

Matching Effects and the Syntax-Morphology Interface: Evidence from Hindi Correlatives*

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1. Introduction

The question I address in this paper is whether information about morphological illformedness is available for the purposes of economy computations in syntax. The kind of morphological illformedness I consider here is of a superficial kind – the wellformedness/illformedness in the relevant constructions depends upon the actual phonological forms of the relevant entities. The construction examined here is the free relative constructions and the entities involved are the case assigned from inside the free relative clause and the case assigned from outside (from the matrix clause). I provide evidence from Hindi correlatives to the effect that information about (surface) morphological illformedness is not available for the purposes of economy computations in syntax.

2. Matching effects and correlatives

2.1. Matching effects

The term *matching effect* was first introduced in Grimshaw (1977) and developed in further work by Bresnan & Grimshaw (1978) and Groos & Riemsdijk (1979). It refers to the phenomena that in certain languages, free relatives are acceptable only in configurations which are either case matching or categorial matching.

Case matching obtains if the case assigned to the relativized element in the free relative from inside the free relative clause is the same as the case assigned to the free relative clause from the outside. German displays case matching effects in free relatives (cf. 1).

- (1) a. Wer(nom) nicht stark ist, muss klug sein.
Who not strong is must clever be
'Who isn't strong must be clever.'

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- b. * Wen(acc)/Wer(nom) Gott schwach geschaffen hat, muss klug
 Whom/who God weak created has must clever
 sein.
 be
 ‘Who God has created weak must be clever.’
- c. * Wem(dat)/Wer(nom) Gott keine Kraft geschenkt hat, muss
 Whom/who God no strength given has must
 klug sein.
 clever be
 ‘Who God has given no strength to must be clever.’

Categorial matching obtains if the category of the relativized element in the free relative is the same as the category of the node occupied by the entire free relative. Categorial matching can be seen in Dutch & English (cf. Groos & Riemdijk 1980, Bresnan & Grimshaw 1978 respectively).

- (2) a. Ken jij de jongen met wie zij flirt?
 Know you the boy with who she flirts
 ‘Do you know the boy with who she is flirting?’ (*know* subcategorises for NP)
- b. * Ken jij met wie zij flirt?
 Know you with who she flirts
 ‘Do you know with who she is flirting?’ (FR is a PP, clash takes place)
- c. Ken jij wie zij net kuste?
 Know you who she just kissed
 ‘Do you know who she just kissed?’ (FR is an NP, no clash)
- (3) a. I’ll buy [_{NP} [_{NP} whatever] you want to sell].
 b. John will be [_{AP} [_{AP} however tall] his father was].
 c. I’ll word my letter [_{AdvP} [_{AdvP} however] you word yours].
 d. I’ll put my book [_{AdvP} [_{AdvP} wherever] you put yours]].

Headed relatives do not display matching effects – the case marking on the head of the main NP and the relative clause can have different case markings/categories. (cf. 4a, b for German and English respectively)

- (4) a. Der Mensch(nom), den(acc) Gott schwach geschaffen haat, muss
 The person whom God weak created has must
 klug sein
 clever be
 ‘The person whom God has created weak must be clever.’
- b. I saw [_{NP} [_{NP} the girl] [_{CP} [_{PP} to whom]_i [_{IP} John gave a book _{t_i}]]]

There are also languages such as Classical Greek and Archaic German which do not display any kinds of matching effects.¹

2.2. Correlatives in Hindi

Correlatives are a distinctive feature of the Indo-Aryan languages and in particular Hindi. Hindi correlatives have the structure shown in (5), which was proposed by Srivastav (1991).

- (5) [_{IP} [_{CP} jo laRka Sita ko pyaar karta hai]_i [_{IP} vo_i ameer
REL boy Sita ACC love do.HAB be.PRS DEM rich
hai]]
be.PRS
'The boy who loves Sita is rich.'

Srivastav (1991) shows that correlatives are different from the two other kinds of relativization strategies available in Hindi (shown in (6)).

- (6) a. [_{NP} vo laRka [_{CP} jo Sita ko pyaar karta hai]] ameer
DEM boy REL Sita ACC love do.HAB be.PRS rich
hai
be.PRS
'The boy who loves Sita is rich.' (Embedded relative clause)
- b. [_{IP} [_{IP} [_{NP} vo laRka t_j] ameer hai] [_{CP} jo Sita ko
DEM boy rich be.PRS REL Sita ACC
pyaar karta hai]_j]
love do.HAB be.PRS
'The boy is rich who loves Sita.' (Right adjoined relative clause)

The constructions in (6) are different both syntactically and semantically from the correlative in (5). Semantically the relative clause in (6) behaves like a quantificational expression binding a position inside IP while the relative clause in (6) behaves like a noun modifier. Srivastav (1991) showed that the semantics of correlatives was very similar to that of free relatives (cf. Jacobson 1991) and if we assume that free relatives undergo QR at LF, then a correlative looks like the LF of a free relative with an overtly realized trace (the demonstrative).

Correlatives have two sites for the two cases involved – the relative phrase bears the case internal to the correlative clause and the demonstrative phrase bears

¹Interestingly, these languages that do not display matching effects display a phenomena known as case-attraction. Case-attraction involves change in the case marked on the relative phrase if the external case is higher than the internal case on a certain markedness hierarchy. It can take place both in headed relatives and free relatives. In some cases *inverse* case-attraction can also take place and the case on the head of a headed relative can be replaced by the internal case. It is possible, and indeed likely, that case-matching and case-attraction are subcases of a more general process. I leave this topic for further research.

the case assigned in the matrix clause. Consequently, there are no matching effects as can be seen in (7).²

- (7) a. [*IP* [*CP* jis laRke=ko Sita pyaar karti hai] voh
REL.obl.sg boy=ACC Sita love do.HAB.F be.PRS DEM
bahut ameer hai]
very rich be.PRS
'The boy who Sita loves is very rich.' (external case = NOM, internal case = ACC)
- b. [*IP* [*CP* jis laRki=se Ram=ne shaadi kari]
REL.obl.sg girl=INSTR Ram=ERG marriage did.PERF.f
us ke pita-ji bahut ameer hai]
DEM GEN father very rich be.PRS
'The girl who Ram married 's father is very rich.' (external case = GEN, internal case = INSTR)

3. Matching effects in correlatives

Matching effects, however, surface if we try to elide the Demonstrative element in the matrix clause. Consider the examples in (8). These are all cases where it is possible to elide the proform.

- (8) a. [jo laRkii khaRii hai] [(vo) lambii hai]
REL girl standing is DEM tall is]
'The girl who is standing is tall.' (REL = ϕ .SUB, DEM = ϕ .SUB) (ex. from Srivastav-Dayal (1991))
- b. [jo phal khattaa thaa] [Ramesh=ne (vo) khaa li-yaa]
REL fruit sour be.Pst Ramesh=ERG DEM eat take-Pfv
'Ramesh ate the fruit that was sour.' (REL = ϕ .SUB, DEM = ϕ .OBJ)
- c. [Ram=ne jo phal khaa-yaa] [(vo) khattaa thaa]
Ram=ERG REL fruit eat-Pfv DEM sour be.PST
'The fruit that Ram ate was sour.' (REL = ϕ .OBJ, DEM = ϕ .SUB)
- d. [Sita=ne jo pakaaya] [Ram=ne (voh) khaa liya]
Sita=ERG REL cooked Ram=ERG (DEM) eat take
'Ramesh ate what Sita cooked.' (REL = ϕ .OBJ, DEM = ϕ .OBJ)

(9) shows some cases where it is not possible to elide the proform.

²In Hindi, Nominative case is always realized covertly. Accusative case can be realized covertly or by the case clitic *ko*. Other cases such as Ergative, Dative, Instrumental and others are realized by case clitics.

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- (9) a. [jo laRkii khaRii hai] [*(us=ko) medal mil-ega]
 REL girl standing is DEM=DAT medal get-fut]
 ‘The girl who is standing will get a medal.’ (REL = ϕ .SUB, DEM = DAT.SUB)
- b. [jis laRkii=ko Srini pasand hai] [*(vo) khaRii hai]
 REL.obl.sg girl=DAT Srini like be.PRS DEM standing be.PRS
 ‘The girl who likes Srini is standing.’ (REL = DAT.SUB, DEM = ϕ .SUB)

The examples in (8b,c) and (9a,b) show that grammatical function matching is not relevant to whether or not the demonstrative phrase can be elided. The cases where the demonstrative phrase can be elided (cf. 8a-d) are environments of ostensible case matching: both the relative phrase and the demonstrative phrase have non-overt case.

3.1. Is case-matching enough/all?

At this point two questions arise – is it the case that in all cases where there is case-matching, it is possible to elide the demonstrative phrase and is it also the case that in all cases where it is possible to elide the demonstrative phrase, there is case-matching. I consider the first question first.

In (10a, b), the relative phrase and the demonstrative phrase have the same case, Dative and Ergative respectively. However, despite case-matching, it is not possible to elide the demonstrative phrase in either of (10a, b). So case-matching is not all there is to the elision of the demonstrative phrase.

- (10) a. [jin logon=ko gliding ka shauq hota hai]
 REL.pl.obl people=DAT gliding GEN interest be.HAB is
 [*(un=ko) medal milte hai]
 DEM.pl.obl=DAT medal get.HAB is
 ‘Those people who are interested in gliding get medals.’ (REL = DAT.SUB, DEM = DAT.SUBJ)
- b. [jis laRke=ne sports medal jiitaa] [*(us=ne) academic
 REL.obl boy=ERG sports medal win DEM.obl=ERG academic
 medal jiitaa]
 medal win
 ‘The boy who won the sports medal won the academic medal.’ (REL = ERG.SUB, DEM = ERG.SUBJ)

I now turn to the second question – is case-matching necessary to drop the proform? In Hindi, accusative case can either be realized covertly or by the case clitic *ko*.³ If it is abstract case that is being matched, we would expect the

³The case clitic *ko* is also used to mark the Dative. Its use as opposed to covert accusative signals specificity, animacy etc. cf. Mahajan (1990), Singh (1994).

issue of overt realization of accusative case to be irrelevant to matching. However, the examples in (11) do not bear out these expectations.

- (11) a. [jo sabzi Gaurav=ne pakaa-yii] (vo) swaadisht thi
REL vegetable Gaurav=ERG cook-Pfv DEM delicious be.PST
'The vegetable Gaurav cooked was delicious.' (REL = ϕ .ACC, DEM = ϕ .NOM)
- b. [jo sabzi kachhii thi] Gaurav=ne (vo) khaa
REL vegetable.F unripe be.PST.F Gaurav=ERG DEM eat
lii
take-Pfv
'Gaurav ate the vegetable which was unripe.' (REL = ϕ .NOM, DEM = ϕ .ACC)
- c. [jis sabzi=ko Gaurav=ne pakaa-yaa] ???/*(vo)
REL.obl.sg vegetable=ACC Gaurav=ERG cook-Pfv DEM
swaadisht thi
delicious be.PST
'The vegetable Gaurav cooked was delicious.' (REL = *ko*.ACC, DEM = ϕ .NOM)
- d. [jo sabzi kachhii thi] Gaurav=ne *(us=ko)
REL vegetable.F unripe be.PST.F Gaurav=ERG DEM.obl=ACC
khaa-yaa
eat-Pfv
'Gaurav only ate the vegetables that were unripe/uncooked.' (REL = ϕ .NOM, DEM = *ko*.ACC)

There is a failure of case-matching in (11a) and (11b). Yet elision of the demonstrative phrase in (11a) and (11b) is possible. Exactly the same case-mismatch occurs in (11c) and (11d). However, elision of proform in (11c) and (11d) is not possible. The only way in which the examples in (11a,b) differ from the examples in (11c,d) is in the overt realization of accusative case by the case clitic *ko* in (11c,d). Contrary to our expectations, it causes a change in elision possibilities. All of this suggests that whatever is being matched looks at the form/surface realization and not at the function/abstract case.

Further support for the surface nature of matching comes from cross-linguistic evidence. In German, the relative pronoun *was* represents both the nominative and the accusative neuter. (cf. (12), data and observation from Groos & Riemsdijk 1979)

- (12) a. [Was du mir gegeben hast], ist prächtig.
what you me given have is wonderful
'What you have given me is wonderful.' (inside=acc, outside=nom)

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- b. Ich habe gegessen [was noch übrig war].
I have eaten what still left was
'I ate what was left.' (inside=nom, outside=acc)

There is no matching in (12a, b) and yet these sentences are completely acceptable. This phenomenon is not restricted to German and Hindi. In general, languages with matching effects seem to permit non-matching in cases of case syncretism like the above (cf. Suñer 1984 for English and Izvorski 1995 for Bulgarian).

Elision of the demonstrative phrase is thus possible only if the case assigned from inside the correlative clause and the case assigned from the matrix clause are both non-overt, i.e. not realized by a case clitic.

4. Why matching effects (in correlatives)?

At this point the question arises that if the structure of the sentences with the elided demonstrative phrase is like the structure in (5), i.e. the same as a correlative except the demonstrative phrase is replaced by a covert element (presumably *pro*), why do matching effects come into play at all? The absence of matching effects from correlatives with an overt demonstrative phrase has been noted (cf. (7)). Hindi is a *pro*-drop language (cf. (13)).

- (13) Rita=ne Ramesh=ko kal dekh-aa thaa. *pro*
Rita=ERG Ramesh=ACC yesterday see-Pfv be.PST
us=se baat bhii kar-ii thii
DEM.obl=INSTR talk also di-Pfv be.PST
'Rita had seen Ramesh yesterday. She had also talked to him.'

If the null subject of the second sentence in (13) were to be overtly realized, it would be *us ne* 'Dem ERG'. Now since arguments with Ergative case can be *pro*-dropped, it is puzzling why it is ungrammatical to elide (*pro*-drop) the demonstrative proform in (14a) but not in (14b).⁴

- (14) a. [jis laRke=ne sports medal jiiit-aa] [us=ne/**pro* academic
REL.obl boy=ERG sports medal win.Pfv DEM.obl=ERG academic
medal jiiit-aa]
medal win.Pfv
'The boy who won the sports medal won the academic medal.' (REL
= ERG.SUBJ , DEM = ERG.SUBJ)

⁴Hindi is a split-ergative language, i.e. the case on the subject can be ergative or nominative depending on the aspect and argument structure. Ergative case is associated with perfective aspect as in (14a).

- b. [jo laRka sports medal jiiit-taa hai] [vo/pro academic medal
REL boy sports medal win-hab be.PRS DEM academic medal
jiiit-taa hai]
win-hab be.PRS
'The boy who wins the sports medal wins the academic medal.' (REL
= NOM.SUB , DEM = NOM.SUBJ)

The minimal pair in (14) suggests that the *pro*-drop analysis of correlatives without an overt demonstrative phrase cannot be correct.

4.1. Proposal

I propose that instead of having the left dislocation structure shown in (5), repeated here as (15b), sentences like (15a) without the demonstrative have the structure in (15c).

- (15) a. [CP jo laRka Sita=ko pyaar karta hai] ameer hai
REL boy Sita=ACC love do.HAB be.PRS rich be.PRS
'The boy who loves Sita is rich.'
- b. [IP [CP Correlative Clause]_i [IP Dem-XP_i ... Verb]] (structure from Srivastav (1991))
- c. [IP [CP Correlative Clause] ... Verb]

The structure proposed by me, (15c), is the structure that one would construct for the English sentence 'Whoever loves Sita is rich'. The correlative/free relative clause is base-generated in the subject position. Correlatives with an elided demonstrative phrase are under this structure free relatives base-generated in argument position. Treating correlatives without demonstrative phrases as free relatives makes the presence of matching effects non-mysterious. The explanations used to explain the presence of matching effects in English, Dutch, German and other languages can be used without change to explain matching effects in Hindi correlatives without demonstrative phrases.

4.2. Evidence for base-generation in argument position

The fact that the correlative clause is shown sentence-initially in all the examples till this point should not be taken as evidence that it is not base-generated in argument position. Hindi has scrambling and arguments can be freely re-ordered. Thus corresponding to (16a) in which the relative clause is fronted, we have (16b) where it is not.

- (16) a. [jo laRkii roTii banaati hai][Ram=ko (vo) pasand aa
REL girl roti make.HAB is Ram=DAT DEM like come
gayi]
go.PERF
Ram liked the girl who made roti.

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- b. [Ram=ko [_{CP} jis laRkii=ne roTii banaaii] pasand aa
 Ram=DAT REL.obl girl=ERG roti make.Pfv like come
 gayi]
 go.Pfv
 Ram liked the girl who made roti.

However, the availability of scrambling also means that the existence of (16b) cannot be taken as evidence for base-generation of the relative clause.

4.2.1. Evidence from Weak Crossover

Following Srivastav (1991), I assume that the correlative clause in a correlative is a quantificational expression that binds variables in its scope. In (5), the structure for correlatives with an overt proform, the correlative clause is in an *A'* position, adjoined to the IP, which binds a demonstrative phrase. There is no movement and consequently no WCO violation (cf. 17).

- (17) [[_{CP} jo laRkaa_i biimaar thaa] [_{IP} Ram=ne vo_i us_i kii
 REL boy sick was Ram=ERG DEM DEM.obl GEN
 maa=ko de diya]]
 mother=DAT gave gave.PERF
 ‘Ram gave the boy who was sick to his mother.’

If (15b) is the structure for correlatives without demonstrative phrases, we would not expect any WCO violations on an analogy with (17). On the other hand, if the correlative clause is base-generated in an argument position, we would expect it to display WCO effects in its base generated position like other any other quantificational expression cf. (18a). Also we know from the literature on scrambling that short-distance scrambling of a quantificational expression can amnesty WCO violations. cf. the contrast in (18) (Mahajan 1990, Deprez 1993).

- (18) a. * us_i kii maa kis_i ko pyaar kar-tii hai?
 DEM.obl GEN.F mother who DAT/ACC love do-HAB.F be.PRS
 ‘*Who_i does his_i mother love?’
 b. [kis=ko]_i us_i kii maa t_i pyaar kar-tii hai?
 who=ACC DEM.obl GEN.F mother love do-HAB.F be.PRS
 ‘Which person is such that his mother loves him?’

We find WCO effects in (19a), which are amnestied by short distance scrambling cf. (19b).

- (19) a. * Ram=ne us_i kii maa=ko [jo laRkaa_i biimaar tha]
 Ram=ERG DEM GEN mother=DAT REL boy sick was
 de diya
 gave gave.PERF
 ‘Ram gave the boy who was sick to his mother.’

- b. [jo laRkaa_i biimaar tha]_j Ram=ne us_i kii maa=ko t_j
 REL boy sick was Ram=ERG DEM GEN mother=DAT
 de diya
 gave gave.PERF
 ‘Ram gave the boy who was sick to his mother.’

We have to assume that the correlative clause is in its base-generated argument position in (19a) for the following reasons. Firstly, if the correlative clause was base-generated in adjunct position, we should not get any WCO effects cf. (17). Secondly, the scrambling in (19b) amnesties the WCO violation in (19a) so it must be a short-distance scrambling between two L-related positions. The adjoined position is by definition not an L-related position. Therefore, the correlative clause in (19a) has to be in its base-generated argument position.⁵

5. On the morphological nature of matching

Another piece of evidence for the morphological nature of matching comes from the fact that in Hindi, the only configuration in which matching is permitted is (internal-case = non-overt, external-case = non-overt). I connect this additional constraints to certain morphological properties of case clitics in Hindi.

⁵Having shown that the correlative clause is indeed base-generated and thus it is like a free relative clause in the relevant respects, I will now briefly address the question of why there are matching effects in free relatives.

Adopting the structure in (15c) assimilates matching correlatives with free relatives in argument position. Structures for free relatives include the Head Analysis advocated by Bresnan and Grimshaw (1977, 1978) which proposes the structure in (i).

- (i) I’ll eat [_{NP} [_{NP} whatever] [_S you cook e]]

The claim is that the *wh*-word is base-generated as the head of its phrase. Pronoun deletion in the remaining of the free relative leaves a gap whose category is the same as that of the *wh*-word.

The Comp Analysis has been advocated by Groos and van Riemsdijk (1979), Harbert (1983), Suñer (1983, 1984) among others. The exact details vary; here I present the version proposed in Groos and van Riemsdijk (1979) who propose the structure in (ii).

- (ii) I’ll eat [_{NP} [_{NP} e] [_{CP} whatever_i [_S you cook t_i]]]

The *wh*-word is placed in [Spec, CP] (or Comp) by *wh*-movement just as in headed relative clauses.

The Head hypothesis holds that matching is to be expected since it is the features of the head (the *wh*-word) that determine the features on the projection. However, the formal link between the deleted pronoun/trace and the head is obscure.

The Comp Hypothesis has to stipulate that in those cases when the head is empty, the Comp/[Spec, CP] becomes visible to the subcategorizing head.

5.1. Properties of case clitics in Hindi

Hindi has case clitics such as *ne* (ERG), *ko* (DAT), *se* (INSTR), *mē* (LOC). These case clitics have two seemingly opposing properties. On the one hand, they are phrasal cf. (20).

- (20) [Ram aur Srini]=ne phal khaa-yaa
 Ram and Srini=ERG fruit ate-Pfv
 ‘Ram and Srini ate fruit.’

Here *ne* (ERG) modifies the entire phrase. The option where both *Ram* and *Srini* are *ne* marked is also possible (cf. 21).⁶ The point that matters is that the case clitic can take scope over the entire phrase.

- (21) [Ram=ne aur Srini=ne] phal khaa-yaa
 Ram=ERG and Srini=ERG fruit ate-Pfv
 ‘Ram and Srini ate fruit.’

On the other hand, they obey an immediate right adjacency constraint – they have to be immediately to the right of the head of the maximal projection which they modify.^{7,8} This constraint can be seen in operation in (22), which involves a relative clause, the only postnominal modifier in Hindi.

- (22) * [vah laRka [jo khaRaa hai]] ne phal khaa-yaa
 DEM boy REL standing be.PRS ERG fruit eat-Pfv
 ‘The boy who is standing ate the fruit.’

The case clitic *ne* needs to be next to the head of the DP/NP *laRka* ‘boy’ by the immediate right adjacency constraint. However, it is phrasal, so it also has to take scope over the relative clause. If it appears next to the head of the DP/NP, the relative clause is interpreted as an appositive.

Consider a structure like (23) in which the matching requirement is met.

- (23) [[_{FR} REL-CASE₁ ...]-CASE₁]

There are two options now. The first option is that CASE₁ is overt. Since case clitics are phrasal, the entire FR has to be modified. However, the immediate right adjacency constraint is violated and the structure is out.

The second option is that CASE₁ is non overt. The constraints on case clitics are satisfied vacuously. Thus I show why the only case in which it is possible to drop the demonstrative phrases involve non-overt case.

⁶This example sounds a bit odd but it is grammatical. Making the NPs longer makes this example sound more natural.

⁷In the case of a coordinated NP/DP as in (20), the case clitic has to be in the immediate right adjacency of the head of the rightmost NP/DP in the co-ordinated phrase.

⁸There is one exception - the focus particle *hi* can come between the case clitic and the head.

The only way to have a structure like in (23) with overt case clitics is to have an overt demonstrative, so that this morphological property of the case clitic can be satisfied. The resulting structure is a correlative.

5.1.1. Some evidence from Hindi relative clauses

Some circumstantial evidence which lends support to the above analysis comes from the discourse usage of the three different kinds of relative clauses in Hindi: correlatives, embedded relatives and right adjoined relatives (cf. 6, 7). Despite the fact that embedded relative clauses are grammatical, the distribution of embedded relatives is extremely limited in discourse (cf. Bhatt 1995). Speakers only use correlatives or right adjoined relative clauses. These are both strategies that avoid the morphological problem of right adjacency – correlatives are base generated outside the IP while the right adjoined relative clauses are extraposed. At the level where the immediate right adjacency constraint applies, there is no phonological material between the case clitic and the head of the maximal projection.

6. A puzzle (and a solution)

6.1. Multi-*wh* correlatives)

The analysis so far is able to account for simple correlatives, i.e. correlatives with a single relative phrase. However, correlatives may have more than one relative phrase, and these relatives, which I call multi-*wh* correlatives, add an interesting complication. cf. (24a), represented schematically in (24b).

- (24) a. [jis_i ne jo_j chahaa] (us_i ne vo_j) ki yaa.
REL.obl ERG REL want-Pfv DEM.obl ERG DEM do-Pfv
'People did what they wanted. Lit. Whoever whatever wanted, they did that'
- b. Q [x_i ... x_j ...] [x_i ... x_j ...]

The morphological effects of overt case clitics accounted for in the previous section do not seem to apply in (24).⁹ Despite the presence of an overt case clitic *ne* 'ERG' on the first relative phrase and demonstrative phrase, dropping of the demonstrative phrases is acceptable.

However, (24) turns out to be only an apparent counterexample. Note that multiple-*wh* correlatives cannot be base-generated - one correlative clause cannot occupy two argument positions simultaneously. Since multi-*wh* correlatives are never in the base-generated configuration in which matching applies, the absence

⁹Thanks to Veneeta Dayal for bringing such cases to my attention and supplying this example.

of matching effects turns out not to be surprising – in fact it is to be expected.

6.2. The puzzle

While multi-*wh* correlatives do not pose a problem for the analysis so far, they raise an interesting question. If (24) is acceptable without overt demonstratives, why is (25) unacceptable without an overt demonstrative?

- (25) a. [jis laRkii_i ne phal khaa-yaa] [us_i-ne/*pro_i Srini ko
REL.obl girl ERG fruit eat-Pfv DEM.obl-ERG Srini ACC
maar-aa]
hit-Pfv
'The girl who ate the fruit hit Srini.'
- b. Q[... x_i ...].[... x_i ...]

In the analysis so far, we have just stipulated that a structure like (25) does not exist. But this is just description – why should this structure be possible for multi-*wh* correlatives but not for simple correlatives? One direction to explore is that of derivational economy. Multi-*wh* correlatives (without overt demonstrative phrases) can never be base-generated in an argument position – a single correlative clause cannot occupy two slots. However, simple correlatives can be and in fact for this analysis to work must be. For if the structure in (25) with a *pro* instead of an overt demonstrative phrase was systematically available, since Hindi is a *pro*-drop language, we would never see any matching effects at all. Also in order to pursue the derivational economy line, we have to first eliminate the structure in (25). Since the structure in (25) would be generated from a different numeration from the structure where the correlative clause was base-generated (because the numeration for (25) would contain *pro*.), we would not be able to rule it out under any kind of derivational economy analysis since derivational economy only applies to structures that are derived from the same numeration. In order to rule out the structure in (25), I discuss the nature of *pro*-drop in Hindi.

6.3. The nature of *pro*-drop in Hindi

It is not clear if Hindi *pro*-drop is *pro*-drop of the kind seen in Romance and Slavic.¹⁰ It seems to be simultaneously more liberal and restrictive. On the one hand, not just subjects but objects can also be dropped. On the other hand, *pro* in Hindi cannot co-vary with a quantificational antecedent or even take an antecedent (cf. 26a). In general, its distribution in embedded clauses is very limited.

- (26) a. har laRkaa_i sochtaa hai ki vo_i/*pro_i first aayega
every boy think-HAB.m be.PRS that DEM first come-will.m
'Every boy thinks that he will come first.'

¹⁰Thanks to Roumyana Izvorski for suggesting this to me.

- b. har laRke_i kii mā sochtii hai ki vo_i/*pro_i first
 every boy GEN mother think-HAB.f be.PRS that DEM first
 aayega
 come-will.m
 ‘Every boy’s mother thinks that he will come first.’
- c. Srini_i sochtaa hai ki vo_i/*pro_i first aayega
 Srini think-HAB.m be.PRS that first come-will.m
 ‘Srini thinks that he will come first.’

6.4. A derivational economy solution

The null arguments in (24) (and in (25) if it was grammatical) co-vary with quantificational antecedents. The above discussion of *pro* shows that *pro* as opposed to overt pronominals cannot co-vary. Therefore the null argument in (25) cannot be *pro*. Since the null argument is *A'* bound and is not a pronominal, PRO or an NP-trace, it is presumably a variable (cf. 27).

- (27) * [[jis laRkii_i ne phal khaa-yaa]_i [t_i Srini ko maar-aa]]
 REL.obl girl ERG fruit eat-Pfv Srini ACC hit-Pfv
 ‘The girl who ate the fruit hit Srini.’

If it is a variable, then the *in-situ* version is more economical. Hence (27) is ruled out under economy considerations by Procrastinate. The *in-situ* version of (25) shown in (28) fails matching and crashes.¹¹

- (28) * [[jis laRkii_i ne phal khaa-yaa] Srini ko maar-aa]
 REL.obl girl ERG fruit eat-Pfv Srini ACC hit-Pfv
 ‘The girl who ate the fruit hit Srini.’

The ungrammaticality of (28) gives important evidence about the syntax-morphology interface. Note that (28) is ruled out due to failure of morphological matching. Only converging derivations from a numeration can be compared for economy considerations. If information about the failure of matching in (28) was available in syntax, the derivation shown in (27) would be licensed. Assuming that matching effects apply only to correlatives in argument position (cf. the grammaticality of multi-*wh* correlatives without overt demonstrative phrases), (27) should be grammatical. In general, the availability of (27) as an option would result in the absence of any visible matching effects. Since (27) is ungrammatical and in fact Hindi does have matching effects, I conclude that information about the failure of matching is not available to syntactic computation. This supports the claim argued for at different points in this paper that matching effects are morphological. Further, these facts argue in general for a separation of syntax and morphology.

¹¹This use of Procrastinate does not rule out long-distance scrambling which is of the topicalization kind. I assume that it is driven by some kind of topicalization feature which is strong. Short-distance A-bar movement is of the QR kind and involves a weak feature. Consequently by Procrastinate, overt short-distance A-bar movement is ruled out.

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These facts are to be expected under a Late Insertion account (Halle & Marantz 1994, Marantz 1995). Under this account, the phonological features are not inserted into the derivation until Spellout. Consequently there is no way that they could be available to syntax. Since the raw material for matching effects – the actual surface forms – are under this approach just not available in syntax, the fact that syntax cannot use this information to feed economy computations follows. It could not be otherwise.

The multi-*wh* correlative in (24) has no in-situ version. These considerations do not apply. Correlatives with overt demonstrative phrases have a different numeration and have a different comparison class for economy purposes. Hence their grammaticality is not affected.

7. Conclusions

- Hindi has free relatives.
- The Matching Parameter is not a part of syntax. It looks at form and not at function. Information about matching violations is not available to syntax.

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