SUBJACENCY EFFECTS AT LF:
  THE CASE OF HINDI *WH*
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I present evidence from Hindi to argue against the standard assumption, stemming from work on Chinese by Huang (1982), that Subjacency is a principle that does not apply at the level of Logical Form (Chomsky (1986)). I follow instead the claim made by Fiengo et al. (1988) that Subjacency does obtain at LF, though its effects are generally invisible, and I argue that the case of Hindi *wh* is one visible manifestation of the existence of Subjacency at LF.

Hindi has *wh*-in-situ like Chinese but the scope properties of the two elements differ significantly, as pointed out by Davison (1984), Mahajan (1987; 1990), and Srivastav (1989; 1991). Crucially, the scope of a Hindi *wh* embedded inside a finite complement differs from the scope of such a *wh* in Chinese. Compare Hindi (1) with (2), its Chinese counterpart:

(1) tum jaante ho [$_{CP}$ ki   usNE kyaa kiyaa]
     you know   that he   what did
     'You know what he did.' *not* 'What do you know he did?'

(2) ni   zhidao [$_{CP}$ ta zuo-le sheme]
     you know   he did   what
     'You know what he did.' *and* 'What do you know he did?'

Under standard assumptions Hindi *kyaa* 'what', like Chinese *sheme* 'what', must move to an Ā-position (specifically, Spec of CP) for interpretation at LF.[1] What distinguishes the Hindi *wh* in (1) from the Chinese *wh* in (2) is that this movement cannot be to matrix Spec position. The matrix verb *jaanna* 'to know' can take a + or a − *wh* complement, just like Chinese *zhidao*, so selectional restrictions are not involved. Given that the *wh* is in object position (that is, in a lexically governed position), there can be no question of an Empty Category Principle (ECP) violation either. The fact that the Hindi *wh* cannot move to the Spec of matrix CP at LF thus calls for an explanation.

In Srivastav (1989; 1991) I argue that Hindi is an SOV language in which finite complements appear in a postverbal adjunct position due to the Case Resistance Principle (Stowell (1981)). Under this view, the structure of a sentence like (1) is as given in (3):

(3) [$_{CP}$[$_{IP}$[$_{IP}$ you [$_{VP}$ X$_i$ know]] [$_{CP_i}$ that he what did]]]

The canonical object position X with which the postverbal complement is coindexed is occupied by its trace, pro, or a lexically overt pleonastic *yeh* 'this'. The choice is not relevant for the

  [1] See Mahajan (1990) for an alternative view in which Hindi *wh* involves adjunction to IP, not movement to Spec.

purposes of this squib. What is crucial is that the complement in (1) is syntactically an adjunct. It is therefore not L-marked by the verb and is a blocking category and a barrier for movement.[2] The IP dominating it inherits barrierhood from it. The inability of *wh* to move to matrix Spec is thus explained since it involves crossing two barriers, a Subjacency violation.[3] This explanation follows the standard account for ruling out extraction out of adjuncts, except for the fact that the movement under discussion occurs at LF, a level at which Subjacency is not supposed to obtain.

Let us look briefly at the motivation for the view that Subjacency obtains at S-Structure but not at LF. Huang (1982) proposed this distinction between S-Structure and LF based on the fact that Chinese *wh* can take scope outside an island as long as its trace is properly governed. That is, movement of lexically governed *wh*-phrases like subject and object NPs in Chinese is free, whereas that of adjuncts is contingent upon antecedent government. Since the Chinese *wh* remains in situ until LF, this suggests that LF movement is subject only to the ECP.

We have seen, however, that Hindi *wh*-in-situ cannot escape a scope island even when its trace is lexically governed. This means that the ECP cannot be the only principle governing movement at LF in Hindi. What we need is a principled way of reconciling the facts of LF movement in Hindi with what is known about such movement in languages like Chinese.

[2] Nonfinite complements are analyzed as gerundive constructions. Since they are projections of IP, the Case Resistance Principle does not apply to them and they are able to appear in the preverbal L-marked position. *Wh* embedded inside such a complement necessarily takes matrix scope, as predicted by the analysis. Since no intermediate Spec position is available as a landing site, the embedded *wh* must move to matrix Spec for interpretation. Note that this movement is licit since the nonfinite complement is L-marked.

[3] I do not wish to suggest that the Case Resistance Principle will impact on *wh*-extraction in the same way in all languages. In English, for example, extraposition does not prevent extraction:
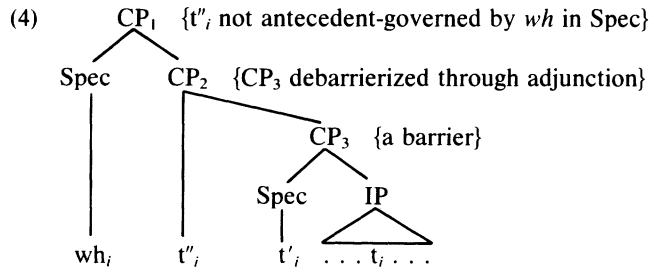
(i) Who$_i$ does Mary expect that Bill will hire t$_i$?

One difference between English and Hindi is that the Case Resistance Principle forces movement within VP in English (Stowell (1981)). In Hindi the complement occurs to the right of elements in Infl, thus arguing for adjunction at the level of IP. This difference in the level of adjunction may be relevant in determining whether an extraposed complement is a barrier. Alternatively, *wh*-extraction in English may precede extraposition. (ii) provides supporting evidence:

(ii) *Who$_i$ does Mary expect it that Bill will hire t$_i$?

Postal and Pullum (1988) analyze *it* in (ii) as a pleonastic in the canonical object position. If so, the CP complement would be base-generated in a non-L-marked adjoined position, explaining the impossibility of extraction. See footnote 6 for similar facts in Hindi. See also Srivastav (1991, 234–236) for differences in the interaction of the Case Resistance Principle and *wh*-extraction in English, Hindi, and Chinese.

The proposal made by Fiengo et al. (1988) that Subjacency obtains at LF though its effect is not visible allows for such a resolution. Briefly, they contend that an adjunct clause, which is potentially a barrier for movement, may be debarrierized by adjunction. Since adjunction is freer at LF than at S-Structure, adjunct clauses in in-situ languages are not scope islands. For this reason, any *wh* can be extracted out of an adjunct as far as Subjacency is concerned. Following May (1985), Fiengo et al. assume that adjunction prevents antecedent government. As a result, they argue, LF extraction out of adjuncts is restricted to those expressions whose traces are lexically governed. Thus, Chinese allows extraction of arguments but not adjuncts out of adjuncts. This is represented schematically in (4):

(4) CP_1 {t''_i not antecedent-governed by *wh* in Spec}

       Spec CP_2 {CP_3 debarrierized through adjunction}

                       CP_3 {a barrier}

                   Spec   IP

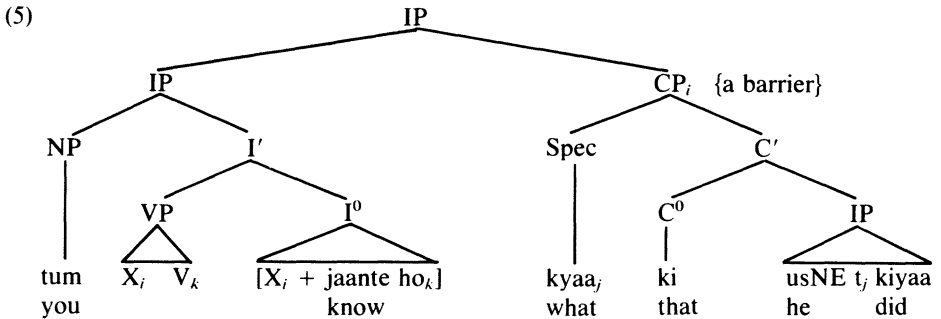 wh_i t''_i t'_i . . . t_i . . .

Though the interpretation of Chinese *wh*-in-situ appears to be constrained only by the ECP, both Subjacency and the ECP are in fact operative at LF. This approach differs from the standard view in that it takes Subjacency to be applicable at LF, though its effect is rendered vacuous.

Turning back to the Hindi case, we see that arguments as well as adjuncts cannot be extracted out of complements that are syntactically in adjunct position. The line of reasoning suggested by Fiengo et al. obviously does not directly explain the Hindi phenomenon. The visibility of Subjacency effects at LF in Hindi can be explained, however, if we assume that the head of the postverbal complement must be properly governed by the inflected verb in order for it to share a θ-role with the pleonastic object in preverbal position. This may be motivated in the following way. Pleonastic elements typically bear Case but no θ-role. Since Case and θ-role assignment are to the left in Hindi, the Hindi pleonastic bears both. Let us assume that the pleonastic cannot retain the θ-role and must transfer it to a coindexed element with semantic content and that this happens under proper government. If the pleonastic moves at LF to Infl, the θ-role can be transferred to the adjoined CP only if its head is properly governed by the matrix Infl. Intuitively, we might think of this requirement of proper government as a principle

licensing adjunctions of Hindi complement CPs to the right of IP.[4]

(5) shows schematically why the embedded CP is an absolute barrier for extraction, given the requirement for government just proposed:[5]

(5)

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                              IP
           ┌──────────────────┴─────────────────────┐
          IP                                      CP_i  {a barrier}
     ┌─────┴─────┐                          ┌───────┴────────┐
    NP          I'                        Spec               C'
     │     ┌─────┴─────┐                    │          ┌──────┴──────┐
     │    VP          I⁰                    │         C⁰            IP
     │    ╱╲          ╱╲                    │          │           ╱╲
    tum  X_i  V_k  [X_i + jaante ho_k]    kyaa_j      ki     usNE t_j kiyaa
    you              know                  what      that     he     did
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In order to debarrierize CP_i, adjunction would be required. As a consequence of this adjunction, however, the requirement of government between I^0 and C^0 would not be satisfied. This follows from the suggestion by Fiengo et al. (1988) that adjunction prevents proper government.

The account sketched above can be demonstrated with an ill-formed LF representation for (1) in which the embedded *wh* has moved to matrix Spec:

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[4] A similar requirement of proper government for extraposed relative clauses is proposed by May (1985) to derive the Right Roof effect. According to him, the head of a relative clause undergoes Quantifier Raising to an IP-adjoined position at LF and can properly govern the extraposed relative clause if it is adjoined locally to IP:

(i) [$_{IP}$[$_{NP_j}$ A man t_i][$_{IP}$[$_{IP}$ t_j came in] [$_{CP_i}$ who was wearing a hat]]]

In Srivastav (1991, 53–58) I show that extraposition in Hindi relative clauses is also local and can be explained under May's account. Note that *wh*-extraction is not possible out of extraposed relative clauses, showing that they are still barriers for *wh*-movement. The parallel between postverbal relative clauses and complements is suggestive of a general requirement of licensing via proper government in Hindi, though its exact formulation remains somewhat open at this point.

[5] The inflected verb is expected to move to C^0, but I do not represent it here.

(6)
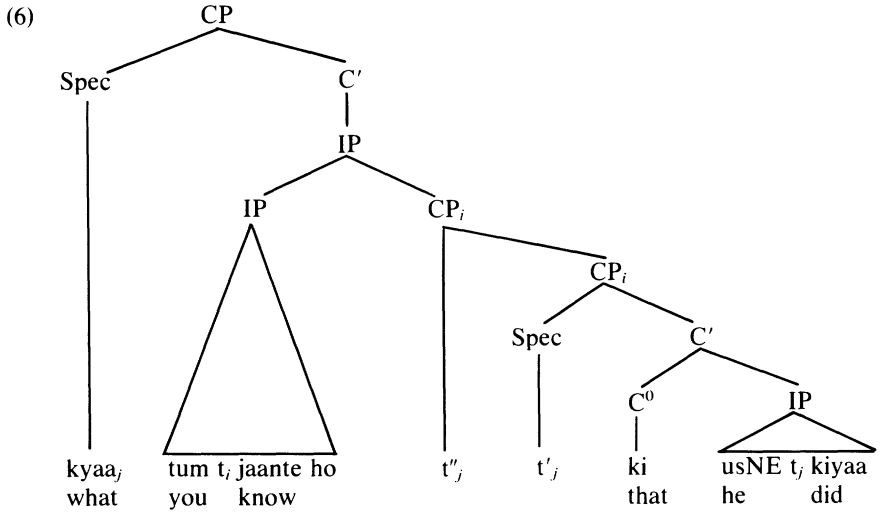
In order to void Subjacency, the *wh* in Spec of the lower CP_i must first adjoin to it. CP_i is then debarrierized, and movement of t''_j to matrix Spec becomes licit. Though t''_j is not antecedent-governed, the trace t_j is lexically governed, hence properly governed. Thus, no ECP violation is involved with respect to the *wh*-trace. However, the LF representation is ruled out because the head of the complement C^0 is no longer properly governed by the inflected verb, since adjunction prevents proper government. The complement therefore remains a scope island. Explaining the impossibility of extraction out of finite complements in terms of the ECP is intuitively satisfactory since the effect is too strong to be considered simply a Subjacency violation.[6]

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[6] Hindi employs two strategies for wide scope readings of *wh* embedded inside finite complements, neither of which violates the requirement of proper government claimed here. The first strategy involves overt extraction:

(i) $kyaa_i$ tum jaante ho [ki   usNE t_i kiyaa]
      what you know   that he   did
      'What do you know that he did?'

In (i) the complement is generated in the L-marked preverbal position. *Wh*-extraction precedes extraposition of the complement. Since it occurs before CP becomes a barrier, the adjunction that interferes with proper government is not required. Note that overt extraction cannot occur with a pleonastic in object position:

(ii)   *$kyaa_i$ tum yeh_j jaante ho [$_{CP_j}$ ki   usNE t_i kiyaa]
       what you this know   that he   did

Taking the presence of the pleonastic as evidence that the actual complement is base-generated in adjoined position (that is, a non-L-marked position), the impossibility of extraction in (ii) follows.

This explanation turns on the requirement that the matrix verb properly govern the head of the complement, and it would be desirable to have corroborating evidence of this. Consider (7), in which two finite complements cannot be conjoined if there is an overt complementizer in each conjunct:

(7) *usNE kahaa [CP[CP ki   anu aayii] aur [CP ki   ravii
    she   said   that Anu came and   that Ravi
    gayaa]]
    left
    'She said that Anu came and that Ravi left.'

In the account suggested above, the ungrammaticality of (7) follows from the fact that the two *ki*'s in the heads of the conjoined CPs are not properly governed by the inflected verb. The CP dominating the two conjuncts blocks proper government in the same way that the topmost CP node inside the complement in (6) blocks it.[7] There is, then, some independent motivation for suggesting that proper government of the head of a postverbal finite complement is needed.

I have argued that Subjacency effects do obtain at LF and that their visibility in Hindi postverbal complements is a reflex of an independent requirement of proper government. If this approach is on the right track, it predicts that there will be a difference between Hindi postverbal complements in adjunct position and ordinary adjuncts in Hindi, with respect to the scope of *wh* inside them. Whereas the former are absolute islands for extraction, the latter should display the argument-adjunct asymmetry seen in Chinese. This prediction is indeed borne out.

Consider (8a), containing an adverbial phrase that is a potential barrier for movement. In (8b) the embedded object is a *wh*-in-situ that takes matrix scope:

(8) a.   vo [raamKO dekhne ke baad] ghar   gayii
         she Ram   seeing after   home went
         'She went home after seeing Ram.'

The second strategy involves an additional *wh*-expression:

(iii)   tum kyaa_i jaante ho [ki   usNE kyaa_i kiyaa]
        you what know   that he   what did
        'What do you know that he did?'

Here the matrix *wh* functions like a pleonastic polyadic operator that is able to bind the embedded *wh* without forcing it to move. Consequently, no adjunction is required and the complement can be properly governed. See Srivastav (1989; 1991) for further discussion and also Mahajan (1990) for a different view.

[7] Note that (i) is not a problem since the conjunction is at the level of IP and *ki* is properly governed by the inflected verb:

(i)   usNE kahaa [CP ki [IP anu aayii] aur [IP ravii gayaa]]
      she   said   that Anu came and   Ravi left
      'She said that Anu came and Ravi left.'

b. vo [kisKO dekhne ke baad] ghar gayii
she who seeing after home went
'Who did she go home after seeing?'

It is possible to extract the object *wh*-phrase in (8b) by first adjoining it to the adverbial phrase and then debarrierizing it. This prevents antecedent government of the intermediate trace; but since the original trace is lexically governed, the status of the intermediate trace does not yield an ECP violation, assuming the procedure for checking ECP violations proposed in Lasnik and Saito (1984).

Next consider an adverbial phrase out of which an adjunct *wh* is extracted:

(9) a. vo [haath SE bartan saaf karne ke baad]
she hand by dishes cleaning after
thak jaatii hai
gets tired
'She gets tired after cleaning dishes by hand.'
b. *vo [kaise bartan saaf karne ke baad]
she how dishes cleaning after
thak jaatii hai
gets tired
('How$_i$ does she get tired after cleaning dishes t$_i$?')

It is not possible to extract the adjunct *wh*-phrase in (9b).[8] In the process of debarrierizing the adverbial phrase, the intermediate trace is not antecedent-governed from matrix Spec. Since the original trace is not governed, this yields an ECP violation.

Thus, we see that ordinary adjuncts in Hindi behave exactly like adjuncts in Chinese in allowing extraction of arguments but not adjuncts. The case of postverbal complements is special. They disallow all extraction because the only way in which a Subjacency violation can be avoided results in a configuration that prevents the transfer of a θ-role from the pleonastic to the actual complement.

We see, then, that the scope properties of Hindi *wh*-in-situ call for a modification of the current view of the principles governing movement. Specifically, they force us to recognize the existence of Subjacency at LF. The analysis presented above accounts for the difference between Hindi finite complements, which disallow extraction, and Chinese finite complements, which freely allow extraction. It also accounts for the difference between postverbal complements in Hindi, which are absolute islands for extraction, and ordinary adjuncts in Hindi, which,

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[8] (9b) is grammatical if interpreted as 'What kind of dishes does she get tired after washing?'—that is, when the *wh*-expression is analyzed as a constituent of the object of the embedded verb. This reading is predicted but is not the one I am focusing on.

like their Chinese counterparts, allow extraction of lexically governed noun phrases.

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