Mohanj upon hisj having seen Raam'

The important difference is that in addition to subject control, these phrases allow object control, although subject control is preferred. In fact, it is possible, given the appropriate context, to construe a salient person in discourse as the controller. Since I assume that the tense dependency is established by moving to [SPEC,TP] for PP's as well as for TP's, it would appear that the proposed theory of control must be wrong. The word order possibilities are exactly the same as those of the *kar*-phrase, as shown in (19). As before, the control properties are independent from the surface word order.

(19) a. [proi/h/k mohan-ko dekh-ne par / proi/h/k Mohan-DO see -ing upon] siitaaj-ne raamj-ko maar-aa / Sitai -ERG Ramj -DO hit -PRF

b. siitaaj-ne [proi/h/k mohan-ko dekh-ne par] raamj-ko maar-aa

c. siitaaj-ne raamj-ko [proi/h/k mohan-ko dekh-ne par] maar-aa

d. siitaaj-ne raamj-ko maar-aa [proi/h/k mohan-ko dekh-ne par]

e. [proi/h/k mohan-ko dekh-ne par / proi/h/k Mohan-DO see -ing upon] [mary-ne soc -aa ki / Mary-ERG think-PRF that [siitaaj-ne raamj-ko maar-aa / Sitai -ERG Ramj -DO hit -PRF]]

However, the postpositional *ne-par* phrase, although superficially very similar to the *kar*-phrase, differs in that it licenses an overt subject, as shown in (20). Thus the embedded subject empty categories in (18) and (19) are empty pronominals, not PRO.

(20) [mary-ke raam-ko dekh-ne par / Mary-GEN Ram -DO see -ing upon] siitaa-ne mohan-ko maar-aa / Sita -ERG Mohan-DO hit -PRF

Sita hit Mohan upon Mary's seeing Raam.

To show that case-marked empty pronouns are generally possible, consider the data in (21) which shows a dative subject which is dropped in an answer to a yes-no question. The relevant generalization is that it is necessary to have the subject NP salient in discourse.

(21) Q: tumharii maaN-ko phuul acche lagte?
your.FAM mother-DAT flowers good strike?
'Does your mother like flowers?'

A: pro pile phuul bahut acche lagte haiN
pro.DAT yellow flowers very good strike be.fem.pl
'She likes yellow flowers very much'.

Thus the coreference possibilities between the embedded empty subject and the matrix NP's has nothing to do with control but rather is an artifact of free coindexation. Let us consider the greater freedom of coreference of reflexives in the case of the *ne-par* phrase, as shown in (22).

(22) a. [pro apne-ko dekh-ne par / pro self -DO see -ing upon] siitaa$_i$-ne raam$_j$-ko maar-aa / Sita$_i$ -ERG Ram$_j$ -DO hit -PRF

b. apne$_j$/PRO$_i$, apne$_j$/PRO$_j$, apne$_j$/PRO$_j$, *apne$_j$/PRO$_i$

There are three interpretations for (22): (i) 'after Sita saw herself, she hit Ram', (ii) 'after Ram saw himself, Sita hit him', or (iii) 'After Ram saw Sita, she hit him'. It cannot mean 'After Sita saw Ram, she hit him'. Since *apne* is subject-oriented, the only way it can corefer with the matrix object in these examples is when the empty embedded subject is coindexed with the matrix object by free coindexation. Notice that even when the empty embedded subject is coindexed with the matrix object, the reflexive *apne* may corefer with the higher subject.

6. Crosslinguistic Parallels

There exists a parallel[16] between the behavior of the *kar*-phrase in Hindi and the *te*-phrase in Japanese. Both of these have the same meaning: the event denoted by the adverbial phrase takes place immediately before the event denoted by the modified phrase. The difference between Japanese and Hindi is that in Japanese, movement to the clause-initial position exhibits reconstruction effects whereas in Hindi it does not. Thus, fronting of the adverbial to clause-initial position seems be A-bar movement in Japanese whereas in the Hindi counterpart it is A-movement. The data in (23) illustrates this behavior.

(23) a ?? [PRO John$_j$-o mi -te / PRO John$_j$-ACC see-ing] Mary-ga kare$_j$-o nagut-ta / Mary-NOM him$_j$ -ACC hit -PST

b Mary-ga [PRO John$_j$-o mi-te] kare$_j$-o nagut-ta

c * Mary-ga kare$_j$-o [PRO John$_j$-o mi-te] nagut-ta

d ??? [PRO John$_j$-o mi -te / PRO John$_j$-ACC see-ing] [Bill-ga [Mary-ga kare$_j$-o nagut-ta / Bill-NOM [Mary-NOM him$_j$ -ACC hit -PST] to omotte-iru koto / that think -PRES ???]]

The control behavior of the *te*-phrase is exactly like the Hindi *kar*-phrase: only subject control is permitted. Reflexive and pronominal binding behave exactly as expected, as shown in (24) and (25) respectively. The *te*-phrase also has a local PRO subject. Hence the embedded direct object reflexive must corefer with the matrix subject. The binding possibilities are constant under the permuted word orders shown in (24) .

(24) a. [PROi kare jishini$_i$/*j-o mi -te / PROi him self$_i$/*j -ACC see-ing] John$_j$-ga Bill$_j$-o nagut-ta / John$_j$-NOM Bill$_j$-ACC hit -PST

b. John$_j$-ga [PROi kare jishini$_i$/*j-o mi-te] Bill$_j$-o nagut-ta

c. John$_j$-ga Bill$_j$-o [PROi kare jishini$_i$/*j-o mi-te] nagut-ta

The embedded direct object pronominal must not corefer with the matrix subject, as shown in (24). Of course it is not required that the pronominal corefer with the matrix object; the referent may be some other person.

(25) a. [PROi karej-o mi -te / PROi himj -ACC see-ing] Maryi-ga Johnj-o nagut-ta / Maryi-NOM Johnj-ACC hit -PST

b.[17] Maryi-ga [PROi karej-o mi-te] Johnj-o nagut-ta

c. Maryi-ga Johnj-o [PROi karej-o mi-te] nagut-ta

I will leave as an open question the precise nature of the difference between these constructions in Hindi and Japanese. See Nemoto 1991 for a treatment of A and A-bar properties of scrambling in Japanese.

7. Conclusion

Thus we have seen that unifying the treatment of adjuncts with that of arguments in that both types of phrase move to the SPEC position of a functional head for morphological requirements at LF makes it possible to analyze both the reconstruction effects and the control facts in terms of movement theory. The paradoxical nature of conflicting requirements of the location of the *kar*-phrase, namely, that with respect to binding theory, the reconstructed location of the *kar*-phrase is below the direct object whereas with respect to control, the relevant location is below the subject, was resolved by assuming that the D-structure position of the adverbial is below the direct object whereas it is at [SPEC,TP] that the tense dependency is established at LF. Locating the *kar*-phrase as sister to V follows from the analysis of the VP in Larson 1988. Requiring movement of the *kar*-phrase to [SPEC,TP] is simply an extension of the type of movement of NP's to [SPEC,AGR] positions. The precise nature of the difference between adverbials and NP's with respect to reconstruction to an intermediate SPEC position of a functional head needs to be explored in more detail.

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9. Notes

[1]I do not necessarily assume that reconstruction effects are due to movement of elements back to their D-structure position. Since the core points of this paper are unaffected by the mechanism that accounts for reconstruction, I will refer simply to the *effects* of reconstruction.

[2]Gambhir 1981 suggests that the unmarked position of adverbs is between the direct object and the verb, however, no direct evidence for this position is presented. My results provide empirical support for Gambhir's intuitions, assuming that *kar*-phrases and PP's are representative of adverbials.

[3]Consider, for example, the theories proposed in Chomsky 1980, Huang 1984 and Cheng 1989. Huang and Cheng discuss the interpretation of the empty pronominal. I am considering only the empty category PRO. Chomsky traces the minimal distance theory to Rosenbaum 1967.

[4]It is beyond the scope of the paper to explore the extent to which control can be said to be established at D-structure instead of S-structure in general.

[5]Whether there is an additional AGR projection in the *kar*-phrase which checks the case of its own embedded direct object is not relevant to the present discussion. We may assume that it is present but that the *kar* head prevents the agreement from being manifested overtly on the verb. Whether the *kar* TP has a SPEC position is also irrelevant here.

[6]I assume that this preference is a reflection of the difficulty in parsing sequences of NP's. Notice that only in the (a) case is the embedded direct object separated from the NP's in the main clause by lexical material. The (c) case, on the other hand, contains three consecutive NP's. The first two NP's in (b) create a garden path, that is, an unmodified sentence [NP-ne NP-ko V-...] yields [SUBJ—DO—V] whereas in (b), [NP-ne NP-ko ...] is actually [SUBJ—EDO—...]. Therefore I assume that the preference for (4a) is an artifact of parsing and does not reflect relevant structural differences.

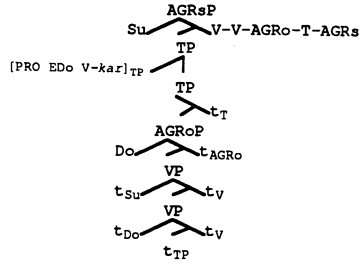
[7]As we shall see, these cases with comma intonation are instances of A-bar movement. The reason why A-bar movement is associated with this intonation is left open.

[8](7a) is judged to be a bit awkward for unknown reasons. In any case, the judgement is clear that without negation, (7b) is completely ungrammatical.

[9]It may be necessary to reconsider using the binding theory diagnostics in the way presented here. Consider, for example, the work of Hestvik 1990.

[10]Following Chomsky 1991, there are actually two possibilities with respect to establishing a morphological relationship with a head. The more familiar one is that the element for which the relation is checked is moved to the SPEC position of that head. This possibility was illustrated in (11). Another possibility is that the element for which the relation is checked is adjoined to the maximal projection of the head. The essential idea is that adjunction to XP brings the element into the required local morphological relation.This possibility is shown in (i).

(i) LF with adjunction of *karP* to TP



The advantage of (i) is that the reconstruction to the D-structure position in (12e) is trivial: one chain is formed by successive-cyclic movement. The disadvantage is that there is no longer a simple answer to why there is no reconstruction in (12a) and (12b). It is beyond the scope of the paper to provide conclusive evidence for choosing between these two possibilities.

[11]The judgement for (e) is that it is not quite as bad as (c) and (d). I assume that this improvement is a refection of the other control possibility, namely, control by the higher subject 'Mary'. Consequently I will consider this case on a par with (c) and (d). In any case, (d) makes the same point as (e) and seems not to be subject to this variation in acceptability.

[12]I am assuming a case-checking theory of the sort proposed in Chomsky 1991. In particular, I assume that the case relations must be established at LF, but that surface representations may reflect a stage of that derivation. The analysis in Mahajan 1990 is different in this respect.

[13]There appears to be some speaker variation in judgements of these data.

[14]However, Mahajan 1990 presents an argument that that the movement of an NP within a clause may be A-bar movement, based on BT(A). For example, the data in (i) is analyzed as involving reconstruction of the scrambled direct object to a position below the subject which is then able to bind the anaphor.

(i)

[apnei aap-ko]	raami		pasand	kartaa	hE
himselfi (DO)	Rami (SU)		likes		
Ram likes himself.					

See Deprez 1989 as well for additional analysis of the reconstruction behavior of similar structures in Hindi.

[15]Recall the speaker variation for the (12e) cases. In those dialects in which (12e) is good, it could be the case that for some reason, the *kar*-phrase behaves like the corresponding NP's and does in fact reconstruct to [SPEC,T].

[16]The BT(C) violations derived from reconstructions are similar but the wh- crossover facts are not. The latter may be due to differences outside the scope of my paper.

[17]Similar to the Hindi sentence of the same form, this sentence is judged to be a bit odd although still grammatical. I assume that the oddness arises from the garden path effect of *John-ga kare-o* where *kare-o* is initially parsed as the direct object of the main sentence although it is in fact the embedded direct object of the adjunct.

10. References

Cheng, L. (1988a) "Aspectual Licensing and pro". ms, MIT.

Chomsky, N. (1989) "Notes on Economy of Derivation", MIT Working Papers in Linguistics 10.

Chomsky, N. (1991) 24.958 Fall class lectures.

Chomsky, N. (1991) "A Minimalist Program for Linguistic Theory". draft, MIT.

Davison, A. (1990) "Experiencers and Patients as Subjects in Hindi-Urdu" ms. University of Illinois.

Davison, A. (1981) "Syntactic and Semantic Indeterminacy Resolved: A Mostly Pragmatic Analysis for the Hindi Conjunctive Participle. in P. Cole (ed) *Radical Pragmatics*, Academic Press, New York.

Deprez, V. (1989) On the Typology of Syntactic Positions and the Nature of Chains: Move-α to the specifier of functional projections. Doctoral Dissertation, MIT, Distributed by MIT Working Papers in Linguistics.

Gambhir, V. (1981) Syntactic Restrictions and Discourse Functions of Word Order in Standard Hindi. Doctoral Dissertation, University of Pennsylvania.

Gurtu, M. (1985) Anaphoric Relations in Hindi and English. Doctoral Dissertation, Central Institute of English and Foreign Languages, Hyderabad.

Hestvik, A. G. *LF-Movement of Pronouns and the Computation of Binding Domains*, Doctoral Dissertation, Brandeis University, Waltham Massachusetts.

Huang, C.-T. J. (1984) "On the Distribution and Reference of Empty Pronouns", Linguistic Inquiry 15, 531–544.

Kachru, Y. (1981) "On the Syntax, Semantics and Pragmatics of the Conjunctive Participle in Hindi-Urdu" Studies in the Linguistic Sciences, 11, 35–49.

Laka, I. (1990) *Negation in Syntax: On the Nature of Functional Categories and Projections*. Doctoral Dissertation, MIT, Distributed by MIT Working Papers in Linguistics.

Larson, R. (1988) "On the Double Object Construction" Linguistic Inquiry 19, 335–391.

Mahajan, A. (1989) "Agreement and Agreement Phrases" MIT Working Papers in Linguistics 10, 217–252.

Mahajan, A. (1990b) "LF Conditions on Negative Polarity Licensing", Lingua 80, 333–348.

Mahajan, A. (1990a) The A/A-bar Distinction and Movement Theory, Doctoral Dissertation, MIT, Distributed by MIT Working Papers in Linguistics.

Murasugi, K. (1991) "Case and Agreement in Hindi" ms, MIT.

Nemoto, N. (1991) "On A-movement and Barriers" ms. University of Connecticut.

Pollock (1989) "Verb Movement, Universal Grammar, and the Structure of IP". *Linguistic Inquiry* 20, 365–424.

Rosenbaum (1967) *The Grammar of English Predicate Complement Constructions*Research Monograph No. 47, MIT Press.

Schumacher, R. (1977) Untersuchungen zum Absolutiv im modernen Hindi. Peter Lang, Bern.