Selective opacity

Stefan Keine
University of Southern California

This paper develops a general theory of *selective opacity effects,* configurations in which one and the same constituent is opaque for some operations but transparent for others. Classical observations of selective opacity lie in the realm of movement. Finite clauses, for instance, are opaque for A-movement but transparent for $\overline{\text{A}}$-extraction, a pattern that has been shown to generalize beyond the A/$\overline{\text{A}}$-distinction. Based on novel evidence from movement–agreement interactions in Hindi-Urdu, this paper argues that selective opacity also encompasses ϕ-agreement and I propose that the underlying constraint does not apply to movement itself, but to the operation Agree. I develop the novel concept of *horizons,* which delimit search spaces in probe-specific ways by terminating search. They thereby prevent particular probes from searching into them, inducing selective opacity. The horizons account derives an otherwise surprising property of selective opacity effects noted in the previous literature: The higher the structural position of a probe in the clausal spine, the more structures are transparent to it. The analysis proposed here unifies, in a systematic and novel way, improper movement and related selective opacity restrictions, mismatches between the locality of movement and agreement, and intricate interactions between movement types and agreement.

1 Introduction

Movement types differ in what structures are transparent or opaque for them. One and the same structure may allow one movement type to proceed out of it but at the same type block other types of extraction. I will refer to this descriptive phenomenon as *selective opacity:*[1]

(1) *Selective opacity*
A syntactic domain Δ is selectively opaque for α-extraction if Δ prohibits α-extraction but allows β-extraction out of it, where α and β are different types of extraction.

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[1] The concept of selective opacity is related to the notion of a weak island (see, e.g., Szabolcsi 2006 for an overview of the latter). The term 'weak island' is usually applied to environments that allow argument extraction but not adjunct extraction (e.g. Lasnik & Saito 1992) or DP gaps but not PP gaps (e.g. Cinque 1990). In other words, the barrierhood is modulated by the type of the moving element. I reserve the term 'selective opacity' to refer to instances where it is the type of the movement itself that affects barrierhood.

The most well-studied contrast of this sort is between A- and $\overline{\text{A}}$-extraction out of finite clauses. While $\overline{\text{A}}$-extraction is possible, as in (2a), A-extraction out of a finite clause (*hyperraising*) is not, as shown in (2b). Finite clauses are thus selectively opaque for A-extraction but not for $\overline{\text{A}}$-extraction.

(2) a. Who$_1$ do you think [$_{CP}$ t_1 eats oatmeal for breakfast]

   b. *John$_1$/Who$_1$ seems [$_{CP}$ t_1 eats oatmeal for breakfast]

The standard account of this contrast (Chomsky 1973, 1977, 1981) involves a conspiracy of two constraints: First, extraction out of a CP has to proceed through the specifier of that CP, an $\overline{\text{A}}$-position. Second, movement from an $\overline{\text{A}}$- to an A-position is impossible (*improper movement*).

   There is good reason to believe that selective opacity is not limited to differences between A- and $\overline{\text{A}}$-movement (see, e.g., Sternefeld 1992, Müller & Sternefeld 1993, Williams 2003, 2013, Abels 2007, 2009, Müller 2014a). In English, infinitival clauses are selectively opaque for extraposition (3) but not for regular A- or $\overline{\text{A}}$-movement (Ross 1967), illustrated by (3) from Baltin (1978:144), where extraposition of *that Fred is crazy* over an infinitival clause boundary is ill-formed.

(3) *[John$_1$ is believed [$_{TP}$ t_1 to be certain t_2] by everybody [that Fred is crazy]$_2$].

Other examples of selective opacity are easy to come by (see, e.g., Abels 2012b:61). German provides a number of illustrative cases. First, embedded V2 clauses are opaque for *wh*-movement that lands in a verb-final clause, but not for *wh*-movement into a V2 clause (Haider 1984:82, Reis 1985:296, Sternefeld 1989, Staudacher 1990, Müller & Sternefeld 1993:497):

(4) *Selective opacity of German V2 clauses*

   a. [$_{CP_{V2}}$ Wen$_1$ meint er [$_{CP_{V2}}$ t_1 hat sie t_1 getroffen]]?
          who   thinks he   has she   met
       'Who does he think that she met?'

   b. *(Ich weiß nicht) [$_{CP_{V-final}}$ wen$_1$ er meint [$_{CP_{V2}}$ t_1 hat sie t_1 getroffen]]
          I   know not   who   he thinks   has she   met
       '(I don't know) who he thinks that she met.'

Second, V-final finite clauses are selectively opaque for scrambling (Bierwisch 1963, also see Ross 1967) and, for many speakers, relativization (Lühr 1988:77, Bayer & Salzmann 2013:310–311, Müller 2014b:130–131), but not for *wh*-movement or topicalization. The contrast between *wh*-movement and relativization is illustrated in (5).

(5) *Selective opacity of German V-final clauses*

   a. Wen$_1$ glaubt Fritz [$_{CP}$ dass Maria t_1 getroffen hat]?
       who   believes Fritz   that Maria   met   has

   b. ?*der Mann [den$_1$ Fritz glaubt [$_{CP}$ dass Maria t_1 getroffen hat]]
       the man   who   Fritz believes   that Maria   met   has

Third, embedded clauses in which *wh*-movement has taken place are opaque for *wh*-extraction but not for subsequent topicalization (Sternefeld 1992:6, Müller & Sternefeld 1993:494). Fourth, speakers of northern varieties of German commonly disallow *wh*-extraction out of a finite CP but accept topicalization across such CPs (Abels 2012b:61). Fifth, non-coherent infinitives in German are opaque for scrambling (Bech 1955/1957), but at the same time allow *wh*-movement and relativization out of them (e.g., Müller 1998:299,304, Bayer & Salzmann 2013:311, Müller 2014b:130–131).

Similarly, in Spanish and other Romance languages, finite clauses are transparent to topicalization, but opaque to clitic climbing. In Polish, nonfinite clauses with the complementizer *żeby* are transparent to topicalization, but opaque to scrambling (Wurmbrand 2015:229–230). In Italian, finite clauses allow focus movement, topicalization, and relativization out of them, but they block adverb preposing (Rizzi 2004:249n10, Abels 2012a:238).

This cursory survey strongly suggests that selective opacity is a pervasive phenomenon, attested in a wide variety of constructions and languages and this is the perspective that I will adopt in this paper. Interestingly, selective opacity poses a challenge to standard approaches to syntactic locality, which have historically tended to treat locality as a binary distinction: a given domain is either transparent or opaque, without sensitivity to the type of the extraction. This is true for the traditional notion of subjacency (Chomsky 1973, 1977, 1981), barriers (Chomsky 1986) or the more recent Phase Impenetrability Condition (Chomsky 2000, 2001 *et seq.*).[2] As a consequence, selective opacity effects have generally been handled by additional constraints on particular movement types. As already mentioned, the Ban on Improper Movement (Chomsky 1973, 1977, 1981, May 1979) restricts the application of A- but not $\overline{\text{A}}$-movement from an $\overline{\text{A}}$-position. In a similar vein, Ross' (1967) *Right Roof Constraint* ensures the clause-boundedness of extraposition but does not restrict leftward movement, and so on. From a current perspective, such constraints are dubious in light of the common assumption that all movement is established uniformly, i.e., via Internal Merge (Chomsky 2004), and that, as a consequence, there are no genuine movement types that syntactic constraints could refer to. This raises the question of how empirical differences between movement types can be accounted for in a theory that eschews analytical distinctions between movement types.

Against this background, this paper makes a number of interconnected claims. First, I will argue that selective opacity is not a restriction on movement per se, but rather on the operation Agree. The evidence for this claim comes from novel observations about long-distance agreement in Hindi-Urdu (henceforth Hindi) and its interaction with various movement types, which demonstrate that φ-agreement partakes in selective opacity, just like movement does. These interactions suggest a uniform principle that regulates both movement and φ-agreement. Assuming throughout that Agree is a component of both movement and φ-agreement (Chomsky 2000, 2001, 2004), rationalizing selective opacity as a constraint on Agree provides the desired unification. With this reassessment in place, I propose that selective opacity is a property of probes: Probes can differ in what domains they can search into. This view allows us to maintain the strong view that movement

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[2]   While relative notions of phasehood have recently been explored (see, e.g., den Dikken 2007 and Bošković 2014, and the references cited there), these approaches treat the phasal status of a node as a function of its syntactic context. Crucially, however, if a node constitutes a phase, it does so irrespective of individual movement types. For this reason, these approaches likewise do not lend themselves to an account of selective opacity.

is a uniform process (Internal Merge) because selective opacity is a manifestation of the Agree relation that movement is parasitic on. I will moreover suggest that selective opacity is a direct consequence of a defective version of the A-over-A Principle, a constraint that prevents search for an element to access an element of the same type. Specifically, I will motivate the concept of *horizons*, nodes that prevent certain probes from searching into them. Horizons, in this sense, demarcate the domain visible to a probe. Just like horizons in the real world, horizons in syntax may differ between probes and therefore give rise to locality mismatches. The horizon-based account developed here entails a substantial shift in perspective from traditional accounts of selective opacity in that it moves the focus of the explanation away from the moving element and towards the attracting probe. On the account developed here, selective opacity is no longer conceived of as a constraint on admissible sequences of movement steps. Rather, it arises from the interplay of probes and their horizons.

The second core part of this paper focuses on an intriguing generalization that the prior literature on selective opacity has unearthed. This literature has argued that selective opacity is not distributed at random across various movement types, but that there appears to be a connection between the locality properties of a movement type and the height of that movement type's landing site in the clausal spine (Sternefeld 1992, Williams 2003, 2013, Abels 2007, 2009, 2012a, Müller 2014a,b). Specifically, movement types that target higher landing sites tend to be able to extract out of more domains. To give an illustrative example from English, the fact that A-movement cannot escape finite clauses while $\overline{\text{A}}$-movement can is connected, on this generalization, to the fact that A-movement lands in Spec,TP, a position lower than that targeted by $\overline{\text{A}}$-movement (Spec,CP). I will argue that given independent properties of extended projections, a connection between landing site and locality naturally falls out from the horizon-based system developed here. As a result, the account makes predictions about possible and impossible selective opacity patterns.

I will proceed as follows: Section 2 will lay out the crucial evidence from long-distance agreement and movement in Hindi and their interactions. I conclude from these interactions that the constraint underlying selective opacity targets Agree, not movement proper. Section 3 then argues, based on evidence from Hindi and other languages, that the structural height of a probe in the clausal spine is systematically connected to the locality profile of this probe. In other words, it will motivate a restriction on possible selective opacity patterns. Section 4 lays out the horizons account of selective opacity and applies it to movement and agreement restrictions in Hindi and English. Section 5 then demonstrates how horizons provide an account of the connection between height and locality motivated in section 3. Section 6 concludes the paper and addresses further issues that emerge from the account presented here.

2   Movement and long-distance agreement (LDA) in Hindi

This section presents the empirical evidence motivating the account proposed in this paper. Of central importance is the observation that the A-/$\overline{\text{A}}$-movement distinction interacts with long-distance agreement (LDA) and that these interactions apply at the level of the clause, instead of individual syntactic items. I will start out by providing some background on the A-/$\overline{\text{A}}$-distinction and LDA.

2.1 *Some background on Hindi LDA*

A general property of verbal agreement in Hindi is that it targets the hierarchically highest non-overtly case-marked nominal in the domain of the verb (Pandharipande & Kachru 1977). As a consequence, nominals may not agree if they carry an overt case marker like the ergative marker *-ne* or the accusative/dative marker *-ko*. The underlying algorithm is stated in (6):[3]

(6) *Hindi ϕ-agreement algorithm*
   If the subject does not bear a case marker → agree with the subject
   Otherwise: If object does not bear a case marker → agree with the object
              Otherwise: Use masculine singular default agreement.

Verbal agreement is reflected on the main verb as well as auxiliaries, which always agree with the same element. The algorithm in (6) can be straightforwardly characterized in terms of obligatory operations (Preminger 2011, 2014): A ϕ-probe situated higher than the subject probes within its c-command domain and obligatorily agrees with the closest accessible (i.e., not case-marked) DP. If and only if no such DP exists, default agreement arises as a last resort. The agreement algorithm in (6) is independent of movement. That is, the preference for subject agreement is independent of the surface word order of the sentence, a point that will become important in section 3.

   While the agreement trigger is normally an argument of the respective verb, verbs may also agree with arguments of infinitival clauses in object position if the matrix clause does not contain an eligible (i.e., non-overtly case-marked) nominal. Such cross-clausal agreement is commonly referred to as 'long-distance agreement' (see Mahajan 1989, Davison 1991, Butt 1993, Boeckx 2004, Bhatt 2005, Franks 2006, Chandra 2007, Keine 2013). Unlike local agreement, cross-clausal agreement is generally optional. To illustrate, consider the examples in (7), based on Mahajan (1989:237).[4]
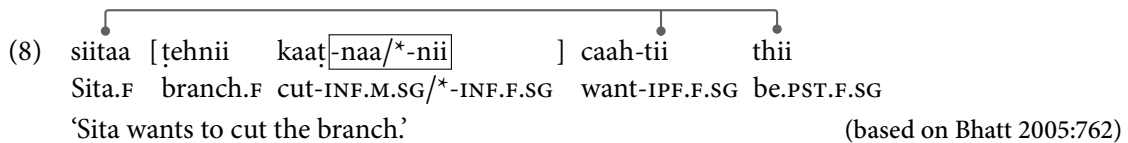
(7) a. laṛkõ-ne [roṭii khaa-*nii*] caah-*ii*   *long-distance agreement*
      boys-ERG bread.F eat-INF.F.SG want-PF.F.SG
      'The boys wanted to eat bread.'

   b. laṛkõ-ne [roṭii khaa-*naa*] caah-*aa*   *default agreement*
      boys-ERG bread.F eat-INF.M.SG want-PF.M.SG
      'The boys wanted to eat bread.'

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[3] I will remain agnostic here with respect to the question why overtly case-marked DPs are invisible to the agreement algorithm. One option is to assume that agreement is sensitive to case values (Bobaljik 2008, Preminger 2014). Another is to treat the Hindi case markers as postpositions (Spencer 2005) or K(ase) projections (Butt & King 2004), which, being phrasal, block agreement into their complement. Either choice is compatible with the remainder of this paper.

[4] Unless indicated otherwise, Hindi judgments are due to my consultants. Transcription have been unified. The following abbreviations are used: ACC – accusative, DAT – dative, ERG – ergative, F – feminine, FUT – future, GEN – genitive, INF – infinitive, IPF – imperfective, M – masculine, NPI – negative polarity item, PF – perfective, PL – plural, PRES – present, PST – past, SG – singular.

In both sentences in (7), the matrix subject *laṛkõ-ne* is overtly case-marked and hence not an eligible agreement controller. In (7a), the matrix verb *caah* 'want' agrees with the embedded object *roṭii* 'bread'. Matrix agreement is accompanied by agreement on the infinitival verb *khaa* 'eat'. The minimally different example in (7b) employs masculine singular default agreement on both the matrix and the embedded verb. There are subtle scope differences between the two variants, which are addressed in section 2.3.2. Bhatt (2005) argues that LDA is independent of case and that the difference between (7a) and (7b) is not correlated with case properties of *roṭii* 'bread', which receives case inside the embedded clause in both (7a) and (7b). I will adopt this view here.

A general propery of LDA in Hindi is that the embedded verb shares the agreement of the matrix predicate. Thus, in (7a) the infinitival verb likewise agrees with *roṭii* 'bread', while it exhibits default agreement in (7b). Mismatches between the two verbs are impossible in (7) (Mahajan 1989:234–235, Bhatt 2005:761, Chandra 2007:46).[5] Bhatt (2005) provides evidence that agreement on the infinitive is not established independently, but rather a side product of agreement with the matrix verb. The evidence comes from configurations in which the matrix subject does not bear ergative case. By the agreement algorithm in (6), the matrix verb and auxiliary then have to obligatorily agree with this subject and LDA is impossible. In this case, the embedded verb is not able to agree with either the embedded object or the matrix subject. The only possibility is for it to carry default agreement:

(8) siitaa [ṭehnii   kaaṭ -naa/*-nii   ] caah-tii   thii
     Sita.F   branch.F   cut-INF.M.SG/*-INF.F.SG   want-IPF.F.SG be.PST.F.SG
     'Sita wants to cut the branch.'   (based on Bhatt 2005:762)

Infinitival agreement is thus parasitic on LDA between the embedded object and the matrix verb. This indicates that the infinitival agreement is not established by an independent probe, as it crucially depends on the syntactic operations of a structurally higher probe. I will therefore follow Bhatt's (2005) conclusion that embedded agreement is a byproduct of agreement with a matrix probe.[6] As my primary concern in this paper is the syntactic aspects of LDA, I will lay aside here the proper treatment of embedded agreement in the interest of space. See Bhatt (2005) for one proposal compatible with the account presented here and also fn. 10.

As mentioned above, word order permutations do not impact agreement in Hindi, a generalization that encompasses both local and long-distance agreement. In (9), where the embedded object *roṭii* 'bread' is moved into the matrix clause, both LDA and default agreement remain possible.[7]

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5 There appears to be some dialectal variation in whether infinitival agreement is possible in the absence of LDA. Mahajan (1989:235) notes that some speakers accept it, and Bickel & Yadava (2000:356) and Butt (1993:77) report them as grammatical. The claims in this paper are based on variants that do not allow infinitival agreement in the absence of LDA.

6 Further support for this view comes from the verb *denaa* 'let', which allows LDA without infinitival agreement (see Butt 1995, 2014, Bhatt 2005, Davison 2014).

7 In the interest of space, I will present optional LDA as in (9). It is important to bear in mind, however, that LDA and infinitival agreement entail each other. Thus, (9) is grammatical if either (i) both verbs bear feminine singular agreement or (ii) both verbs carry masculine singular default agreement. Mixtures are impossible.

(9) **rotii**$_1$ larkõ-ne [t_1 khaa -nii/-naa] caah -ii/-aa

bread.F boys-ERG eat-INF.F.SG/-INF.M.SG want-PF.F.SG/-PF.M.SG

'The boys wanted to eat bread.'

I will show that, upon closer scrutiny, interactions between LDA and movement do arise once the movement type is controlled for. The next section will introduce a means of severing A- from $\overline{\text{A}}$-movement, which will then be used to reassess the relation between movement and agreement.

2.2 *The A/$\overline{A}$-distinction in Hindi*

Mahajan (1990, 1994) presents evidence that scrambling in Hindi is not a uniform phenomenon and that the language utilizes both A- and $\overline{\text{A}}$-movement (see also Déprez 1989, Gurtu 1992, Dayal 1994a, and Kidwai 2000 for extensive studies of Hindi scrambling).[8] Both types of movement are independent of ϕ-agreement in Hindi in that they can target an element regardless of whether it controls verb agreement or not. Like their English counterparts, $\overline{\text{A}}$-movement in Hindi is subject to weak crossover, while A-movement is not. As (10) illustrates, scrambling within a clause and scrambling out of an infinitival clause are not subject to weak crossover (10a,b), but scrambling out of a finite clause is (10c). This entails that scrambling within a clause and across an infinitival clause boundary can be A-movement, whereas scrambling out of a finite clause has to be $\overline{\text{A}}$-movement.

(10) a. har larke-ko$_1$ [*us-kii*$_1$ bahin-ne] t_1 dekh-aa

every boy-ACC 3SG-GEN sister-ERG see-PF.M.SG

'For every boy *x*, *x*'s sister saw *x*.'

b. har larke-ko$_1$ [*us-kii*$_1$ bahin-ne] [t_1 dekh-naa] caah-aa

every boy-ACC 3SG-GEN sister-ERG see-INF.M.SG want-PF.M.SG

'For every boy *x*, *x*'s sister wanted to see *x*.'

c. har larke-ko$_1$ [*us-kii*$_{2/*1}$ bahin-ne] soc-aa [ki raam-ne t_1

every boy-ACC 3SG-GEN sister-ERG think-PF.M.SG that Ram-ERG

dekh-aa]

see-PF.M.SG

'His$_2$ sister thought that Ram saw every boy$_1$.' (*bound reading impossible*)

A- and $\overline{\text{A}}$-movement are thus restricted in Hindi in a way parallel to English: Finite clauses are selectively opaque for A-movement but not $\overline{\text{A}}$-movement; nonfinite clauses are transparent for both. In what follows, I will simply refer to the two types of scrambling as A-movement and $\overline{\text{A}}$-movement, respectively. While LDA and movement are normally independent of each other, the next sections demonstrate that interactions between the two arise once the A/$\overline{\text{A}}$-distinction is controlled for.

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[8] While Dayal (1994a) and Kidwai (2000) challenge Mahajan's (1990) analysis of Hindi scrambling, the empirical facts he presents in support of this distinction are uncontested with the exception of reflexive binding, for which see fn. 9. I will use the terms 'A- vs. $\overline{\text{A}}$-movement' as convenient descriptive labels.

2.3   *A-movement and LDA*

This section will use weak crossover as well as quantifier scope to diagnose A-movement and investigate how it interacts with LDA.[9]

2.3.1   *Weak crossover*

We will begin by investigating the effect of A-moving the embedded direct object, the very element that controls LDA. Because only A-movement is able to obviate a weak crossover violation, a weak crossover configuration effectively disambiguates a movement dependency as A-movement. Consider the paradigm in (11):

(11)   a.   [us-ke$_{2/*1}$ maalik-ne] [**har   billii**$_1$ ghumaa-nii/-naa   ] caah-ii/-aa
           3SG-GEN owner-ERG   every cat.F walk-INF.F.SG/-INF.M.SG want-PF.F.SG/-PF.M.SG
           'His/her$_2$ owner wanted to walk every cat$_1$.'

   b.   **har   billii**$_1$ [us-ke$_2$ maalik-ne] [t_1 ghumaa-nii/-naa   ] caah-ii/-aa
         every cat.F   3SG-GEN owner-ERG   walk-INF.F.SG/-INF.M.SG want-PF.F.SG/-PF.M.SG
         'Every cat$_1$, his/her$_2$ owner wanted to walk (it).'

   c.   **har   billii**$_1$ [*us-ke$_1$*   maalik-ne] [t_1 ghumaa-nii/*-naa   ] caah-ii/*-aa
         every cat.F   3SG-GEN owner-ERG   walk-INF.F.SG/*-INF.M.SG want-PF.F.SG/*-PF.M.SG
         'For every cat *x*, *x*'s owner wanted to walk *x*.'

(11a) constitutes the baseline. The embedded object *har billii* 'every cat' remains in its base position and, unsurprisingly, cannot bind the pronoun *us-ke* inside the matrix subject due to the lack of c-command. LDA is optional here. In (11b), *har billii* is scrambled into the matrix clause, to a position above the subject. Importantly, the pronoun retains a referential interpretation. This movement step does not affect LDA, which remains optional. The crucial example is (11c). Here *har billii* is moved above the matrix subject, just as in (11b), but it binds the pronoun. Under this interpretation, LDA is obligatory. What distinguishes (11b) and (11c) is that the movement step in (11c) must be A-movement, as Ā-movement would result in a crossover violation. In (11b), by contrast, the movement merely affects the word order and is hence ambiguous between A- and Ā-movement. Pronominal binding in (11c) hence acts as a diagnostic for A-movement out of the infinitival clause. (11) thus demonstrates that A-movement of the embedded direct object into the matrix clause leads to obligatory LDA.

As it turns out, it is not only A-movement of the agreement trigger itself that renders LDA obligatory, but A-extraction of *any* embedded constituent. This is shown in (12) for indirect objects. This paradigm is parallel to (11), the only difference being that the embedded verb is the ditransitive

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[9]   Reciprocal binding exhibits the same pattern, but is not shown here in the interest of space. Mahajan (1990, 1994) uses reflexive binding as an additional diagnostic for A-movement (see also Gurtu 1992), but as Dayal (1994a) and Kidwai (2000:72) point out, reflexives are subject-oriented for many speakers, including my consultants (see Bhatia & Poole 2016 for recent discussion and analysis). They hence resist being bound even by objects that are A-scrambled and I will hence put reflexive binding aside here.

dikhaa 'show', which takes the dative-marked indirect object *har bacce-ko* 'every child-DAT' and the unmarked direct object *film* 'movie'. In the case of LDA, agreement is controlled by *film*.

(12) a. (**har bacce-ko₁**) [us-kii₂ mãã-ne] [(**har bacce-ko₁**) $\boxed{\text{film}}$
           every child-DAT   3SG-GEN mother-ERG   every child-DAT   movie.F
           dikhaa-nii/-naa   ] caah-ii/-aa
           show-INF.F.SG/-INF.M.SG   want-PF.F.SG/-PF.M.SG
           'His/her₂ mother wanted to show a movie to every child₁.'

      b. **har bacce-ko₁** [*us-kii₁* mãã-ne] [t_1 $\boxed{\text{film}}$ dikhaa$\boxed{\text{-nii/*?-naa}}$]
           every child-DAT   3SG-GEN mother-ERG   movie.F show-INF.F.SG/*?-INF.M.SG
           caah$\boxed{\text{-ii/*?-aa}}$
           want-PF.F.SG/*?-PF.M.SG
           'For every child *x*, *x*'s mother wanted to show *x* a movie.'

(12a) demonstrates that LDA with *film* is optional if *har bacce-ko* 'every child-DAT' either remains in its base position or moves into the matrix clause without binding the subject-internal pronoun *uskii* 'his/her'. Crucially, if the indirect object does bind the pronoun, as in (12b), LDA with *film* becomes obligatory. This is remarkable because there is no indication that *film* itself has undergone any kind of movement in (12b). Notably, *film* can be interpreted as a weak indefinite ('do film-showing'), suggesting that it may remain in its base position (Diesing 1992), at least as an option. Nonetheless, it has to obligatorily control LDA if the indirect object is A-extracted into the matrix clause.[10]

This pattern is not restricted to movement of indirect objects either. In Hindi, possessor DPs may be moved out of their host DP. In (13), the embedded object is *har lekhak-kii kitaabẽ* 'every author's books'. The possessor *har lekhak-kii* may be subextracted. The paradigm in (13) is again parallel to the ones in (11) and (12). In the case of LDA, agreement is controlled by *kitaabẽ* 'books'.

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[10] A reviewer raises the possibility that the infinitival agreement in (11c) and (12b) could reflect obligatory movement of the agreement controller into the matrix clause. There is reason to believe that this is not the case. First, as mentioned in the main text, there is no independent syntactic or semantic evidence to suggest that *film* obligatorily moves out of its base position in (12b). Second, this view would require that A-movement of the indirect object as in (12b) make movement of *film* obligatory. It is not evident why this would be the case or how it could be technically enforced. Third, LDA is also possible with elements that demonstrably resist movement, as shown in (16) below. Fourth, A-raising of the embedded object does not always result in infinitival agreement. In (i), the matrix verb in (11c) has been switched to imperfective aspect and the subject *uskaa maalik* 'his/her owner' loses its case marker as a consequence. In line with the agreement algorithm in (6) and the example in (8), *caah* 'want' has to agree with *uskaa maalik*. Crucially, the infinitival verb has to carry default agreement and cannot agree with the embedded object despite its overt A-movement.

(i) har billii₁ [us-kaa₁ maalik] [t₁ ghumaa-**naa**/*-**nii**] caah-taa hai
     every cat.F 3SG-GEN owner.M.SG   walk-INF.M.SG/*-INF.F.SG   want-IPF.M.SG be.PRES.3SG
     'For every cat *x*, *x*'s owner wants to walk *x*.'

This provides further evidence for the conclusion reached in section 2.1 above: Infinitival agreement is a morphological side effect of LDA with the matrix verb and does not directly reflect independent properties of the syntactic structure.

(13) a. (**har   lekhak-kii₁**) [us-kii₂   patnii-ne] [[_DP_ (**har   lekhak-kii₁**) |kitaabẽ|]
     every author-GEN   3SG-GEN wife-ERG   every author-GEN   books.F
     paṛh-nii/-naa   ] caah-ĩĩ/-aa
     read-INF.F.PL/-INF.M.SG   want-PF.F.PL/-PF.M.SG
     'His₂ wife wanted to read the books of every author₁.'

   b. **har   lekhak-kii₁** [_us-kii₁_   patnii-ne] [[_DP_ t₁ |kitaabẽ|] paṛh|-nii/*-naa |
     every author-GEN   3SG-GEN wife-ERG   books.F   read-INF.F.PL/*-INF.M.SG
     caah|-ĩĩ/*-aa|
     want-PF.F.PL/*-PF.M.SG
     'For every author x, x's wife wanted to read x's books.'

(13a) shows that LDA with _kitaabẽ_ 'books' is optional if _har lekhak-kii_ either remains in its base position or is moved above the matrix subject without binding the pronoun. Importantly, if the possessor does bind the pronoun, as in (13b), LDA becomes obligatory. Just as in (12b), A-movement of a DP into the matrix clause renders obligatory LDA with the embedded object, but, crucially, the element that is moved (_har lekhak-kii_) is not the one that controls agreement (_kitaabẽ_). There is again no indication that the agreement trigger _kitaabẽ_ has itself undergone movement. What is remarkable about (12b) and (13b) is thus that LDA with the embedded direct object is made obligatory by A-movement of _another_ element. (12b) and (13b) also illustrate that A-movement and ɸ-agreement are formally independent operations in Hindi in that they may target distinct elements.

The conclusion that the embedded object does not have to move into the matrix clause to control LDA receives striking support from idioms. Bhatt & Keine (to appear:ex. (19)) note that the idiom _X-kii khuub marammat karnaa_ 'give X a good beating' (lit. 'do X's many repairs') does not allow the object DP _X-kii marammat_ to be moved. (14b) lacks the idiomatic reading.

(14) a.   raam-ne [prataap-kii khuub marammat] kii
     Ram-ERG Pratap-GEN lot   repair.F.SG do.PF.F.SG
     'Ram gave Pratap a good beating.' (lit. 'Ram did Pratap's many repairs.')

   b.   #[prataap-kii khuub marammat]₁ raam-ne   t₁ kii
     Pratap-GEN lot   repair.F.SG   Ram-ERG   do.PF.F.SG
                                        (_idiomatic reading deviant_)

Bhatt & Keine (to appear:ex. (18)) also note that _marammat_ may control LDA (15). This provides an argument that LDA in Hindi does not require movement of the agreement controller.

(15) raam-ne [prataap-kii khuub |marammat| kar|-nii/-naa |] caah|-ii/-aa|
     Ram-ERG Pratap-GEN lot   repair.F.SG do-INF.F.SG/-INF.M.SG   want-PF.F.SG/-PF.M.SG
     'Ram wanted to give Pratap a good beating.'

One restriction not noted by Bhatt & Keine (to appear) that is particularly instructive for our present concerns is that A-movement of the possessor DP renders LDA with _marammat_ obligatory:

(16) **har** **bacce-kii**₁ [*us-kii*₁ mãã-ne] [[*t*₁ khuub marammat]
every child-GEN 3SG-GEN mother-ERG lot repair.F.SG

kar-nii/*-naa] caah-ii/*-aa
do-INF.F.SG/*-INF.M.SG want-PF.F.SG/*-PF.F.SG

'For every child *x*, *x*'s mother wanted to give *x* a good beating.'

(16) falls under the same generalization as (11–13) above: A-movement out of the infinitival clause renders LDA into it obligatory. The fact that this implication also holds if the LDA controller demonstrably resists movement, as in (16), provides direct evidence that no movement of the element triggering LDA is required to establish agreement with it.

2.3.2 *Quantifier scope*

This section will present a second and to my knowledge novel diagnostic for A-movement in Hindi, namely quantifier scope. Like many other languages with free word order, an object can only take scope over a subject if the former moves above the latter (Mahajan 1997:199–200; see, e.g., Frey 1993 and Krifka 1998 for German). This is illustrated by (17):[11]

(17) a. kisii laṛkii-ne har laṛke-ko ḍ̃ããṭ-aa
some.F girl-ERG every boy-ACC scold-PF.M.SG
'Some girl scolded every boy.' (∃ > ∀; *∀ > ∃)

b. har laṛke-ko₁ kisii laṛkii-ne *t*₁ ḍ̃ããṭ-aa
every boy-ACC some.F girl-ERG scold-PF.M.SG (∀ > ∃)

Interestingly, only A-movement seems to have a scope-widening effect in Hindi. In (18), movement proceeds out of a finite clause. In this case, the moved element *har laṛke-ko* 'every boy-ACC' may not take scope over of the matrix subject *kisii laṛkii-ne* 'some girl-ERG', despite the fact that the surface position of *har laṛke-ko* c-commands the matrix subject.

(18) **har** **laṛke-ko**₁ *kisii* *laṛkii-ne* soc-aa [ki prataap-ne *t*₁ ḍ̃ããṭ-aa]
every boy-ACC some.F girl-ERG think-PF.M.SG that Pratap-ERG scold-PF.M.SG
'Every boy, some girl thought that Pratap scolded.' (∃ > ∀; *∀ > ∃)

Because the movement of *har laṛke-ko* in (18) leaves a finite clause, it must be an instance of Ā-movement, indicating that Ā-movement in Hindi obligatorily reconstructs for scope. If only A-movement may hence extend scope domains, then quantifier scope provides a novel way of analytically separating A- from Ā-movement in Hindi. It has frequently been noted in the literature that there are subtle semantic differences between structures with LDA and ones with default agreement (Mahajan 1989, Butt 1995, Bhatt 2005). Bhatt (2005) observes that there is a one-way entailment relationship between quantifier scope and LDA. Consider the contrast in (19), taken

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[11] One complicating factor discussed by Anand & Nevins (2006) is that the scope rigidity in the absence of scrambling is limited to cases with ergative subjects. This complication is irrelevant for the present discussion. See Anand & Nevins (2006) for a proposal.

from Bhatt (2005:799). Under LDA, the embedded object *har kitaab* 'every book' can take scope either above the matrix verb *caah* 'want' or under it, as (19a) shows. With default agreement, by contrast, only low scope of *har kitaab* is possible, see (19b).[12]

(19) a. naim-ne **har** **kitaab** paṛh-[nii] caah-[ii] th-[ii]
　　　　Naim-ERG every book.F read-INF.F want-PF.F.SG be.PST-F.SG
　　　　'Naim wanted to read every book.'　　　　　　　　　(*want* > ∀; ∀ > *want*)

　　　b. naim-ne **har** **kitaab** paṛh-[naa] caah-[aa] th-[aa]
　　　　Naim-ERG every book.F read-INF.M.SG want-PF.M.SG be.PST-M.SG
　　　　'Naim wanted to read every book.'　　　　　　　　(*want* > ∀; *∀ > *want*)

The generalization that only A-movement extends scope in Hindi implies that high scope of *har kitaab* in (19) is the result of (string-vacuous) A-movement of it into the matrix clause. The observation that wide scope requires LDA then shows that A-movement of *har kitaab* into the matrix clause renders LDA with it obligatory. There is thus an encouraging convergence between the evidence from scope in (19) and that from weak crossover in (11).

　　We can now ask whether extending the scope of an element other than the direct object has a similar effect on LDA. (20) demonstrates that the answer is yes. The indirect object *har laṛkii-ko* 'every girl-DAT' can take matrix scope only if the direct object *film* 'movie' controls LDA (20a).

(20) a. naim-ne **har** **laṛkii-ko** [film] dikhaa-[nii] caah-[ii]
　　　　Naim-ERG every girl-DAT movie.F show-INF.F.SG want-PF.F.SG
　　　　'Naim wanted to show a movie to every girl.'　　　(*want* > ∀; ∀ > *want*)

　　　b. naim-ne **har** **laṛkii-ko** [film] dikhaa-[naa] caah-[aa]
　　　　Naim-ERG every girl-DAT movie.F show-INF.M.SG want-PF.M.SG
　　　　'Naim wanted to show a movie to every girl.'　　　(*want* > ∀; ??∀ > *want*)

The scope facts in (20) are consistent with the weak crossover facts in (12), (13) and (16). To take wide scope, *har laṛkii-ko* has to A-raise into the matrix clause and as a result of this raising, the embedded direct object *film* has to control LDA. Both sets of data thus fall under a uniform generalization.

　　The crossover and scope evidence discussed in this section can be captured by the generalization in (21), which comprises the data in (11)–(13), (16), (19), and (20). The convergence of unrelated tests for A-movement (weak crossover and scope) constitutes rather strong support for the generalization.[13]

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[12]　The two readings differ as follows: According to the '*want* > ∀' reading, Naim's goal is to read every book in the library, regardless of what these books are. On the '∀ > *want*' reading, Naim intends to read a particular set of books, which happens to be the set of all books in the library, a fact that he may be oblivious to.

[13]　To be precise, A-extraction renders LDA obligatory only in configurations that independently allow LDA, i.e., ones in which the matrix subject is overtly case-marked and hence invisible to agreement. If the matrix subject does not bear overt case, agreement is with it instead (see fn. 10). This is in line with the obligatory-operations view adopted here. Conforming to (21), default agreement is likewise impossible in this case.

(21) If A-movement of *any* element out of an embedded clause has applied, that clause is obligatorily transparent for LDA. Agreement is hence obligatory and default agreement is impossible, regardless of whether the agreement controller moves or not. $\overline{\text{A}}$-movement has no such effect.

Because A-movement and φ-agreement are separate operations in Hindi that do not need to target the same DP (as we saw in (12), (13), (16) and (20)), and that do not otherwise interact with each other (e.g., in local agreement contexts), the fact that interactions between them arise in LDA contexts is in need of explanation. The next section will turn to finite clauses and their relationship to LDA.

2.4 *Finite clauses and their interaction with LDA*

We saw on the basis of (10c) above that finite clauses allow $\overline{\text{A}}$-extraction out of them, but block A-extraction, in contrast to infinitival clauses. Finite clauses furthermore never allow φ-agreement into them, a fact widely noted in the literature (e.g., Butt 1993:76, Bhatt 2005:776, Chandra 2007:45). Thus, the matrix verb *soc* 'think' in (22) cannot agree with *ghazal* inside the embedded clause but must instead display default agreement. Significantly, this restriction holds regardless of the position of *ghazal* inside the lower clause, hence even if *ghazal* is located at the edge of the lower clause.

(22) firoz-ne   soc -aa/*-ii   [(**ghazal**) monaa-ne (**ghazal**) gaa-yii
      Firoz-ERG   think-PF.M.SG/*-PF.F.SG   ghazal.F   Mona-ERG   ghazal.F   sing-PF.F.SG
      thii]
      be.PST.F.SG
      'Firoz thought that Mona had sung ghazal.'

Finite clauses are thus selectively opaque:[14]

(23) Finite clauses are opaque to A-movement and φ-agreement (including their edge), but not to $\overline{\text{A}}$-movement.

2.5 *Selective opacity and agreement*

A crucial feature of the generalizations in (21) and (23) is that both apply to syntactic *domains* rather than to individual syntactic items. This is particularly striking for (21). LDA into the embedded nonfinite clause becomes obligatory if there is any A-extraction out of this clause. As emphasized above, it is insubstantial for (21) which element undergoes this A-movement step. In other words, A-movement of one element can render LDA with some other element obligatory. In this sense,

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[14] Another type of clause that prohibits φ-agreement into them are case-marked infinitival clauses (Butt 1993:77, Bhatt 2005:777). Like finite clauses, case-marked infinitival clauses are transparent to $\overline{\text{A}}$-movement only, not to A-movement (not illustrated here in the interest of space). The generalization in (23) is thus not specific to finite clauses.

the generalization in (21) is fundamentally *clause-based*. It is noteworthy that this feature of the generalization is problematic for previous accounts of LDA in Hindi. Even accounts that involve a connection between movement and agreement (Mahajan 1989, Bobaljik & Wurmbrand 2005, Chandra 2007, Keine 2013) are stated on the basis of individual items, and hence fail to extend to the domain-based generalizations in (21): On these accounts, the agreement controller has to move for LDA to result. That A-movement of *one* element can lead to obligatory LDA with *another* element is surprising on these approaches. The clause-based nature of (21) is shared by (23).

To account for this clause-based nature of the movement–agreement interaction, I propose a clause pruning/restructuring approach, according to which embedded clauses differ in their structural size and their syntactic properties are a function of their size (see, e.g., Wurmbrand 2001 for restructuring in general, and Boeckx 2004 and Bhatt 2005 for restructuring approaches to Hindi LDA). First of all, there is good evidence that finite clauses contain more functional structure than nonfinite clauses in Hindi: Finite clauses can contain the complementizer *ki* and provide a scope position for *wh*-elements, clearly suggesting a CP structure. Nonfinite clauses, on the other hand, obligatorily lack a complementizer as well as interrogative force (Dayal 1996, Bhatt & Dayal 2007), irrespective of whether LDA takes place or not. This indicates that nonfinite clauses obligatory lack a CP layer, and thus have a structure smaller than a full CP (see Dayal 1996, Bhatt 2005, Chandra 2007 for versions of this general claim).

Second, I propose that nonfinite clauses are structurally ambiguous. As noted above, ϕ-agreement is obligatory in simple clauses, following the algorithm in (6), itself derivable from the logic of obligatory operations (Preminger 2011, 2014). This directly contrasts with LDA, which, as we have seen, is optional unless A-movement takes place. Why does the presence of a nonfinite clause boundary render otherwise obligatory ϕ-agreement optional? We can understand both facts if (i) ϕ-agreement is obligatory if it is possible, and (ii) nonfinite clauses are ambiguous between a structure that is transparent for ϕ-Agree and one that is not. Evidence allowing us to pinpoint the locus of this variability comes from temporal adverbs. In (24), the embedded verb is modified by the adverb *kal* 'yesterday/tomorrow' and the matrix adverb *pichle hafte* 'last week' makes it clear that *kal* modifies the embedded predicate. Under default agreement, the sentence is well-formed. With LDA, on the other hand, the sentence receives a deviant interpretation whereby the two adverbs jointly, and hence inconsistently, specify a single event. On the natural assumption that temporal adverbs require the presence of a TP projection in the nonfinite clause, (24) provides evidence that such a TP projection is obligatorily absent in clauses with LDA.

(24) *pichle hafte* raam-ne [yeh kitaab *kal*   paṛh -naa/#-nii   ]
      last   week Ram-ERG   this book.F yesterday/tomorrow read-INF.M.SG/#-INF.F.SG
      caah -aa/#-ii   th -aa/#-ii
      want-PF.M.SG/#-PF.F.SG be.PST-M.SG/-#F.SG
      'Last week, Ram had wanted to read this book yesterday–tomorrow.'

I will assume for the sake of concreteness that infinitival clauses can be either TPs or *v*Ps, but the exact structural labels are irrelevant for what is to follow.[15] The surface optionality of LDA as well

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[15] Bhatt (2005) presents converging evidence from NPI licensing that supports a structural ambiguity of nonfinite clauses. Furthermore, Bhatt (2005) and Davison (2010) provide evidence that nonfinite clauses in Hindi cannot be

as the interaction with temporal adverbs shown in (24) can then be accounted for if TPs are opaque to φ-agreement, while *v*Ps are transparent to it.

Finally, we have seen in the preceding section that A-extraction out of an infinitival clause renders this clause obligatorily transparent to LDA (recall (21)). This interaction provides a window into the locality of A-movement in Hindi. Specifically, it provides evidence that only *v*P clauses are transparent to A-extraction and that TP clauses pattern like finite CP clauses in disallowing A-movement out of them. A-movement out of a nonfinite clause then disambiguates this clause in favor of a *v*P structure. Because this *v*P structure is necessarily transparent for φ-agreement, LDA emerges as obligatory in this case. These findings are summarized in (25), which indicates for each type of clause what operations it is transparent to.

(25)   *Transparency (✓) and opacity (*) by clause type and operation* (to be extended)

	Size of clause		
	CP (*finite*)	TP (*nonfinite*)	*v*P (*nonfinite*)
φ-agreement	*	*	✓
A-movement	*	*	✓
A̅-movement	✓	✓	✓

On the view just developed, the generalizations in (21) and (23) emerge as special cases of the transparencies in (25): If the embedded clause is small enough to allow A-extraction (i.e., a *v*P), it is necessarily transparent for φ-agreement, giving rise to obligatory LDA (21). No such entailment holds between A̅-extraction and LDA, because A̅-extraction is possible out of structures that disallow φ-agreement into them (CP, TP). Moreover, since finite clauses are CPs, they block A-extraction out of them as well as φ-agreement into them (23). The schema in (25) is an instance of selective opacity: Structures of a certain size (e.g., finite clauses) only allow some extraction types out of them. The central insight afforded by (25) is that this selective opacity pattern is not limited to differences between types of movement, but that it instead encompasses φ-agreement in an entirely parallel way.

The observation that the selective opacity pattern in (25) encompasses φ-agreement has important implications for the theory of selective opacity. As I have emphasized repeatedly, φ-agreement and A-movement are distinct syntactic operations in Hindi. The examples in section 2.2 have shown that A-movement of a DP does not require φ-agreement with that DP (see (12b), (13b), and also (31) below), and conversely, that φ-agreement does not require A-movement (see (15) and (16)). That A-movement and in-situ φ-agreement partake in selective opacity in a parallel way therefore strongly suggests that the mechanisms and principles underlying selective opacity are not specific to movement, but must also encompass φ-agreement. To appreciate this point, consider May's (1979) classic account of improper movement, adopted in Chomsky (1981), according to which traces left by A̅-movement are variables, subject to Principle C. Assuming furthermore that extraction out of a finite clause requires a prior A̅-step to the edge of the clause, further A-movement is then ruled

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bare VPs. Davison (2010) argues that nonfinite clauses must contain a PRO, even if LDA into them takes place. Bhatt (2005) argues that the case of the embedded object is invariably licensed within the infinitival clause. Assuming that introduction of the external argument and case assignment to the object are properties of *v*, these considerations suggest that these clauses must be at least as large as *v*P.

out because the $\overline{\text{A}}$-trace would be bound from an A-position, violating Principle C. The limitation of such an account is that it has nothing to say about ɸ-agreement: ɸ-agreement with an $\overline{\text{A}}$-moved element does not result in a Principle C violation and is hence expected to be possible. This is not the case, however, as has already been shown on the basis of (22), where agreement with an $\overline{\text{A}}$-moved DP at the edge of a finite clause leads to ungrammaticality. As a result, the fact that finite clauses are opaque to ɸ-agreement in the same way that they are for A-movement falls outside the scope of a trace-based account like May (1979). Similar remarks apply to more recent accounts of improper movement, as virtually all of them handle selective opacity by imposing constraints on movement paths (Müller & Sternefeld 1993, Abels 2007, 2009, Neeleman & van de Koot 2010, Müller 2014a,b). But restrictions on movement paths do not constrain ɸ-agreement and this is what prevents such accounts from extending to the full pattern in (25).[16]

I conclude, therefore, that selective opacity is not confined to movement and hence more general than previous analyses lead one to expect. This suggests that any theory of selective opacity that is based on constraints on movement is too narrow empirically and that a more abstract account that applies to both movement and nonmovement dependencies is called for. The parallelism between the two types of dependencies indicates that they share some component and that it is this component that the constraint underlying selective opacity targets. While several ways of developing this unification are possible, I will follow here the view in Chomsky (2000, 2001, 2004) that movement is parasitic on the operation Agree. Because on this view Agree is a component of both movement and ɸ-agreement, constraints on Agree will apply to both and thus achieve the desired unification.[17]

Before moving on to develop such an account in detail, the next section will add an important additional piece to the puzzle. One intriguing generalization that the previous literature on selective opacity has argued for is that selective opacity is not distributed randomly across movement types (Williams 2003, 2011, 2013, Abels 2007, 2009, 2012a, Müller 2014a,b). Instead, there appears to be a connection between the locality properties of a movement type and the structural height of the position that this movement types targets. The next section will present evidence from Hindi that provides further support for this conclusion.

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[16] Notable exceptions are Obata & Epstein (2011) and Williams (2003, 2011, 2013). Obata & Epstein (2011) attribute improper movement to the absence of ɸ-features in $\overline{\text{A}}$-position and as such has the potential of extending to ɸ-agreement. However, there is no indication that $\overline{\text{A}}$-moved elements in Hindi are devoid of their ɸ-content, as these ɸ-features are morphologically expressed on these elements. Williams' (2003, 2011, 2013) account is discussed in fn. 32.

[17] As a reviewer points out, the unification of agreement and movement for the purposes of the constraint could in principle also be achieved the other way around: On the view that agreement necessarily involves movement (e.g., Koopman 2006), a constraint on movement would also constrain ɸ-agreement. I will not pursue this line of account here because, first, we have seen in section 2.3 evidence that LDA does not require movement of the agreement trigger; second, this line of analysis would require what one might call 'tandem movement'. We have seen on the basis of (12b), (13b), (16) and (20) that LDA with the direct object is obligatory if *any* element is A-extracted out of the embedded clause. This would require that movement of the direct object into the matrix clause becomes obligatory if *another* DP is A-extracted. Patterns of this sort are naturally derived on an Agree-based account, which I therefore adopt here.

3 The Height–Locality Connection

In this section I will present novel evidence which demonstrates that the height of the projections targeted by A-movement, $\overline{\text{A}}$-movement, and ϕ-agreement coincides with the locality profiles of these three operations in (25). This finding corroborates a discovery in the previous literature on selective opacity that a movement type's locality is partially correlated with the height of its landing site and that, as a result, locality patterns are not random but subject to overarching generalizations.

One of the generalizations expressed by (25) is that $\overline{\text{A}}$-movement is able to proceed out of more structures than A-movement. Closer scrutiny reveals this difference in locality to be correlated with a difference in the height of the landing site of the two movement types. Due to the very free word order in Hindi, the landing site of a movement step cannot be readily read off the surface string. Indirect evidence for the landing site of $\overline{\text{A}}$-movement comes from the paradigm in (26).[18] A restriction that (26) makes use of is Bhatt & Dayal's (2007) argument that only verbal constituents may undergo extraposition in Hindi while nominal ones may not. (26a) provides the baseline configuration: It involves a double embedding structure, in which a finite clause is embedded within a nonfinite clause, which in turn is embedded inside a matrix clause. The nonfinite clause is extraposed to the right of the matrix verb to demarcate its left edge. (26b) is then derived from (26a) by moving *kitaab* 'book' from the lowermost clause into the intermediate nonfinite clause. The landing site of *kitaab* 'book' cannot reside in the matrix clause in (26b), or else it would appear to the left of the matrix verb. Instead, *kitaab* must have targeted a position inside the nonfinite clause. As shown, the resulting sentence is ungrammatical. In (26c), on the other hand, *kitaab* is moved all the way into the matrix clause and the result is grammatical. The pattern in (26) is independent of the case of the moving element. While in (26) the moving element does not bear the accusative case marker *-ko*, the same restriction obtains for elements with *-ko*.

(26) a. *Base configuration:* $\checkmark$[matrix ... [nonfinite ... [finite ... DP ...]]]
            clause   clause   clause

   mãĩ caah-taa   hũũ [kah-naa   [ki   mãĩ-ne **kitaab** paṛh-ii   hai]]
   I   want-IPF.M.SG be.1SG say-INF.M.SG that I-ERG   book.F read-PF.F.SG be.3SG
   'I want to say that I read the book.'

   b. *No $\overline{\text{A}}$-mvt into nonfinite clause:* *[matrix ... [nonfinite DP ... [finite ... t ...]]]
            clause   clause   clause

   *mãĩ caah-taa   hũũ   [**kitaab**₁ kah-naa   [ki   mãĩ-ne t_1 paṛh-ii
   I   want-IPF.M.SG be.1SG book   say-INF.M.SG that I-ERG   read-PF.F.SG
   hai]]
   be.3SG

   c. *$\overline{\text{A}}$-mvt into finite clause:* $\checkmark$[matrix DP ... [nonfinite ... [finite ... t ...]]]
            clause   clause   clause

   kitaab₁ mãĩ caah-taa   hũũ [kah-naa   [ki   mãĩ-ne t_1 paṛh-ii
   book   I   want-IPF.M.SG be.1SG say-INF.M.SG that I-ERG   read-PF.F.SG
   hai]]
   be.3SG

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[18] I am indebted to Klaus Abels (p.c.), who suggested this test.

Because both (26b) and (26c) involve extraction out of a finite clause, both must involve A̅-movement. The contrast between (26b) and (26c) therefore demonstrates that A̅-movement *cannot* land within a nonfinite clause but that it *can* target a finite clause (see Keine 2017 for additional evidence for this conclusion). This difference allows us to draw inferences about the landing site of A̅-movement. Recall from section 2.5 that only finite clauses contain a CP layer, but nonfinite clauses do not. The pattern in (26) can then be accounted for if A̅-movement lands in Spec,CP. Because the intermediate nonfinite clause in (26) lacks a CP layer, it does not provide a landing site for A̅-movement. By contrast, the matrix clause in (26) does contain a CP, and A̅-movement into it is possible.

This patterns stands in striking contrast to A-movement. Using crossover as a diagnostic for A-movement, we already saw on the basis of (10a) that A-movement within a finite clause is possible. (27) demonstrates that A-movement within a nonfinite clause is also licit. Here *har laṛkii-ko* 'every girl-ACC' is moved over the adjunct *uskii shaadii ke dauraan* 'during her wedding'. The binding of the adjunct-internal pronoun *uskii* requires that this movement step be A-movement. The nonfinite clause is again extraposed to ensure that this A-movement step does not leave the nonfinite clause.

(27) *A-movement within nonfinite clause*
siitaa-ne caah-aa   thaa   [**har   laṛkii-ko**$_1$ [*us-kii*$_1$ shaadii   ke dauraan]
Sita-ERG want-PF.M.SG be.PST.M.SG   every girl-ACC   3SG-GEN   wedding   during
t_1 dekh-naa   ]
   see-INF.M.SG
'Sita wanted to see every girl *x* at *x*'s wedding.'

Because nonfinite clauses thus provide a landing site for A-movement despite lacking a CP layer, we can infer that A-movement lands in a position lower than Spec,CP. The insights from (26) and (27) hence reveal that A- and A̅-movement target different structural positions in Hindi, a distinction that is disguised in the surface facts: A-movement lands in a lower position than A̅-movement.

Turning now to the location of the φ-probe in Hindi, there is good reason for locating it on T. Evidence for this view comes from the fact, already mentioned in (6) above, that subject agreement, if possible, preempts object agreement. This is illustrated in (28). Here both the subject and the object of a regular transitive clause are not overtly case-marked and hence accessible for agreement. In this case, the verb has to agree with the subject; object agreement is impossible. If the subject were overtly case-marked, object agreement would be possible and in fact obligatory.

(28) *Subject agreement preempts object agreement*
laṛke   kitaab   paṛh-te/*-tii   hãĩ/*hai
boys.M.PL book.F.SG   read-IPF.M.PL/*-IPF.F.SG be.PRES.3PL/*be.PRES.3SG
'The boys are reading a book.'

If the φ-probe is situated on T, the restriction in (28) follows as a standard minimality effect.

Finally, it is also possible to utilize φ-agreement to sharpen our conclusions about the landing site of A- and A̅-movement. The general logic is this: Assuming, as is standard, that the φ-probe may only search its c-command domain for an accessible goal, movement that lands below the

position of the φ-probe should be able to feed agreement with that φ-probe, whereas movement that lands higher than this φ-probe and hence outside its c-command domain should not be able to do so. As it turns out, movement of the object over the subject does not override agreement with the subject:

(29) *Object movement does not override subject agreement*
kitaab₁   laṛke   t₁ paṛh-te/*-tii   hãĩ/*hai
book.F.SG boys.M.PL   read-IPF.M.PL/*-IPF.F.SG be.PRES.3PL/*be.PRES.3SG
'The boys are reading a book.'

The inability of movement to feed agreement also holds for movement that is unambiguously A- or A̅-movement. The example in (30) illustrates extraction out of a finite clause, which we have seen is invariably A̅-movement. In (30), the matrix verb cannot agree with the A̅-moved element despite both being clausemates after movement and the local subject being overtly case-marked. This is readily accounted for if A̅-movement, as concluded above, targets Spec,CP, hence a position outside the c-command domain of T's φ-probe.

(30) *No φ-agreement with A̅-landing site*
ghazal₁ firoz-ne   soc-aa/*-ii   [ki   monaa-ne   t₁ gaa-yii
ghazal.F   Firoz-ERG   think-PF.M.SG/*-PF.F.SG   that   Mona-ERG   sing-PF.F.SG
thii   ]
be.PST.F.SG
'Firoz thought that Mona had sung ghazal.'

Unambiguous A-movement is likewise unable to feed agreement, as demonstrated by its inability to override subject agreement.

(31) *No φ-agreement with A-landing site*
har   **gaaṛii₁** [us-kaa₁   maalik (=hii)] t₁ saaf   kar-egaa/*-egii
every   car.F   3SG-GEN owner.M(=only)   clean do-FUT.M.SG/*-FUT.F.SG
'Every car *x* will be cleaned by *x*'s owner (not by anybody else).'

We have seen above on the basis of (27) that A-movement targets a position lower than CP. At the same time, (31) demonstrates that it must land in a position outside the c-command domain of the φ-probe on T. Both requirements are satisfied on the assumption that A-movement lands in a TP specifier (possibly an outer one). As a result, the φ-probe on T in (31) can neither agree with the base position of the object – due to intervention by the subject –, nor with the landing site – which the probe does not c-command. This derives that object agreement in (31) is impossible.

   Summarizing these findings, I have argued that (i) the landing site of A̅-movement is higher than that of A-movement, (ii) nonfinite clauses contain a landing site for A-movement but not for A̅-movement, and (iii) neither A- nor A̅-movement are able to feed φ-agreement. I have proposed that these facts are accounted for if (i) the φ-probe is located on T, (ii) that A̅-movement targets Spec,CP and is hence triggered by a probe on C, and (iii) that A-movement targets (an outer)

Spec,TP, hence triggered by a probe on T. These locational properties of the three probes alongside their locality properties are summarized in (32).

(32) *Transparency (✓) and opacity (*) by clause type and operation* (to be extended)

	probe location	Size of clause		
		CP (*finite*)	TP (*nonfinite*)	*v*P (*nonfinite*)
φ-agreement	T^0	*	*	✓
A-movement	T^0	*	*	✓
$\overline{\text{A}}$-movement	C^0	✓	✓	✓

The table in (32) suggests that there exists an empirical connection between the locality properties of a probe and its syntactic location. The operation associated with the structurally highest probe ($\overline{\text{A}}$-movement) also enjoys the greatest search space (i.e., it can enter CP, TP as well as *v*P clauses), while operations initiated by structurally lower probes (φ-agreement and A-movement) are only able to search into structurally small domains (*v*P clauses). Equivalently, structurally small clauses (like *v*P clauses) are transparent for structurally high as well as low probes, whereas larger clauses (like TP or CP clauses) are selectively opaque for operations triggered by structurally low heads, but transparent for the operation associated with a high head. In a nutshell, then, the higher the structural position of a probe, the more domains are transparent for this probe:

(33) *Height–Locality Connection*
      The higher the structural position of a probe π, the more kinds of structures π can search into.

There is good reason to believe that (33) is not just a coincidence of Hindi but rather a general property of selective opacity. Indeed, one of the main discoveries of the recent literature on selective opacity effects is the recognition that the height of a movement type's landing site and its locality constraints are related (Sternefeld 1992, Williams 2003, 2011, 2013, Abels 2007, 2009, 2012a, Müller 2014a,b). Consider the classical case of selective opacity alluded to above: English hyperraising. While $\overline{\text{A}}$-extraction out of a finite clause is possible, A-extraction is not. This coincides with the height of their respective landing sites: $\overline{\text{A}}$-movement lands in a position higher than that targeted by A-movement. The contrast between the movement types thus conforms to (33).

The connection extends to movement types beyond the binary A/$\overline{\text{A}}$-distinction. Sternefeld (1992) and Abels (2007, 2009), for instance, contrast scrambling, *wh*-movement and topicalization in German. While scrambling targets a low position in the clause and is unable to leave finite clauses, both *wh*-movement and topicalization land in higher positions and are able to proceed from within finite clauses. Williams (2011, 2013), extending ideas in Williams (2003), discusses a similar connection between the height of the landing site of a movement type and its locality for relativization, *wh*-movement and topicalization in English. Another example is the locality contrast between *wh*-movement and topicalization on the one hand and clitic climbing on the other in, e.g., Spanish. As is well-known, while *wh*-movement and topicalization may cross a finite clause boundary, clitic climbing may not. This again corresponds to the height of their respective landing sites, as clitic climbing targets a lower position than topicalization and *wh*-movement.

Abels (2012a) provides a particularly striking illustration. Contrasting movement types targeting the Italian left periphery (relativization, topicalization, focus movement, and modifier fronting), he shows that the relative height of their landing sites correlates with their locality profiles. For instance, relativization is able to proceed out of a *wh*-island, while focus movement is not. This correlates with differences in their landing sites: Relative pronouns obligatorily occur to the left of focus-fronted elements, indicating a higher landing site. Abels (2012a) also shows that focus fronting itself lands in a higher position than fronted modifiers. This again correlates with their respective locality profiles: focus fronting is able to leave a finite clause, whereas modifier fronting is not. Müller (2014a,b) makes similar observations for German pronoun fronting, Icelandic object shift, and English extraposition: Each of these movement types targets a low position and is not able to cross a CP.

This body of evidence converges on the view that the locality profile of a movement type is at least in part determined by the structural height of its landing site. Assuming, as before, that movement is parasitic on an Agree dependency, these findings provide good indication that the Height–Locality Connection in (33) is not merely a coincidence in Hindi, but that it instead reflects a systematic and fundamental property of selective opacity, in need of explanation. Overarching generalizations like the Height–Locality Connection provide a strong reason for treating selective opacity effects as a unified phenomenon, because (33) emerges as an empirical generalization only once selective opacity is conceived of as a general phenomenon that arises in variety of constructions and languages. The discussion of Hindi in this section contributes two important points to the existing literature. First, it demonstrates that the Height–Locality Connection holds even in cases in which the surface evidence does not appear to support it. Second, it shows that the relevant generalization is not restricted to movement, as it also encompasses φ-agreement. This is fully in line with the conclusion regarding selective opacity in section 2.5: While the previous literature has focused on movement, Hindi provides compelling evidence that φ-agreement follows the same pattern. Consequently, an account of selective opacity and the Height–Locality Connection has to be general enough to cover both movement and φ-agreement. The next section will develop an analysis of selective opacity that builds on the conclusions drawn in the preceding sections.

4   Horizons

Selective opacity falls outside the purview of standard principles of syntactic locality like phases because these principles are absolute in nature. Phases mandate that only the edge of a phase is accessible to operations from outside the phase. But unless further assumptions are added, phases do not differentiate between different operations. According to standard phase theory, elements at the edge of a phase are accessible to *all* operations; elements in its domain are accessible to *none*. Selective opacity requires that a given position is accessible to some operations but not to others. In (34), an element in Spec,CP must be accessible to $\overline{\text{A}}$-movement, but not to A-movement (in both Hindi and English), and such an element must also be inaccessible to φ-agreement in Hindi (recall (22) above). Phases by themselves do not provide the means of making such statements and therefore do not lend themselves to an account of selective opacity.

(34) $[$ operation α → ... $[_{CP}$ DP$_1$ C^0 $‖$ $[_{TP}$ ... t_1 ... $]$ $]$ $]$

Spellout domain

operation β ×

The phenomenon of selective opacity requires that at least some locality boundaries are relative in a way that is not reducible to phases. Consequently, selective opacity has always required additional, often construction-specific stipulations, like the Ban on Improper Movement (Chomsky 1973, 1977, 1981, May 1979). [19]

4.1 *The proposal*

To approach the problem of selective opacity, it is instructive to consider Chomsky's (1964) *A-over-A Principle* (also see Chomsky 1973 and Bresnan 1976). While originally formulated on the basis of categorial features, the A-over-A Principle has been further revised and extended in subsequent work with particular attention to differences between movement types. Müller (1996, 1998), for instance, notes that extraction out of a remnant is impossible if this remnant itself undergoes the same extraction type and attributes this restriction to a revised version of the A-over-A Principle (also see Takano 1994, Kitahara 1997, Sauerland 1999, Fitzpatrick 2002, van Urk & Richards 2015). What is crucial for our purposes is that this revised A-over-A Principle discriminates between different movement types: For example, a constituent that undergoes scrambling is opaque for scrambling out of it but it is transparent for topicalization, and so on.

As it stands, the A-over-A Principle does not extend to the instances of selective opacity discussed here and hence does not provide a comprehensive theory of selective opacity.[20] I will provide three illustrations of this general claim. First, consider what an A-over-A account of English hyperraising would amount to. To block A-extraction out of finite clause, the finite clause would have to count as a closer target for A-movement. Yet such A-movement of the finite clause itself is ungrammatical in at least some instances:

(35) *[That Mary is sick]$_1$ seems t_1.

A-extraction out of finite clause is impossible even in cases in which the finite clause is not itself a legitimate goal for A-movement, such as (35). Moreover, Iatridou & Embick (1997) argue that CPs lack ϕ-features and as such they should not constitute a goal for agreement with T. As a consequence, the CP in (35) does not qualify as a closer target for either EPP movement or ϕ-agreement. The standard A-over-A Principle therefore has nothing to say about why this CP nonetheless prevents these processes from targeting elements inside it.

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[19] A more recent line of approach attributes (34) to case: only elements with an unvalued case feature may undergo A-movement and ϕ-agreement (Chomsky 2001). In the interest of space, I will put this line of account aside here, but see Keine (2017) for arguments against such an approach. Additionally, Bhatt (2005) shows that LDA targets already case-marked elements and that case marking hence does not bleed ϕ-agreement.

[20] Approaches to hyperraising that incorporate the A-over-A Principle or Relativized Minimality have been proposed by McFadden (2004), Nunes (2008), van Urk (2015), and Halpert (2016). My argument that the A-over-A Principle does not provide a comprehensive account of selective opacity does not, of course, entail that there are no instances of selective opacity that may be attributed to it. See, for example, Nunes (2008) and Halpert (2016) for plausible cases.

A second illustration of the same problem comes from Hindi. As (36) demonstrates, it is altogether impossible to move a finite clause in the language (also see Bhatt & Dayal 2007 and Manetta 2012 for related recent discussion):

(36) a. raam-ne kahaa [ki paris sundar hai].
         Ram-ERG said that Paris beautiful is
         'Ram said that Paris is beautiful.'

     b. *[ki paris sundar hai]₁ raam-ne kahaa t₁.
         that Paris beautiful is Ram-ERG said

To correctly rule out (36b), finite clauses must be blocked from undergoing A- as well as $\overline{\text{A}}$-movement. The source of this restriction does not need to concern us here. What (36) allows us to conclude is that the opacity of finite clauses for A-extraction in Hindi cannot plausibly be attributed to a traditional A-over-A effect, as they do not themselves constitute a goal for such movement.

A third argument is based on φ-agreement. I have argued above that infinitival clauses in Hindi come in two sizes, one of which is transparent for φ-agreement (vP), while the other is not (TP). Notably, infinitival clauses in Hindi appear to *never* carry φ-features of their own. In (37), the subject of the sentence is the infinitival clause *lekh paṛhnaa* 'to read articles' while the object is the feminine DP *acchii baat* 'good thing'. Given the general agreement algorithm in (6), we make the following prediction: If the infinitival clause has φ-features of its own, it should obligatorily control masculine singular agreement on the main predicate because subject agreement preempts object agreement. If, on the other hand, the infinitival clause does not contain φ-features, then the matrix verb should exhibit feminine agreement with its object instead. As (37) shows, object agreement is obligatory.

(37) [lekh paṛh-naa] acchii baat thii / *thaa.
      article.M read-INF.M.SG good.F thing.F was.F.SG / was.M.SG
      'To read articles was a good thing.'

(37) thus indicates that both vP and TP infinitival clauses in Hindi obligatorily lack φ-features and that they are hence not licit goals for a φ-probe. The fact that their larger TP variant blocks φ-agreement into it hence cannot be the result of regular A-over-A intervention.

In sum, I have argued that some domains are opaque for operations into them even if they cannot themselves undergo these operations. It is therefore not clear how selective opacity could be reduced to standard minimality or the A-over-A Principle. I would like to explore here the claim that selective opacity is the result of a *defective* version of the A-over-A Principle, in the sense of Chomsky's (2000) defective intervention, whereby an element that cannot itself undergo an operation can still block this operation across it. Specifically, I propose that category features can lead to termination of a search process. Crucially, probes may differ in which category features terminate their search. I will refer to such category labels that block a probe's search as *horizons*:

(38) *Horizons*
     If a category label X is a horizon for probe π (notated as 'π ⊣∣ X'), then a π-initated search terminates at a node of category X. All elements dominated by XP are therefore outside π's search space.

According to (38), category features may delimit a probe's search space. Suppose, for example, that a probe π has the category feature C as its horizon (π ⊣∣ C). In this case, any node bearing a C specification will terminate π's search. As a result, any element separated from π by a CP node would be out of reach for π, as π's sequential search would end before it could reach such an element. Like horizons in the real world, anything beyond a probe's horizon is invisible to this probe. Because I will draw a crucial distinction between a category feature and a head of that category, I will notate the former as, e.g., 'C' and the latter as 'C^0'. Only abstract category features condition horizons.

   An important property of horizons is that they differ between probes. One and the same node may be a horizon to one probe, but not to another. To give a schematic example, consider two probes π_1 and π_2 with π_1 ⊣∣ C and π_2 ⊣̸∣ C. In this case, π_1 cannot agree with anything dominated by an intervening CP, not even an element at the edge of this CP, as π_1's search terminates before it reaches such elements. CPs are thus completely opaque to π_1. π_2, by contrast, is able to search into CPs as C does not constitute a horizon for π_2. The result is selective opacity. This state of affairs is illustrated in (39), where I abstract away from the effects of CP's phasehood for now.

(39) [π_2 … π_1 … [$_{CP}$] …]]

     search space of π_1

     search space of π_2
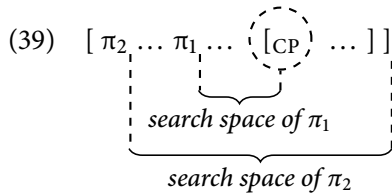
   For notational concreteness, I will indicate probes that trigger movement as 'bullet' features (Heck & Müller 2007, Müller 2010). I will notate the probes that give rise to A-movement as $[\bullet A \bullet]$ and the probe resulting in $\overline{A}$-movement as $[\bullet \overline{A} \bullet]$. This is primarily a notational choice and nothing crucial hinges on it. By contrast, probes that can be checked via pure Agree, i.e., without movement, are notated as 'star' features. The feature underlying verb agreement will be indicated as $[\ast \phi \ast]$.

   An important conclusion of the discussion above is that selective opacity effects are not distributed at random and any account of selective opacity has to account for the attested regularities. One central empirical generalization, the Height–Locality Connection (33), will be taken up in section 5. For now, I will limit my attention to a second regularity, implicit in the discussion so far. I will refer to this generalization as *Upward Entailment* (40). Upward Entailment states a generalization over embedded clauses of varying sizes, namely that the addition of functional structure may decrease, but never increase, the number of operations that may access this clause.

(40) *Upward Entailment*
     If a clause of a certain structural size is opaque to an operation, then clauses that are structurally larger are likewise opaque to this operation.

The Hindi facts in (32) may serve to illustrate Upward Entailment. Here, if a clause of a given structural size (e.g., TP) is opaque to some operation, then structurally larger clauses (CP) are likewise opaque to this operation. In other words, functionally larger clauses are always at least as opaque as structurally smaller ones. A second illustrative example comes from English extraposition. As demonstrated by (3) above, nonfinite clauses are opaque for extraposition. As is well-known, finite clauses are opaque as well.

An empirical pattern that would violate Upward Entailment would be a movement type that cannot extract an element out of an infinitival TP clause, but that is able to extract an element out of a finite CP clause. Such a pattern is, to the best of my knowledge, unattested. Upward Entailment encodes this fact.

Horizons in and of themselves do not derive (40). To see this, consider a configuration with a probe $\pi \dashv T$ in the matrix clause and an embedded TP clause. π will not be able to search into the embedded clause because the TP node will constitute a horizons and π's search will therefore terminate at this TP node. Compare this configuration to one with an embedded CP clause. If only TP were a horizon to π, π's search space would include the CP domain of the embedded clause. π could hence agree with an element in Spec,CP, either base-generated or moved there. The search space of $\pi \dashv T$ would be as schematized in (41).

(41)   *Incorrect hypothetical search space of $\pi \dashv T$*

$$\pi \ldots [_{CP} \; \textbf{XP} \; C^0 \; [_{TP} \ldots]\,]$$
      search space
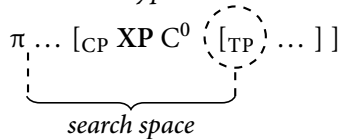
The probe π in (41) would be able to agree with XP in the embedded Spec,CP because π's search domain is delimited only by TP nodes. The descriptive result would be that π can extract out of a CP clause (via the edge of the CP), but not out of a TP clause. Yet such a situation would violate Upward Entailment (40), and should hence be excluded on principled grounds.

I would like to suggest that (40) can be derived from the interplay of horizons with independently motivated properties of extended projections. To develop this idea, it is instructive to briefly consider other properties of the functional makeup of clauses. A classical observation made by van Riemsdijk (1990, 1998), Grimshaw (1991, 2000), and others is that the functional layers projected over a lexical projection form an unit – an *extended projection* in Grimshaw's (1991) terms. Grimshaw (1991, 2000) observes that selection may require access to information that is not present on the highest member of an extended projection (also see Shlonsky 2006). For example, the verb *request* takes a subjunctive complement clause, while a verb like *think* is incompatible with it.

(42)   a.   We requested that he leave/?left at 6.

       b.   We thought that he left/*leave at 6.   (Grimshaw 2000:130)

Crucially, both types of complement clauses are headed by the complementizer *that,* indicating that the relevant distinction is not present on C^0 itself. This raises the question of how the matrix verb can select for the property of an embedded clause that is encoded more deeply than the

highest projection of that clause. Grimshaw proposes that the features of a head percolate up within an extended projection. Because the TP forms an extended projection with the CP, the indicative/subjunctive feature percolates to the CP level and can there be selected for by the matrix predicate.

I propose that Upward Entailment (40) follows from this general mechanisms applied to category features. A number of technical implementations are available to achieve this result. For the sake of concreteness, I will adopt the recursive formulation in (43). It states that within an extended projection (e.g., $\langle$CP $>$ TP $>$ vP $>$ VP$\rangle$), at least the categorial features percolate up, though others plausibly do as well.[21]

(43)   *Category Inheritance*
       Given an extended projection $\Phi = \langle \Pi_n > \Pi_{n-1} > \ldots > \Pi_1 \rangle$, where as Π_x's are phrases, the categorial features of Π_m are inherited up to Π_{m+1}.

(43) states that if a head takes a complement that is part of the same extended projection, the category of the resulting constituent is a function of both the category of the head and of its complement. The category of complex expression is hence determine bilaterally in this case. Across extended projections, by contrast, only the category of the head projects. This is illustrated in (44):

(44)   *Schematic example of (43)*
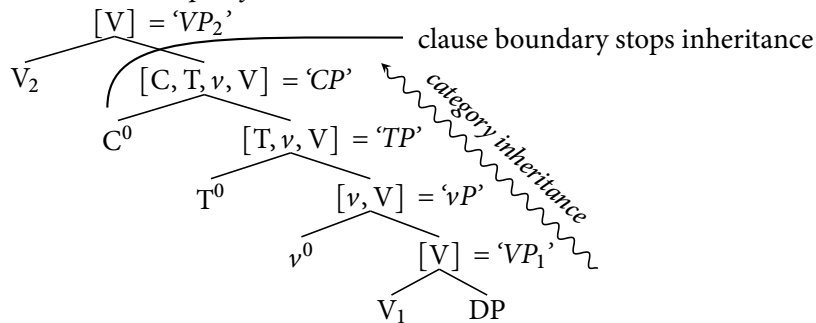
Within the extended projection spanning the lower V up to the C layer, category is cumulative: Following and extending Grimshaw's (1991, 2000) proposal, category features percolate up beyond the immediate projection of the head by (43). Importantly, category inheritance applies only to heads within a single extended projection. Returning to the schematized structure in (44), merging v^0 and VP$_1$ ([V]) creates a complex mother label [v, V], which reflects the categories of both of its daughters, as v^0 and V^0 are part of the same extended projection. The same holds for Merge of T^0 and vP, which creates the complex label [T, v, V], and so forth. On the other hand, V$_2$ and

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[21]   As noted in the main text, alternatives are conceivable and little will hinge on the formulation adopted here. Van Riemsdijk (1990, 1998) and Grimshaw (1991, 2000) propose that all heads within an extended projection have the same category. They are differentiated by a second feature that indicates the level of the head within the extended projection. Inheritance could then be stated in terms of level features. An anonymous reviewer suggests an alternative but related way of deducing Upward Entailment. In this alternative, functional heads are lexically decomposed into categorial subfeatures. Thus, the head v^0 would comprise the subfeatures $\{v, V\}$, T^0 would consist of $\{T, v, V\}$, and so on. Horizon inheritance (45) would then follow even without category inheritance (43). The alternative differs from the proposal in the text in that it locates the regularity in the lexicon instead of the syntax. For the purposes of this paper, the two alternatives are equivalent.

CP are not part of the same extended projection. Thus, at this juncture point between extended projections the category of the mother node is unilaterally determined by only V_2, thus creating VP_2 ($[V]$).
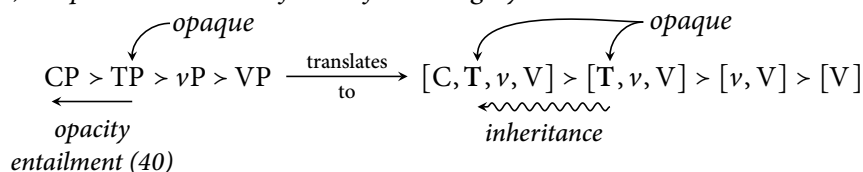
The two assumptions that (i) categorial features can be horizons in (38) and (ii) categorial features percolate within an extended projection in (43) together give rise to the following theorem:

(45)   *Horizon Inheritance Theorem*
       Given a probe π and an extended projection $\Phi = \langle \Pi_n > \Pi_{n-1} > \ldots > \Pi_1 \rangle$, if $\Pi_m \in \Phi$ is a horizon for π, then all projections $\Pi_{m+1}, \ldots, \Pi_n$ are likewise horizons for π (due to category inheritance (43)).

Suppose there is a probe $\pi \dashv T$. CPs will be opaque for π, as they are projected higher than TPs and hence inherit a T specification in their complex category label (see (44)). Because, by assumption, a T category is a horizon for π, it necessarily follows that CP is a horizon for π as well. This is schematized in (46).

(46)   *Upward Entailment follows from category inheritance*

$$\overbrace{}^{opaque}\; CP > TP > vP > VP \xrightarrow[\text{to}]{\text{translates}} [C, T, v, V] > [T, v, V] > [v, V] > [V] \;\overbrace{}^{opaque}$$

       opacity   *inheritance*
   entailment (40)

Against this background, let us return to the schematic example considered above: Let there be a probe $\pi \dashv T$, located on T^0, and let the embedded clause be a CP. Because of category inheritance, CP contains a T specification, hence constituting a horizon for π. The CP clause is therefore completely inaccessible to π, including XP at its edge.

(47)   *Search space of $\pi \dashv T$* (revised from (41))

$$\pi \ldots [_{CP} \; \textbf{XP} \; C^0 \; [_{TP} \ldots \;] \;]$$

       search space
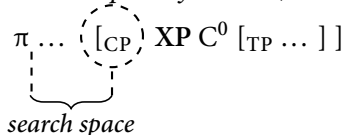
Upward Entailment is thereby derived: Addition of functional structure never leads to transparency.

To summarize this section, I have taken selective opacity at face value and proposed that probes can be blocked by different projections. Thus, opacity is not always binary: The same node can be opaque for one probe, but transparent for another. I have suggested that selective opacity is an instance of defective A-over-A intervention, thus extending defective intervention to dominance relations between the intervener and the goal. I have proposed that probes have characteristic horizons, which induce a termination of their search. Following previous work on extended projections and their properties, I have proposed that categorial features are inherited up within an extended projection. As a result, if a specific category label constitutes the horizon for a probe, then all higher projections within the same extended projection will likewise constitute horizons for that probe.

4.2 *Application*

Section 4.2.1 will illustrate the proposal on the basis of the intricate movement and agreement facts observed for Hindi in section 2. Section 4.2.2 will then discuss a crucial expectation of the horizons accounts – that selective opacity effects are non-binary. Based on *wh*-licensing in Hindi, I will show that this expectation is borne out. In section 4.2.3, I will move on to demonstrate how this system derives a ban on hyperraising and other selective opacity effects and I will discuss cases that empirically favor the horizons account over more traditional analyses.

4.2.1 *Movement and agreement in Hindi*

Recall from (32) the crucial generalizations regulating crossclausal movement and agreement in Hindi motivated in sections 2 and 3: ϕ-agreement and A-movement are possible out of vP clauses, but not out of TP and CP clauses; $\overline{\text{A}}$-movement is possible out of all three types of clauses.

    The three probes underlying these processes differ in their horizons. These horizon settings are given in (48), where the subscript to the probe designates the syntactic position of that probe. The category feature T constitutes a horizon for the probes underlying A-movement ($[\cdot\text{A}\cdot]$) and ϕ-agreement ($[*\phi*]$). Search initiated by these probes will thus terminate upon encountering a TP or a CP node. The $\overline{\text{A}}$-probe ($[\cdot\overline{\text{A}}\cdot]$) does not have a horizon. We will see in section 5.2 below that the horizons account in fact derives various aspects of (48).
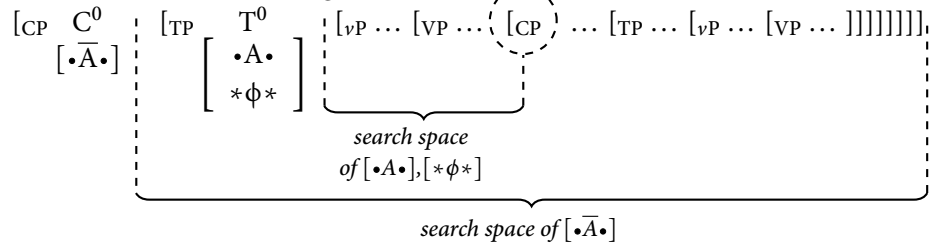
(48)   *Hindi probes and their horizons*
     a. $\left[\cdot\text{A}\cdot\right]_{\text{T}^0}$ ⊣ T   b. $\left[*\phi*\right]_{\text{T}^0}$ ⊣ T   c. $\left[\cdot\overline{\text{A}}\cdot\right]_{\text{C}^0}$ ⊣ ∅

    To illustrate, consider first finite clauses. As argued above, the following generalizations hold: (i) finite clauses allow $\overline{\text{A}}$-extraction; (ii) they disallow both A-extraction out of them and ϕ-agreement into them; (iii) DPs moved out of them cannot control ϕ-agreement in the higher clause.

    The schematic clause structure of a finite clause embedding and its interaction with matrix probes is provided in (49). Because $[\cdot\text{A}\cdot]$ ⊣ T and $[*\phi*]$ ⊣ T, the search space of these two probes terminates at the CP node of the embedded clause, as a consequence of horizon inheritance (45). Because A-extraction and ϕ-agreement are parasitic on the establishment of an Agree relation with $[\cdot\text{A}\cdot]$ and $[*\phi*]$, respectively, A-movement out of and ϕ-agreement into a finite clause are altogether impossible. Importantly, this includes elements at the edge of the finite clause, as these too are dominated by CP. Search induced by $[\cdot\overline{\text{A}}\cdot]$, on the other hand, is not restricted by CP nodes or any lower node and hence enjoys a search space that encompasses the embedded clause. $\overline{\text{A}}$-extraction out of finite clauses is hence possible. Finally, because $\overline{\text{A}}$-extraction lands in Spec,CP, its landing site is outside the c-command domain of the matrix $[*\phi*]$-probe, which as shown in section 3 is located on T^0. ϕ-agreement with an $\overline{\text{A}}$-moved element is therefore impossible. I would like to emphasize that $[\cdot\overline{\text{A}}\cdot]$'s search space in (49) is indicated only with respect to horizons. It is conceivable, and in fact plausible, that other non-relative constraints on movement like phases impose further restrictions on a probe's search space. This issue is addressed in section 6.
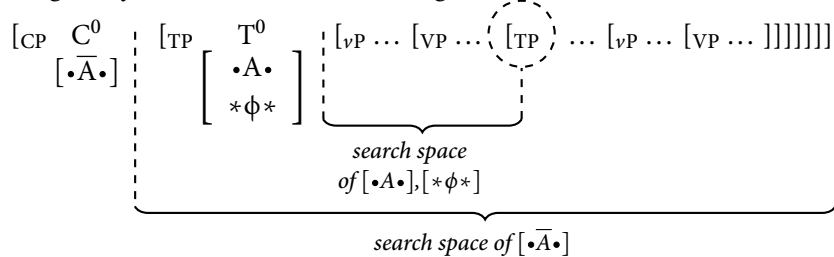
(49) *Finite clause (CP) embedding in Hindi*

$[_{CP}$ C⁰ $[_{TP}$ T⁰ $[_{vP}$ ... $[_{VP}$ ... $([_{CP}$ ... $[_{TP}$ ... $[_{vP}$ ... $[_{VP}$ ...]]]]]]]]]
       $[\bullet\overline{A}\bullet]$ $\begin{bmatrix} \bullet A\bullet \\ *\phi* \end{bmatrix}$

search space
of $[\bullet A\bullet],[*\phi*]$

search space of $[\bullet\overline{A}\bullet]$

This account derives the three crucial properties of finite clause: (i) they allow $\overline{A}$-extraction because they are accessible to $[\bullet\overline{A}\bullet]$, (ii) they disallow A-extraction and φ-agreement because CPs are horizons for $[\bullet A\bullet]$ and $[*\phi*]$, and (iii) elements moved out of them must have been $\overline{A}$-moved and hence landed in CP, a position too high to control verb agreement in the higher clause.
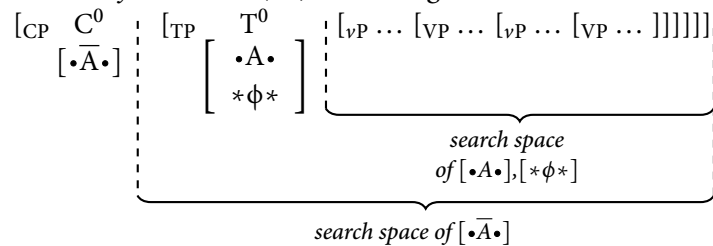
Let us now turn to infinitival clauses. The crucial facts that need to be derived are that all else equal, LDA into them is optional, but it becomes obligatory if A-extraction out of them has taken place. Given the considerations in section 2.5, infinitival clauses are ambiguous between a TP and a *v*P structure in Hindi. As mentioned above, I treat φ-Agree as obligatory if possible and default agreement as a last resort (Preminger 2011, 2014). On a TP structure, the opacity facts are distributed in a way parallel to (49): $[\bullet A\bullet]$ and $[*\phi*]$ cannot access the embedded clause while $[\bullet\overline{A}\bullet]$ can:

(50) *Large nonfinite clause (TP) embedding in Hindi*

$[_{CP}$ C⁰ $[_{TP}$ T⁰ $[_{vP}$ ... $[_{VP}$ ... $([_{TP}$ ... $[_{vP}$ ... $[_{VP}$ ...]]]]]]]]
       $[\bullet\overline{A}\bullet]$ $\begin{bmatrix} \bullet A\bullet \\ *\phi* \end{bmatrix}$

search space
of $[\bullet A\bullet],[*\phi*]$

search space of $[\bullet\overline{A}\bullet]$

On a *v*P structure, on the other hand, all three probes are able to access the embedded clause, as no node of category T intervenes. This is shown in (51), where the matrix $[*\phi*]$ can agree into the embedded clause and LDA is thus obligatory.

(51) *Small nonfinite clause (vP) embedding in Hindi*

$[_{CP}$ C⁰ $[_{TP}$ T⁰ $[_{vP}$ ... $[_{VP}$ ... $[_{vP}$ ... $[_{VP}$ ...]]]]]]]
       $[\bullet\overline{A}\bullet]$ $\begin{bmatrix} \bullet A\bullet \\ *\phi* \end{bmatrix}$

search space
of $[\bullet A\bullet],[*\phi*]$

search space of $[\bullet\overline{A}\bullet]$

In the TP structure (50), LDA is impossible; in the *v*P structure (51), it is obligatory. Because the two structures are surface-identical, the superficial optionality of LDA (as in (7)) is accounted for.

Consider now a structure in which A-movement out of the infinitival clause takes place, as in (52), repeated from (12b). As shown above, LDA is obligatory in this case even if the element that A-moves is not the agreement controller:

(52) **har bacce-ko₁** [*us-kii₁* mãã-ne] [t_1 film dikhaa -nii/*?-naa]
     every child-DAT 3SG-GEN mother-ERG movie.F show-INF.F.SG/*?-INF.M.SG
     caah -ii/*?-aa
     want-PF.F.SG/*?-PF.M.SG
     'For every child x, x's mother wanted to show x a movie.'

Because [•A•] ⊣ T, the A-movement of the indirect object *har bacce-ko* in (52) requires that the embedded clause must be a vP, as in (51). The lower clause is hence necessarily transparent for the matrix [∗φ∗]-probe. Because Agree is obligatory if possible, LDA with *film* is obligatory in this case. The resulting structure is given in (53). I will stay agnostic as to whether the external argument moves to Spec,TP in (53) (cf. Davison 2004, Anand & Nevins 2006). Because the ergative DP is invisible to T^0's φ-probe, its exact structural position is irrelevant to the analysis of (52).[22]

(53) *Structure of (52)*
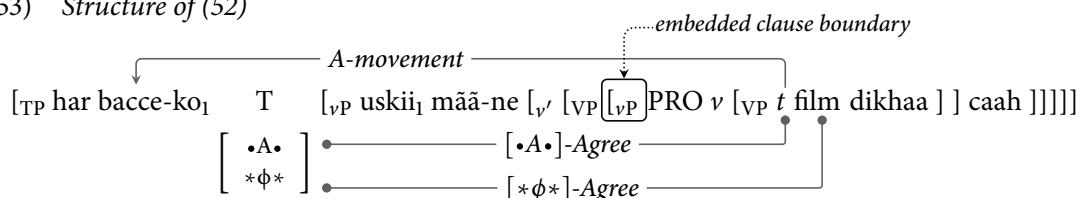
It also follows that only A-movement renders LDA obligatory. A̅-movement is possible out of vP and TP clauses alike and hence does not impact the surface optionality of LDA. The system proposed here thus accounts for the crucial generalizations argued for in section 2 ((21) and (23)).

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[22] Notice that the PRO inside the embedded clause intervenes between the agreeing probe on T and the embedded object and one might wonder why it does not intervene for φ-agreement (see Bhatt 2005 for discussion). Interestingly, there is evidence that PRO in Hindi lacks φ-features. Some secondary predicates like *nangaa* 'nude' have to obligatorily agree in φ-features with the subject (i.a). If these predicates modify a PRO, no such agreement is possible. Instead, they have to appear in their masculine singular form, irrespective of the φ-content of the controller of PRO, indicating that PRO does not contain φ-features. This is shown in (i.b). If these considerations are on the right track, we immediately derive why PRO does not intervene for φ-agreement in (53): it invisible for a verbal φ-probe and hence not block Agree over it. Thanks to Kyle Johnson for discussions of this issue.

(i) a. miinaa nang-ii/*-aa naac-tii hai
     Mina.F nude-F.SG/*-M.SG dance-IPF.F.SG be.3SG
     'Mina dances nude.'

    b. miinaa [PRO nang-aa/*-ii naac-naa] caah-tii hai
     Mina.F nude-M.SG/*-F.SG dance-INF.M.SG want-IPF.F.SG be.3SG
     'Mina wants to dance nude.'

4.2.2 Beyond the A/$\overline{\text{A}}$-distinction

The Hindi patterns discussed so far involved a binary distinction between locality profiles. The A- and φ-probes have T as their horizon, while the $\overline{\text{A}}$-probe has no horizon whatsoever. The horizons account proposed here gives rise to the expectation that locality pattern should go beyond a binary distinction, as horizon settings other than the ones considered so far are permitted. The various examples in section 1 make it clear that crosslinguistically, locality patterns are indeed substantially more nuanced than a binary split between A- and $\overline{\text{A}}$-locality would lead one to expect. And even within Hindi, we find evidence for a third locality profile, which I will briefly discuss in this section.

It is well-established in the literature that *wh*-elements do not undergo obligatory overt movement to Spec,CP in Hindi (Mahajan 1990, Srivastav 1991, Dayal 1996, Kidwai 2000, Manetta 2010). They have a weak tendency to appear in a preverbal focus position, but they may also scramble into other positions (Mahajan 1990, Dayal 1996, 2017, Kidwai 2000).

(54) raam-ne kyaa khaa-yaa   thaa?
       Ram-ERG what eat-PF.M.SG be.PST.M.SG
       'What did Ram eat?'   (Mahajan 1990:125)

I remain agnostic here as to whether *wh*-elements are licensed by covert movement, as proposed by Mahajan (1990), Srivastav (1991), and Dayal (1994b, 1996), or whether they are licensed in situ.[23]

Crucially for our present concerns, the locality of *wh*-licensing falls in-between those of A-movement and φ-agreement on the one hand and $\overline{\text{A}}$-movement on the other. Finite clauses in Hindi are scope islands for *wh*-elements inside them (Mahajan 1990, 2000, Srivastav 1991, Dayal 1996, Lahiri 2002, Bhatt & Dayal 2007). In (55), the embedded *wh*-element *kis-ko* 'who-ACC' cannot take matrix scope and only an embedded-question interpretation is possible.[24]

(55) siitaa-ne kah-aa   [ki ravii-ne **kis-ko** dekh-aa   ]?
       Sita-ERG say-PF.M.SG   that Ravi-ERG who-ACC   see-PF.M.SG
       'Sita said who Ravi saw.'
       Not: 'Who did Sita say that Ravi saw?'

The boundedness of *wh*-licensing with respect to finite clauses clearly sets it apart from $\overline{\text{A}}$-movement in the language.

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[23] Manetta (2010) makes an interesting third proposal, according to which *wh*-elements move overtly to Spec,*v*P and are licensed from there. See Dayal (2017) for recent discussion.

  In Keine (2016), I argue on the basis of evidence from focus intervention effects (Beck 1996, 2006, Pesetsky 2000, Kotek 2014) that the *wh*-licensing relationship is established through an Agree dependency and hence does not require covert movement.

[24] In order to obtain a matrix-question reading in (55), one of two strategies can be used (Mahajan 1990, Dayal 1996, Manetta 2010). One is to $\overline{\text{A}}$-move the *wh*-item into the matrix clause, from where *wh*-licensing does not need to cross a CP anymore. The other one is to use the so-called 'scope-marking construction', where the *wh*-item remains in the lower clause but the matrix clause contains the question word *kyaa* 'what'. Dayal (1994b, 1996, 2017) and Lahiri (2002) argue that such structures comprise two separate and local *wh*-dependencies: the embedded *wh*-item takes embedded *wh*-scope, yielding an embedded question, which serves as the restrictor for the question word in the matrix clause, which in turn yields a local matrix question. What both strategies have in common is that *wh*-licensing does not cross a CP.

Turning to infinitival clauses, we find that *wh*-licensing is possible across an infinitival clause boundary (Mahajan 1990, Dayal 1996). Notably, this holds regardless of whether LDA into this clause has taken place or not, as (56) shows, where LDA with *film* is optional. In this lack of interaction between *wh*-licensing and LDA, *wh*-licensing contrasts with what we saw for A-movement.

(56) raam-ne [**kaunse baccõ-ko** film dikhaa-nii/-naa] caah-ii/-aa ?
      Ram-ERG which children-DAT movie.F show-INF.F.SG/-INF.M.SG want-PF.F.SG/-PF.M.SG
      'Which children did Ram want to show a movie to?'

Taken together, these facts indicate that *wh*-licensing in Hindi is possible out of both *v*P and TP clauses, but not out of CP clauses. Within the horizons account, this suggests that the probe underlying *wh*-licensing, which I refer to as $[*\text{wh}*]$, has C as its horizon. This *wh*-probe is distinct from the $\overline{\text{A}}$-probe in Hindi, as neither entails the other. *Wh*-licensing does not require $\overline{\text{A}}$-movement and $\overline{\text{A}}$-movement can apply to non-*wh* elements. Assuming that $[*\text{wh}*]$ resides on C^0, we obtain:

(57) $[*\text{wh}*]_{C^0}$ ⊣l C

(57) has the effect that only CP clauses are opaque to search by $[*\text{wh}*]$ and hence *wh*-licensing. Along with the generalizations seen earlier, we arrive at the final summary table in (58).

(58) *Transparency (✓) and opacity (*) by clause type and operation* (final version)

	probe location	*Size of clause*		
		CP (*finite*)	TP (*nonfinite*)	*v*P (*nonfinite*)
φ-agreement	T^0	*	*	✓
A-movement	T^0	*	*	✓
wh-licensing	C^0	*	✓	✓
$\overline{\text{A}}$-movement	C^0	✓	✓	✓

(58) highlights that selective opacity is not a binary phenomenon, given that there are at least three distinct locality types in Hindi. This finding poses a challenge for any theory that limits itself to the binary A/$\overline{\text{A}}$-distinction. Furthermore, *wh*-licensing conforms to Upward Entailment and the Height–Locality Connection and thereby provides further support for their empirical validity as overarching generalizations of selective opacity.[25] Finally, to the extent that *wh*-licensing does not involve movement (see fn. **??**), (58) also demonstrates that locality mismatches are not limited to movement but also arise between different types of in-situ/Agree relations.

4.2.3 Hyperraising and related restrictions

The analysis just proposed extends to hyperraising and other selective opacity effects without further ado. A-movement is impossible out of CPs in English for the same reason as in Hindi. T^0's

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[25] The locality contrast between $\overline{\text{A}}$-movement and *wh*-licensing in (58) also suggests that the syntactic location of a probe does not entirely determine its horizon setting. See sections 4.2.3 and 5 for discussion.

EPP probe (notated here as $[\cdot A \cdot]$) has C as its horizon ($[\cdot A \cdot]$ ⊣∣ C) and hence cannot search into a CP.

(59) a.   *John$_1$ seems [$_{CP}$ t_1 likes oatmeal].

b.   T^0 seems   [$_{CP}$] John likes oatmeal].
      $[\cdot A \cdot]$

      search
      space

$\overline{A}$-extraction out of CPs is thereby correctly ruled out.[26] C is not, by contrast, a horizon for $\overline{A}$-probes, a fact that allows for $\overline{A}$-extraction out of finite clauses.

A distinctive feature of this account is that it attributes the restriction to a constraint on Agree and not on movement itself. On the present account, improper movement is a manifestation of a more general pattern, which one might call 'improper Agree'.

A second dimension in which the present analysis embodies a substantial shift in perspective from standard approaches to improper movement is that the properties of the moving element (*John* in (59b)) and the kind of position it occupies play no role in the account of (59). Most previous accounts (with one notable exception being Williams 2003, 2013) are based on a constraint that applies to the moving element or its trace, e.g., an element may not move from an $\overline{A}$- to an A-position (see Chomsky 1973, 1977, 1981, May 1979, Müller & Sternefeld 1993, Abels 2007, 2009, Müller 2014a). By contrast, the present account focuses exclusively on probes and their horizons. (59) is ruled out because the A-probe cannot search past the CP node. *John* is therefore simply outside the portion of the structure that is visible to the probe.

This change in perspective has a number of consequences. First, no designated constraints on possible sequences of movement types like the Ban on Improper Movement are needed anymore. Rather, the fact that $\overline{A}$-movement cannot feed A-movement follows as an epiphenomenon: $\overline{A}$-movement requires the presence of a CP layer and this CP layer prevents a higher A-probe from reaching the $\overline{A}$-moved element. Second, the invisibility of *John* to the $[\cdot A \cdot]$-probe in (59b) holds irrespective of whether *John* has undergone $\overline{A}$-movement in the embedded clause. As a consequence, both a successive-cyclic derivation via Spec,CP and a one-fell-swoop derivation of (59a) are ruled out in a uniform manner. Third, the account derives an interesting range of improper movement facts that lie beyond the scope of more traditional accounts. As Sakai (1994), Abels (2007, 2009), and Neeleman & van de Koot (2010) have emphasized, A-movement out of a CP is impossible even if the moving element has not itself undergone any $\overline{A}$-movement, but is 'smuggled' to the CP edge inside another, $\overline{A}$-moved constituent (see also Collins 2005). A relevant example is provided in (60), which is taken from Abels (2009:331) and based on an example by Sakai (1994:300).

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[26]   A reviewer points out that this account is incompatible with an analysis of *tough*-constructions in which the *tough*-subject undergoes A-movement out of an embedded CP clause. While Hartman (2011) provides an empirical argument for this A-movement step based on defective intervention by PP experiencers, the empirical generalization underlying this argument and the argument itself have been called into question by Bruening (2014) and Keine & Poole (2017). In fact, Keine & Poole (2017) argue that these PP intervention facts provide evidence for a base-generation analysis of *tough*-constructions, in which no movement from an $\overline{A}$- to an A-position takes place. If this approach is on the right track, then *tough*-constructions are unproblematic for the account presented here.

Here, $\overline{\text{A}}$-movement of *how likely Oscar to win* is followed by A-movement of *Oscar.* The result is ungrammatical.

(60)   *Oscar$_1$ is known [[how likely t_1 to win]$_2$ it was t_2]

A-movement — $\overline{\text{A}}$-*movement*
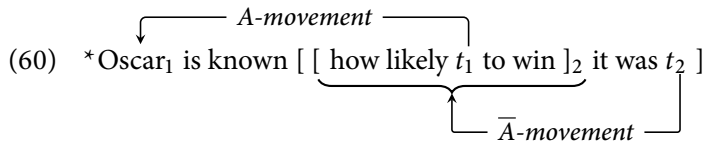
The derivation in (60) is not ruled out by the traditional Ban on Improper Movement because the element that undergoes $\overline{\text{A}}$-movement is distinct from the element that undergoes the A-movement step. Its ungrammaticality is therefore unexpected on this account. The horizons account, by contrast, extends to (60) without further ado. Search by the A-probe on T^0 terminates at the CP node of the lower clause and no Agree relation with *Oscar* can be established. A-movement is consequently ruled out for exactly the same reason as in (59).[27]

(61)   … T^0 is known $[_{CP}$ [how likely Oscar to win]$_1$ it was t_1]
          $[\bullet A\bullet]$

search space
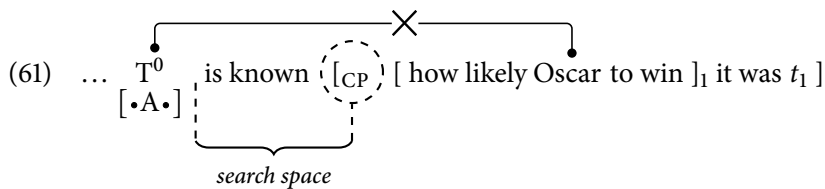
Abels (2007, 2009) provides evidence that similar interactions in smuggling derivations hold more generally. The ability of the horizons account to derive configurations like (60) is an immediate consequence of the fact that it does not invoke the moving element per se or conditions on possible sequences of movement types. The gain in empirical coverage that this yields is hence a direct consequence of the focus on probes and their search spaces.[28]

Moreover, horizons offer a new perspective on crosslinguistic variation in the availability of hyperraising. It has often been observed that some languages allow A-movement out of finite clauses, e.g., many Bantu languages (e.g., Carstens 2011, Diercks 2012, Halpert 2012). This variability now emerges as a consequence of the parametrization inherent in horizons. In English, $[\bullet A\bullet]$ ⊣ C blocks A-movement out of CPs. In languages that allow hyperraising, $[\bullet A\bullet]$ ⊬ C and CPs therefore do not block probing by an $[\bullet A\bullet]$-probe.

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[27] It would also be a priori possible to attribute the ungrammaticality of (60) to *freezing* (Wexler & Culicover 1980), which prohibits extraction out of a moved constituent. A general freezing principle is arguably too strong, however, because $\overline{\text{A}}$-movement out of an $\overline{\text{A}}$-moved constituent, while not perfect, is considerably better than (60) (Chomsky 1986:25–27, Lasnik & Saito 1992:102, Sakai 1994:300n9, McCloskey 2000:62n7, Rizzi 2006:114). One relevant example is given in (i):

(i)   the guy [∅$_1$ that we couldn't decide [[how many pictures of t_1]$_2$ we should buy t_2]]

(McCloskey 2000:62n7)

An omnibus freezing principle would incorrectly attribute to (i) the same ungrammatical status as to (60). By contrast, the horizons account excludes (60), but permits (i), as only the A-probe has C as its horizon. A similar argument is advanced by Abels (2007, 2009) and Neeleman & van de Koot (2010), who emphasize that $\overline{\text{A}}$-movement out of an A-moved constituent is possible, contrary to what a general freezing constraint predicts.

[28] Grewendorf (2003), Williams (2003), and Abels (2007, 2009) argue that related effects also hold of remnant movement. Horizons extend to interactions in remnant-movement configurations.

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Finally, selective opacity effects beyond traditional hyperraising are likewise accounted for. First, that extraposition in English is not able to extract an element even out of an infinitival clause follows if the probe underlying extraposition has T as its horizon. As a consequence, both TPs and CPs are opaque for extraposition. Second, as noted in section 1, finite clauses in German are transparent to *wh*-movement, but opaque to relativization (see (5)). This follows if the probe for relativization has C as its horizon, whereas the *wh*-probe does not. Third, as also mentioned in section 1, V2 clauses in German are opaque to movement into a V-final clause, but not for movement into a V2 clause (see (4) above), whereas V-final clauses are transparent for movement into V-final clauses as well as V2 clauses. Following analyses by Sternefeld (1992) and Williams (2003:78–79), we may account for this curious restriction on the assumption that V2 clauses comprise more structure than V-final clauses. This view is independently plausible in light of Gärtner's (2002) and Truckenbrodt's (2006) arguments that V2 encodes assertional proto-force. It is thus natural to treat V2 clauses as ForcePs and V-final clauses as, e.g., FinPs, where ForceP dominates FinP (also see Frey 2011 for the relationship between V2 and ForceP). As a result, movement into a V2 clause targets a higher position (Spec,ForceP) than movement into a V-final clause (Spec,FinP). If ForceP is a horizon for the movement-inducing probe on Fin^0 ($[\bullet\pi\bullet]_{Fin^0}$ ⊣⊦ Force), but not for the probe triggering movement to Spec,ForceP ($[\bullet\pi_{V2}\bullet]_{Force^0}$ ⊣⊦ $\emptyset$), the pattern follows: V2 clauses (i.e., ForcePs) are transparent only for movement into a V2 clause ($[\bullet\pi_{V2}\bullet]_{Force^0}$). V-final clauses (FinPs), by contrast, are transparent for both probes, but not for certain other probes, e.g., relativization or scrambling. Due to its flexibility, this line of account can be straightforwardly extended to the various other selective opacity facts summarized in section 1.[29]

In sum, this section has developed an account of the Hindi movement–agreement interactions in particular and selective opacity phenomena in general. Three components of the analysis are crucial. First, opacity, at least of the kind investigated here, is relative. The same node can be a horizon for some probes, but not for others. As a consequence, opacity is not an all-or-nothing property. Second, the constraint is formulated on the basis of Agree. This allows it to regulate movement as well as agreement and derive interactions between the two. Third, category features, and hence horizons, are inherited along the spine of an extended projection. This correctly entails that there is no movement that, e.g., can escape a finite clause but not a nonfinite clause.

5   Deriving the Height–Locality Connection

One of the main insights of the recent literature on selective opacity is that it is not distributed arbitrarily, but that there seems to be a systematic relationship between the height of movement type's landing site in the functional structure and its locality profile, as reviewed in section 3 (Sternefeld 1992, Williams 2003, 2013, Abels 2007, 2009, 2012a, Müller 2014a,b). Section 3 also presented evidence from Hindi further supporting this generalization and arguing that it also holds for ϕ-agreement. I have called this empirical generalization over movement and agreement dependencies the Height–Locality Connection; it is repeated from (33) in (62). The present section is devoted to demonstrating that the horizons account proposed above allows us to derive a version

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[29]   See Keine (2016) for an in-depth application of the horizons account to German.

of this connection in a principled way and that it hence allows us to understand why there should be a connection between height and locality to begin with.

(62) *Height–Locality Connection*
The higher the structural position of a probe π, the more kinds of structures π can search into.

While it is of course possible in any theory to stipulate a connection to the effect of (62), I will show that the account developed here derives a connection between height and locality without actually imposing a designated restriction on the two. This consequence emerges because, as I will show, certain pairings of locality and height systematically deprive a probe of all search space, thus rendering the probe vacuous in the sense that it is unable to give rise to movement or agreement dependencies. For all non-vacuous probes, syntactic height effectively imposes restrictions on locality and vice versa. Because movement and agreement dependencies can only be triggered by non-vacuous probes, all attested movement and agreement dependencies exhibit an empirical link between the position that they target and their locality profile. This derives a version of (62). As a result, the account proposed here makes prediction about possible and impossible selective opacity patterns.

5.1 *Proposal*

Consider a probe π on some projection Π_m whose horizon is Π_{m-1} (i.e., π ⊣ı Π_{m-1}), i.e., the projection immediate below it. In such a case, π's sister constitutes a horizon for π and terminates a π-initiated search. For example, if π is located on C^0, with π ⊣ı T, the result is (63):

(63) *Example of a vacuous probe:* π on C^0 with π ⊣ı T
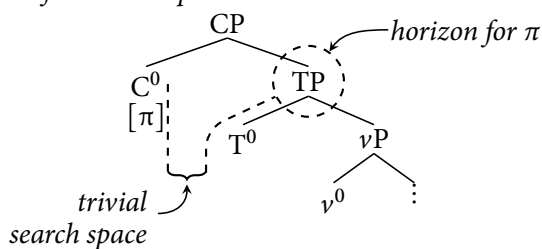
In this case, π's search is immediately terminated upon encountering the first element in its search space, namely its sister (TP in (63)). π's search space is therefore trivial in that π will be unable to enter into movement or agreement dependencies with another element as its search space does not comprise any possible goals for such operations.[30] I will call such probes *vacuous*. Because vacuous probes like π in (63) cannot enter into movement or agreement dependencies with other

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[30] One question that arises is whether π's sister node TP is itself a viable goal for π. Assuming an anti-locality constraint that prohibits movement of a complement to the specifier position of the same projection for general reasons of economy (Abels 2003), π could not induce movement of TP. Furthermore, Agree between π and TP would be factually indistinguishable from selection/subcategorization under sisterhood. π would therefore likewise be undetectable. Detectable Agree, i.e., Agree with an element farther away than π's sister is ruled out in (63). I will use the term 'agreement' here to refer to agreement between elements in an asymmetric c-command relationship.

elements, π's presence in (63) would be effectively undetectable in the output of the system as far as such dependencies are concerned. Only non-vacuous probes can underlie attested movement and agreement dependencies.

The distribution of vacuous probes generalizes. Recall from the previous section the Horizon Inheritance Theorem in (45), repeated here:

(64) *Horizon Inheritance Theorem*
Given a probe π and an extended projection $\Phi = \langle \Pi_n > \Pi_{n-1} > \ldots > \Pi_1 \rangle$, if $\Pi_m \in \Phi$ is a horizon for π, then all projections $\Pi_{m+1}, \ldots, \Pi_n$ are likewise horizons for π (due to category inheritance (43)).

For any extended projection (e.g., $\langle CP > TP > vP > VP \rangle$), opacity ascends up the spine of that extended projection. As a consequence, the restriction just discussed generalizes to *all* projections lower than the one that the probe is located on. Consider, as an example, a probe π located on C^0 and with v as its horizon ($\pi \dashv\!\!\vert\ v$). Because TP is higher than vP, TP will be a horizon for π by (64). This in turn entails that π is a vacuous probe, analogous to the situation depicted in (63).

The concept of horizons thus has as an immediate consequence the theorem in (65). The theorem specifies relationships that must hold between the location of a probe and its horizon setting in order for this probe to be non-vacuous. Probes that violate (65) are possible as far as the axioms of the system are concerned, but they will be vacuous, and hence unable to result in movement or agreement dependencies. (65a) restricts what may constitute a horizon for a probe given the syntactic position of that probe. Conversely, (65b) states a restriction on the syntactic position that a probe may occupy given its horizon specification.

(65) *Height–Locality Theorem*
Given an extended projection $\Phi = \langle \Pi_n > \Pi_{n-1} > \ldots > \Pi_1 \rangle$, for any non-vacuous probe π,

    a. *Height → locality entailment:*
       If π is located on Π_m, then a projection $\in \{\Pi_{m-1}, \ldots, \Pi_1\}$ cannot be a horizon for π.

    b. *Locality → height entailment:*
       If π has Π_m as a horizon, then π cannot be located on a projection $\in \{\Pi_n, \ldots, \Pi_{m+1}\}$.

(65a) expresses the consequence that, e.g., a non-vacuous probe located on C^0 could not have V, v, or T as its horizon. This entails that VP clauses, vP clauses, and TP clauses are necessarily transparent to such a probe. Knowing the location of a non-vacuous probe thus imposes restrictions on its possible locality properties. Conversely, knowing the locality properties of a probe imposes restrictions on its possible locations (65b). There is hence an abstract but entirely general connection between a probe's location and its possible horizon settings. For any non-vacuous probe, the consequence that certain horizon settings violate (65) given the location of this probe immediately entails that some clauses are necessarily transparent to this probe.

It is important to emphasize that neither (65a) nor (65b) are stipulations of the system. Nothing in the account precludes the existence of probes that do not conform to (65). As far as the axioms of the account are concerned, all pairings of location and horizons are allowed. But as I have just shown, pairings that do not conform to (65) result in vacuous probes, which are unable to

trigger movement or agreement dependencies. It follows that all attested movement and agreement dependencies must be triggered by probes for which height and locality stand in the relationship described by (65). Consequently, all such movement and agreement dependencies exhibit an empirical link between height and locality, and hence a version of the Height–Locality Connection (62). As a result, while the horizons system itself hence does not impose any designated connection between height and locality, such a connection nevertheless arises in the *output* of the system. The Height–Locality Connection is thus an *emergent* feature of the horizons account and derived from the more basic architecture of horizons.[31]

5.2 *Some consequences of the Height–Locality Theorem*

To provide a concrete illustration of the empirical effects of the Height–Locality Theorem (65), (66) and (67) provide a number of concrete entailments that the theorem gives rise to in Hindi. (66) illustrates how the syntactic location of a probe constrains its possible horizon settings and hence its locality profile. (67) shows how knowing the horizon of a probe constrains its possible syntactic locations. All entailments in (66) and (67) are correct in Hindi.

(66) *Empirical effects of the Height–Locality Theorem (65) in Hindi: Height → locality*

   a. $\overline{A}$-*movement*
       As motivated in section 3, the $\overline{A}$-probe $[\cdot\overline{A}\cdot]$ is located on C^0. By (65a), neither T nor v nor V can be horizons for $[\cdot\overline{A}\cdot]$. TP clauses as well as vP clause are hence necessarily transparent to $[\cdot\overline{A}\cdot]$. Consequently, nonfinite could not be islands for movement triggered by $[\cdot\overline{A}\cdot]$. Furthermore, such movement could not interact with long-distance agreement in that it would make LDA into that clause obligatory (as in the case of A-movement). This entailment is correct, as shown in section 2.

   b. *Wh-licensing*
       Because the *wh*-probe is likewise located on C^0, the entailment for its locality is identical to the case of $\overline{A}$-movement. Nonfinite clauses could not be opaque to *wh*-licensing and *wh*-licensing could not interact with long-distance agreement. Both entailments are correct, as shown in section 4.2.2.

   c. *A-movement*
       Section 3 has provided distributional evidence for the claim that the A-probe $[\cdot A\cdot]$ is situated on T^0. By (65a), this entails that neither v nor V can be horizons for $[\cdot A\cdot]$. vP and VP clauses are hence necessarily transparent for movement triggered by $[\cdot A\cdot]$.

   d. *ϕ-Agreement*
       Given that the ϕ-probe in Hindi also resides on T^0 (section 3), the entailment for $[*\phi*]$ is the same as for $[\cdot A\cdot]$.

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[31] Considerations of language acquisition may entail that vacuous probes do not actually exist, as there would be no motivation for a language learner to postulate the existence of a probe that never has any effect on output. But as far as the axioms of the analysis are concerned, there is nothing wrong with vacuous probes besides the fact that their effects are invisible.

(67) *Empirical effects of the Height–Locality Theorem (65) in Hindi: Locality → height*
In section 2, we saw evidence that in Hindi, A-movement out of TP clauses is impossible. This means that $[\cdot A\cdot]$ has T as its horizon. By (65b), it follows that $[\cdot A\cdot]$ cannot be located on C^0. Consequently, A-movement must be able to land inside nonfinite clauses. This is correct, as shown in section 3.

The horizons framework hence provides a principled way of linking a probe's location to its locality profile and vice versa.[32] Therefore, horizons not only provide us with the means of accounting for the various selective opacity facts observed in Hindi and beyond, it also contributes to our understanding of *why* selective opacity in Hindi is distributed in the way it is. Several properties of the Hindi system now emerge as necessary aspects of this system.

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[32] The horizons account differs from previous attempts to derive the Height–Locality Connection in that the latter involve a direct entailment relationship, and hence a one-to-one mapping, between the two. Williams (2003, 2011, 2013) proposes a system that directly derives the locality of a movement type from its landing site. Abels (2012a) lays out a system in which the locality properties of a movement type determine its landing site.

Williams' (2003, 2011, 2013) system gives rise to the prediction that movement that lands in some projection α cannot cross projections higher than α in the hierarchy of projections (i.e., the functional sequence). For example, movement to TP cannot cross a CP node. This excludes (i):

clause boundary

(i) $[_{\alpha P} \, \alpha \ldots \beta \ldots \, [_{\alpha P} \, \alpha \ldots t_\beta \ldots$
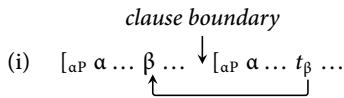
Williams (2003:80) notes that the French L-*tous* construction instantiates (i) and is hence incorrectly ruled out by his account. Abels (2007, 2009) provides a number of other examples that instantiate (i), including English subject-to-object raising, scrambling out of finite clauses in Russian, and hyperraising in Bantu and other languages. Topicalization in English is likewise problematic because it can cross a complementizer but has to land to the right of one in the same clause. Williams' account is hence arguably too restrictive empirically.

On the other end of the spectrum of accounts is Abels (2012a), who proposes that the locality of a movement type directly entails its landing site in that locality constraints that hold *across clauses* make superfluous constraints on landing sites *within clauses*. On a strong version of this proposal, configurations like the one in (ii) should be impossible:

clause boundary

(ii) $[\, \beta \ldots \alpha \ldots \beta \ldots \, [\ldots \alpha \ldots t_\beta \ldots$
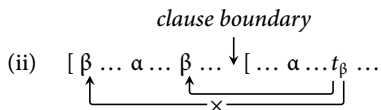
(ii) involves movement of β over α in the lower clause, entailing that α is not a barrier for such movement. Nonetheless, β can only land below α in the matrix clause in (ii), not above it. This ordering restriction between α and β in the matrix clause cannot follow from locality, as α does not generally block this movement over it. Consequently, if the landing site of a movement type were solely determined by its locality, (ii) should be unattested. It appears that this is not the case. Abels (2012a:251) himself notes that extraction over the Italian complementizer *che* instantiates (ii). Similar facts hold for the English complementizer *that* and the Hindi complementizer *ki*, and for the relation between subject-to-object raising and negation in English. While Abels (2012a) makes a compelling argument that locality restrictions impose restrictions on the height of a landing site in line with the Height–Locality Connection, it also seems clear that locality does not always determine height, suggesting that height cannot be completely derived from locality.

I conclude that height and locality cannot be reduced to each other, because it is impossible to entirely predict one from the other. The horizons account differs from the proposals just discussed in that it imposes limits on possible mismatches between height and locality, but it does not put them into a one-to-one relationship. This line of approach hence appears preferable on empirical grounds. I am indebted to Klaus Abels, Gereon Müller, Edwin Williams, and the anonymous referees for very helpful discussion of these issues.

(65) similarly constrains the possible interactions between movement types. Consider the relationship between topicalization and *wh*-movement in English as an example. It is clear that topicalization targets a lower position than *wh*-movement, because topicalization lands to the right of a complementizer. The Height–Locality Theorem then makes the prediction that topicalization cannot, as a matter of principle, induce islandhood for *wh*-movement (*contra* Lasnik & Saito 1992, Müller & Sternefeld 1993, Williams 2013). The empirical facts are somewhat controversial, but Culicover (1996) provides evidence that suggests that this prediction is indeed borne out. (68a) is from Culicover (1996:460), (68b) is due to Ethan Poole (p.c.).

(68)   a.   I was wondering [to what kinds of people]$_{wh}$ [books like these]$_{top}$ you would actually have given *t t* if you had had the chance.

       b.   [To what kinds of people]$_{wh}$ did she say [(that) [books like these]$_{top}$ she would actually have given *t t* if she had had the chance]?

There is hence reason to believe that the connection between the height and locality properties of the two movement types that the Height–Locality Connection gives rise to is correct. Abels (2012a) employs a similar reasoning in an investigation into the Italian left periphery and demonstrates these entailment relationships to be borne out there as well.

5.3   *Summary*

We saw in section 3 that selective opacity is not distributed randomly. Rather, it obeys the Height–Locality Connection (33): there is a systematic relationship between the locality profile of a probe and the height of its structural position. Horizons and the notion of category inheritance within extended projections (43) derive for free a version of this connection. They do so because they give rise to a general and systematic constraint on the relationship that must hold between the syntactic position of a probe and its possible horizon settings in order for this probe to be non-vacuous. This relationship is what the Height–Locality Theorem (65) describes. The gist of this line of explanation is that only probes for which position and horizon conform to (65) are able to trigger any movement and agreement operations. As a consequence, all movement and agreement dependencies exhibit an empirical link between height and locality. Notably, this link is not the result of a designated stipulation, but an emergent property of the system. I have shown how this account succeeds in deriving various aspects of the Hindi system as necessary consequences of horizons. The analysis, then, not only offers an account of selective opacity effects of various types, it also imposes systematic and non-stipulatory constraints on possible selective opacity patterns.

6   Conclusion and emerging issues

This paper has proposed a general account of selective opacity effects, the phenomenon that certain domains are transparent to some operations, but opaque to others. I have argued for five interrelated claims: First, selective opacity is not limited to the A/$\overline{\text{A}}$-distinction but considerably more pervasive and nuanced. Second, selective opacity is not limited to movement, but also

encompasses in-situ relations like φ-agreement (and conceivably *wh*-licensing). I have taken this to suggest that the relevant constraint targets the operation Agree. Third, selective opacity is not distributed randomly. Rather, there are overarching generalizations that become evident once selective opacity effects across constructions and languages are treated as a unified phenomenon (the Height–Locality Connection (33) and Upward Entailment (40)). Fourth, I have proposed that probes have characteristic horizons, i.e, categories that terminate their search. Horizons thereby render everything they dominate inaccessible to that probe. The crucial analytical property of horizons is that they may differ between probes. The same node can be a horizon for one probe, but not for another. Selective opacity then follows as a direct consequence of the probe-specific nature of horizons. This account then allows us to dispense with designated constraints on admissible sequences of movement types. Fifth, I have demonstrated how the horizons account derives the overarching generalizations that selective opacity obeys from general properties of extended projections. In particular, the account provides an explanation for the observed link between a probe's location and its locality properties, because a connection between the two is an emergent property of the system. On a general level, the analysis proposed here unifies, in a systematic and novel way, improper movement and related selective opacity restrictions, mismatches between the locality of movement and agreement, and intricate interactions between movement types and agreement.

Due to its generality, the account presented here raises several further questions, which I cannot hope to address comprehensively here. I would nonetheless like to mention some of them and suggest possible avenues for future work. These issues are discussed in greater detail in Keine (2016).

Movement–agreement mismatches. The first point worth mentioning is that the present account is able to extend to long-distance agreement facts in languages other than Hindi where movement and agreement are subject to distinct locality constraints. For example, Bobaljik & Wurmbrand (2005) argue that in Itelmen, φ-agreement is subject to stricter locality domains than (A-)movement. Interestingly, the opposite conclusion is suggested by LDA in Tsez, as analyzed by Polinsky & Potsdam (2001). They show that the edge of a Topic projection in the lower clause is accessible to a matrix φ-probe but not to movement (given that Tsez does not allow crossclausal movement), indicating that in Tsez, movement is subject to stricter locality constraints than φ-agreement. Comparing Itelmen and Tsez not only provides evidence that movement and agreement are subject to different locality constraints, it furthermore leads to the conclusion that these differences are subject to crosslinguistic variation. Horizons provide a rationale for this otherwise puzzling situation: In Itelmen, the embedded clause is a horizon for a φ-probe, but not for the A-movement probe. By contrast, in Tsez, embedded clauses are horizons for movement, but not for φ-agreement. Thus, horizons provide a general framework not only for analyzing differences between movement types, but also for investigating discrepancies between movement and agreement and their crosslinguistic variability more generally.

Default horizons. The probe specificity of horizons gives rise to an apparent acquisition problem. How is it possible to acquire horizon settings from positive input data when doing so would appear to require information about impossible dependencies? I would like to tentatively suggest that horizons in fact make available a path to acquiring selective opacity. Suppose that certain horizons settings are treated as a default setting. One natural view is that for a probe π

on head X^0, the category X constitutes π's default horizon. This setting yields the most restricted search space for π, as any projection lower than X would violate the Height–Locality Theorem (65) and hence render π vacuous. For example, a probe on T^0 would have T as its default horizon, and so on. It is perhaps noteworthy that in the Hindi pattern in (58), the horizon settings of three of the four probes correspond to this default setting. Because the default setting is the most restrictive, divergences can then be acquired on the basis of purely positive evidence, i.e., by observing well-formed dependencies and adjusting a horizon upward. For instance, in languages that do allow hyperraising, the existence of such structures would trigger a switch from the default setting that rules out such movement to a less restrictive one that does not. Departures from default horizons, and thus crosslinguistic differences in selective opacity, can then be deduced from strictly positive evidence.

Phases. Finally, I would like to relate horizons to the more standard notion of phases. I propose that the two concepts are not only compatible with each other, they moreover have a very different empirical signature and therefore do not give rise to analytical redundancy. Standard phase theory (Chomsky 2000, 2001 *et seq.*) crucially assumes that the edge of a phase remains accessible after Spell-Out has taken place. This enforces that movement out of a phase is successive-cyclic but, as pointed out by Boeckx & Grohmann (2007) and Abels (2012b), among others, it does not render domains entirely opaque for extraction. In other words, phases in and of themselves do not offer an account of why extraction is possible out of some domains, but impossible out of others, precisely because they are porous by design. Moreover, because phases involve cyclic Spell-Out of syntactic structure, they do not discriminate between operations and hence do not lend themselves to an account of selective opacity (see the discussion surrounding (34)). By contrast, horizons determine whether a given operation across a domain is possible or not with no privileged status of the edge of this domain. This opens up the possibility that horizons coexist with phases as independent and complementary constraints on syntactic dependencies. Consider, for instance, the interplay between the horizons of English A- and $\overline{\text{A}}$-extraction on the one hand and C^0 as a traditional phase head on the other. Because a CP clause is a horizon for an A-probe ($[\bullet A \bullet] \dashv\vdash C$), A-extraction is ruled out even if phases themselves would allow it. Conversely, because C is not a horizon for an $\overline{\text{A}}$-probe ($[\bullet \overline{\text{A}} \bullet] \dashv\vdash \varnothing$), horizon do not limit its search space. C^0's phasehood, however, does and anything other than its edge is impenetrable, giving rise to successive-cyclic movement through Spec,CP. As a result, a combination of horizons and phases does not give rise to redundancy, and both concepts have clearly distinguishable empirical effects: While horizons determine whether a specific extraction type is possible out of a given domain, phases force that extraction to be successive-cyclic.

That said, it should be pointed out that the present account is incompatible with the view that all v projections are phasal (e.g., Legate 2003), a consequence that virtually all accounts of improper movement share. To illustrate the problem, the two schematic structures in (69) compare extraction out of finite and nonfinite clauses under the assumption that the higher v is phasal. In either case, extraction proceeds cyclically through this higher vP. The two structures differ in whether subsequent movement from this vP into TP is possible. If the embedded clause is a CP, vP-to-TP movement must be impossible to exclude hyperraising (69a), while the same movement step must be licit if the lower clause is a TP (69b). Crucially, this decision cannot be made locally, but must depend on properties of an already spelled-out phase: If the DP has moved through

Spec,CP in the lower clause, vP-to-TP movement is impossible in the higher clause, otherwise it is licit. Because this information is contained inside the Spell-Out domain of the vP phase, it should no longer be accessible by the time the movement to Spec,TP takes place. This problem is closely related to what Müller (2014a,b) refers to as the *promiscuity problem* of improper movement.

(69) a. *Extraction out of finite clause*
          → vP-to-TP movement impossible
          $[_{TP}$ __ T $[_{vP}$ DP v $[_{VP}$ V $[_{CP}$ t …

     b. *Extraction out of nonfinite clause*
          → vP-to-TP movement possible
          $[_{TP}$ __ T $[_{vP}$ DP v $[_{VP}$ V $[_{TP}$ t …

No parallel problem arises if v in (69) is not a phase and as a result no touchdown in Spec,vP is created: In this case, all that is required is that movement from CP to TP is ruled out, a result delivered by the present analysis. I conclude that an unequivocally phasal status of C^0 is unproblematic, but the same does not hold for v^0 (and other lower projections). Whether v^0 is phasal in some but not all cases (Chomsky 2000, 2001) or never (Keine 2015) is beyond the scope of the present discussion.

In sum, horizons can not only be embedded within a system that assumes phases without creating redundancies, horizons also have repercussions for our understanding of phases and thus for a general theory of locality beyond selective opacity.

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