Reanalysing Hindi Split-Ergativity as a morphological phenomenon

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Abstract

This paper develops an analysis of Hindi split ergativity in morphological terms, employing the framework of Distributed Morphology. Syntactically, the case features assigned to a DP do not differ in perfective and non-perfective clauses. It is merely the phonological realisation of these features that is subject to variations, giving rise to different case markers on the surface. Furthermore, the proposal crucially involves '-ko' (dative) case in the derivation of the distributional pattern of '-ne' (ergative).

1.   Introduction

Deriving alignment patterns with only one homogeneous algorithm is one major goal within the study of syntax (Bittner & Hale 1996, Bobaljik 1993, Chomsky 1993, Lee 2006, Murasugi 1992, Woolford 2001 and others). Since case assignment is widely seen to be a syntactic phenomenon, all these analyses derive alignment patterns by means of syntactic mechanisms. Questions arise how to treat departures from such "pure" alignments patterns. Some languages at first glance seem to switch between different case patterns if certain conditions are fulfilled. Hindi-Urdu is generally assumed to exhibit such a system. In the context of non-perfective aspect the case markers attached are different from the context of perfective aspect, therefore exhibiting a system of *split ergativity* (Das 2006, Mahajan 1990, Pandharipande & Kachru 1977, Ura 2006).

Generally speaking, all previous accounts of the case system of Hindi are syntactic in nature, i.e. they propose special syntactic mechanisms

that "overwrite" the general strategies of case assignment. While this is in principle feasible, it strikingly complicates the syntactic component of the grammar. For any given language exhibiting properties of split ergativity new constraints have to be introduced. This is especially obvious for optimality theoretic approaches such as Lee (2006), that stipulate new and otherwise unmotivated constraints in order to account for the empirical evidence in Hindi.

In this paper, I argue that Hindi split ergativity is best understood to be a morphological phenomenon, with morphology being realizational in nature, such as Distributed Morphology (Halle & Marantz 1993, 1994) or Paradigm Function Morphology (Stump 2001). Interestingly enough, only the distribution of the case markers can be considered split ergative. As for syntactic criteria, Hindi displays an accusative system (Kachru & Pandharipande 1977). If the distribution of the case markers is accounted for in syntactic terms, this raises the question why no such system can be observed in the area of binding, verbal agreement, raising, relativization and other diagnostics (for a detailed discussion see Kachru & Pandharipande 1977). If, on the other hand, the syntactic system of Hindi is treated to be uniform throughout all conditions, the observation that only markers but no syntactic properties change falls into place.

Theoretically speaking, the main claim proposed here is that, apart from the empirical gains of this analysis, all morphological devices resorted to, such as feature decomposition or impoverishment rules, have been motivated independently. Hence, modern morphological theories are fully capable of deriving the empirical facts of Hindi and no additional stipulative principles are necessary.

Three case markers are subject to the analysis: *-ne*, *-ko* and the zero marker. Both *-ne* and *-ko* alternate with the null marker in principled ways. The main claim is that these patterns of alternations can be captured by means of impoverishment rules: In the standard case, the non-null markers are chosen. But in certain contexts features are deleted, so that the set of attachable case markers is minimized, only allowing for the zero marker to be attached. The contextual features of these impoverishment rules capture the principles underlying the alternations between non-null and null markers, therefore giving rise to split ergativity.

This paper is structured as follows: Section 2 describes the empirical phenomena that are to be explained. In section 3 some previous accounts are reviewed, describing the general approach as well as point-

ing out some problems. Section 4 develops a formal theory of how Hindi split-ergativity can be accounted for in morphological terms. Finally, section 5 illustrates some theoretical implications and situates the approach in a wider context, namely predictions about the behavior of identically and distinctly marked DPs with respect to other areas, i.e. binding, agreement and scopal ambiguity. Section 6 draws a conclusion. As an appendix, section 7 demonstrates a translation of the system worked out in section 4 into Paradigm Function Morphology.

2. Empirical Evidence

This section gives an overview over the distributional patterns of three case markers – *-ne*, *-ko* and *-∅*. I mainly draw from Mohanan (1994)'s description. As will become clear, *-ne* and *-ko* are confined to subjects and objects respectively, and both alternate with the zero marker.

Hindi-Urdu distinguishes several case markers. In Mohanan (1994: 66)'s analysis there are eight:

(1) **Hindi case markers**

feature	marking
NOM	$\emptyset$
ERG	-ne
ACC	-ko
DAT	-ko
INST	-se
GEN	-kaa
LOC$_1$	-mē
LOC$_2$	-par

The present analysis will only be concerned with the distribution of the first three case markers -$\emptyset$, *-ne* and *-ko*. Interestingly enough, Mohanan treats *-ko* as being ambiguous between a dative and an accusative marker. The motivation of her doing so lies in the different behavior of the *ko*-marked noun in transitive and ditransitive clauses as will be outlined below.

2.1. -ne

The marker *-ne*, traditionally called ergative, only shows up on subjects of perfective clauses, in all other aspects the use of the ergative is systematically ruled out:
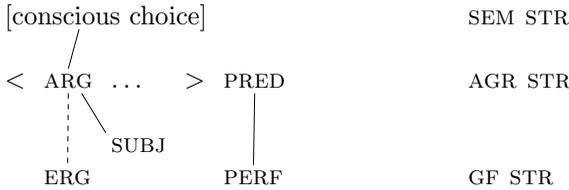
(2) a. raam-ne ravii-ko piiṭaa
        Ram-ERG Ravi-ACC beat.PERF
        'Ram beat Ravi.'
     b. raam   ravii-ko piiṭaa   hai
        Ram.NOM Ravi-ACC beat.IMPERF be.PR
        'Ram beats Ravi.'   (Mohanan 1994: 70)

In perfective clauses the distribution of the ergative is further restricted since it can only be attached to subjects that have *conscious control* over the action denoted by the verb. In all other cases, the subject is zero (nominative) marked, cf. (3).

(3) a. raam-ko acaanak šer   dik^{h}aa.   vah/
        Ram-DAT suddenly lion.NOM appear-PERF he.NOM
        *us-ne cillaayaa
        he-ERG scream-PERF
        'Ram suddenly saw a lion. He screamed.'
     b. us-ne/ *vah   jaan buuj^{h}kar cillaayaa
        he-ERG he.NOM deliberately   shout-PERF
        'He shouted deliberately.'   (ibid.: 72)

Although the condition for the use of the ergative is termed differently in the literature (e.g. *conscious choice* by Mohanan 1994, *volitionality* by Lee 2003, "agent in the completion of the action" by Das 2006: 42, and *conscious awareness* by Montaut 2004), the main insight behind these conditions seems to be the same. Furthermore, since most of the analyses I am aware of lack an articulate semantic theory, the differences between those labels cannot be expatiated. Therefore, I assume the distribution of the ergative in the perfect to be semantically motivated, although the details remain to be worked out. The underlying system is illustrated by Mohanan (1984: 77) as follows (where solid lines indicate conditions and the dashed line the implication):

(4)   ERG association:

[conscious choice]   SEM STR
         /
<   ARG   ...   >   PRED   AGR STR
         ⋮\
         ⋮ SUBJ |
         ⋮ |
      ERG   PERF   GF STR

It turns out that nearly no transitive verb allows for a zero marked sub-
ject in perfect clauses, i.e. the distribution of the marker *-ne* is largely
governed by the factors transitivity and perfective aspect (Das 2006).
To my knowledge, there are only two exceptions to the generalisation
that all transitive verb require *ne*-marked subjects in the perfective as-
pect: *bhuulna* 'forget' and *laanaa* 'bring'. A few verbs show optionality
(e.g. *samajhnaa* 'understand'):

(5)   a.   raam   šiišaa   laayaa
             Ram.NOM mirror.NOM bring.PERF
       b.   *raam-ne šiišaa   laayaa
             Ram-ERG mirror.NOM bring.PERF
             'Ram brought the mirror.'   (ibid.: 72)

Montaut (2004) argues that it is an idiosyncratic property of 'bring'
that this verb does not license ergative marked subject, which has to
be coded lexically. Butt & King (2004: 186) agree with this view in
considering *bring* "truly exceptional". Following their intuition, I will
regard the behavior of these verbs as idiosyncratic. Generally speaking,
all transitive verbs in the perfect must have subjects in the ergative.
The factor *volitionality* only plays a role with intransitive verbs (see
also Butt & King 2004).

2.2.   -ko

The accusative/dative marker *-ko* never shows up on subjects but only
on objects. With transitive verbs its appearance alternates with zero
marking. As for ditransitives, however, the indirect object is obligatorily
ko-marked and the direct object usually has to be zero marked, cf. (6).

(6)   ilaa-ne   mãã-ko   yah   haar /   *is
       Ila-ERG mother-DAT this.NOM necklace.NOM this.NONNOM
       haar-ko   diyaa
       necklace-ACC give.PERF
       'Ila gave this necklace to mother.'   (ibid.: 85)

As is the case with the ergative, the occurence of *-ko* is not optional but conditioned by semantic factors: it is attached "when it refers to a human being or a specific inanimate entity" (Montaut 2004: 170). The dependence on humanness is exemplified in (7), the specificity effects in (8)

(7)   a.   ilaa-ne ek bacce-ko / *baccaa   ut^{h}aayaa
            Ila-ERG one child-ACC child.NOM lift/carry.PERF
            'Ila lifted a child.'
       b.   ilaa-ne ek haar /   *haar-ko   ut^{h}aayaa
            Ila-ERG one necklace.NOM necklace-ACC lift-PERF
            'Ila lifted a necklace.'   (ibid.: 79)

(8)   a.   nadya=ne   gaṛi   cala-yi
            Nadya.F.SG=ERG car.F.SG.NOM drive-PERF.F.SG
            hε
            be.PRES.3SG
            'Nadya has driven a car.'
       b.   nadya=ne   gaṛi=ko   cala–ya
            Nadya.F.SG=ERG car.F.SG=ACC drive–PERF.M.SG
            hε
            be.PRES.3SG
            'Nadya has driven the car.'   (Butt & King 2004: 161)

A subclass of verbs, which Montaut (2004) calls "basic", only permit zero marked objects, regardless of the humanness and specificity features of their objects. Examples for verbs belonging to that class of verbs are *banaa* 'make', *paḍ^h* 'read', *gaa* 'sing', and *pii* 'drink'. One example is provided by (9).

(9)   ilaa-ne yah   k^{h}at /   *is   k^{h}at-ko
       Ila-ERG this.NOM letter.NOM this.NONNOM letter-ACC
       lik^{h}aa
       write.PERF
       'Ila wrote this letter.'   (Mohanan 1994: 81)

Note that out of three logically possible classes of verbs only two exist: Class I in principle allows for zero marked and *ko*-marked objects as well. Objects of verbs belonging to class II, on the other hand, can only be zero marked. But no transitive verb only allows for *ko*-marked objects.

Interestingly enough, in ditransitive clauses the direct object cannot be marked with *-ko* even if it is human, and thus should have to be *ko*-marked in any case:

(10)   ilaa-ne mãã-ko   baccaa / *bacce-ko diyaa
        Ila-ERG mother-DAT child.NOM child-ACC give-PERF
        'Ila gave a/the child to the mother.'

As mentioned above, the empirical generalisation is that in ditransitives only the indirect object can be (and in fact has to be) *ko*-marked.

Accusative/dative marking is in no way connected to the appearance of the ergative marker, so *-ko* occurs throughout all tenses and aspects.

2.3.   Summary

The distributional patterns of *-ne, -ko* and the zero marker can schematically be represented as below.

(11)   *-ne:*

> • only on subjects of perfective clauses

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                         verbs

      intransitives                    transitives
      [+volitionality]                 virtually always ne-
            ↓                          marking in simple
          -ne                          verb forms
      [–volitionality]
            ↓
          -∅
```

(12)   *-ko:*

        • only on objects[1]

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                          verbs
               _____/    _____
          transitives                    ditransitives
         ___/     \___
     type A        type B
 [–specific ∧ –human]   only -∅       DO: -∅
  → ∅
 [+specific] ∨ [+human]               IO: -ko
  → -ko
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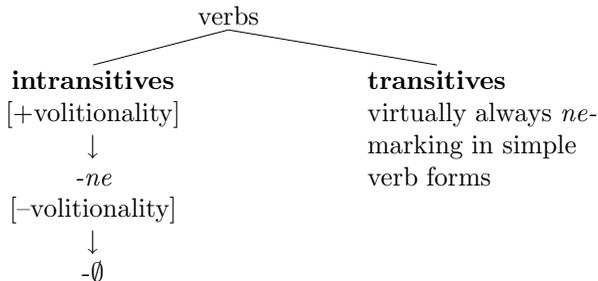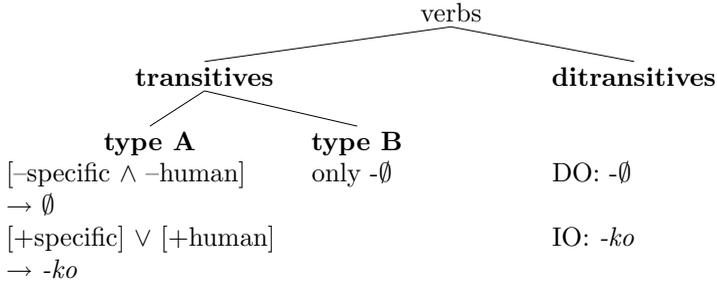
3.   Previous Analyses

In this section some previous theoretical accounts are reviewed. They all have in common that they treat split ergativity as a syntactic phenomenon, a claim contrary to the main proposal of this paper. I will briefly outline several optimality-theoretic accounts and one minimalist account.

3.1.   Optimality-Theoretic Approaches

3.1.1.   *Woolford (2001)*

In order to derive different alignment patterns Woolford (2001), a paper that is mainly concerned with deriving different alignment patterns, also includes an approach to the distribution of the ergative in Hindi. The relevant constraints are the following:

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[1]This is a simplification since there are instances of *ko*-marked subjects. I will abstract away from them, merely noting that some extra mechanism is needed for *quirky case.*

(13)   *Constraints*

    a.   FAITH-LEX:
        'Realize a case feature specified on V in the input.'

    b.   FAITH-LEX$_{perf}$:
        'Realize a case feature specified on perfective V in the input.'

    c.   *ERG:
        'Avoid ergative case.'

(14)   *Ranking in Hindi*
    FAITH-LEX$_{perf}$ ≫ *ERG ≫ FAITH-LEX

These constraints yield the result that in non-perfective clauses the faithfulness constraints FAITH-LEX is outranked by the markedness constraint *ERG so that the ergative cannot be realized. In perfective clauses, however, a special faithfulness contraints overrides the general ban on ergatives. Woolford treats the ergative as lexical and therefore inherent case, present in the input. Hence, if it does not occur in the output a violation of a faithfulness constraint arises.

3.1.2.   Stiebels (2000, 2002)

The reasoning behind Stiebels' account works in the opposite direction of Woolford's: Instead of generating nominative subjects as the default and ensuring ergative marking in perfective contexts, here ergative marking is the standard case, that is overriden in non-perfectives by means of the high-ranked constraint *[+lower role]/[–perf]*:

(15)   *[+lower role]/[–perf]* ([+lr]/[–perf]):
    'Avoid ergative marking in non-perfective contexts.'

The feature *[+lower role]* marks that in the sentence there is a lower Θ-role than the one which this feature is assigned to. Hence *[+lower role]* marks subjects in transitives. One problem with this approach is obvious: It cannot account for *ne*-marked subjects in intransitive clauses. A possible way out would be to assume that unergatives are hidden transitives (cf. Bittner & Hale 1996).

3.1.3. Lee (2003, 2006)

Lee's account resembles that of Woolford in treating nominative marking as the standard case and instantiating ergative marking only in perfective clauses. This is accomplished by the following contraints:

(16)   a.   *E_{RG}
              'Avoid ergative marker.'
        b. $E_{RG_{perf}}$
              The highest argument role in a perfective clause must be in the ergative.'

3.1.4. Problems

Several problems arise with these optimality-theoretic approaches: Firstly, it is not obvious how the semantic impact of ergative vs. nominative marking can be implemented, since they primarily focus on the distribution of case features, abstracting away from semantic implication.[2]

Secondly, the constraints employed are a restatement of the facts. The ranking $E_{RG_{perf}} \gg$ *E_{RG} states that ergative marking is not allowed except for perfective clauses. But this is just an empirical generalization. So these accounts fall somewhat short of deriving empirical patterns from more general principles.

3.2.   A minimalist analysis – Anand & Nevins (2006)

The main focus of Anand & Nevins' analysis lies in accounting for scopal differences between zero marked and *ne*-marked subjects, but they also offer an account of how to capture the relevant distributional properties of the markers under consideration within the Minimalist Program. Their proposal for scope ambiguity is discussed in section 5.3 below.

Ignoring the dative marker *-ko*, Anand & Nevins propose four distinct case features: the ergative (marked by *-ne*, a lexical case assigned

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[2]Lee's account should be noted as an exception to this criticism.

by perfective v[3]), the nominative (the zero marker assigned by T), the accusative (-$\emptyset$, assigned by v) and the objective (-*ko*, a lexical case assigned by a separate projection EncP on direct objects). Hence, -$\emptyset$ (as well a probably -*ko*, although nothing is said about it) is assumed to be ambiguous.

Two derivations are described by Anand & Nevins: ERG-NOM and ERG-OBJCTV. Firstly, they propose that perfective v and passive v are *one and the same head* since they take the identical form:

(17) a. aadmii-ne rotii   khayii   thii
          man-ERG bread-NOM eat-PERF be-PAST
          'The man had eaten the bread.'
      b. rotii   khaayii gayii
          bread-NOM eat.PERF go-PERF
          'The bread was eaten.'   (Anand & Nevins 2006: 16)

Consequently, since passive v cannot assign the accusative, v in passives cannot. But since both subject and object require their case feature to be valued the derivation will crash unless one of the two arguments has its case features valued by some other method. As one way out, the subject (base generated in Specv) receives ergative case from perfective v and is therefore rendered inactive. With the subject being inactive, T assigns its nominative feature to the object which is then realized by zero marking. To account for the fact that the verb only agrees with the highest zero marked argument, hence the object, T has to establish an agree relation with the object which should be barred since the subject intervenes, blocking agreement with the object due to *Relativized Minimality* (Rizzi 1990) or some equivalent notion. The solution to this problem is that the subject has to move to SpecT in order to satisfy T's EPP requirement. At this stage of the derivation the subject no longer intervenes and the object values T's ϕ-features.

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[3]That case marking with the ergative is actually due to perfective v is not explicit in the relevant paper, but was pointed out to me by Andrew Nevins (p.c.).

(18)   *Derivation of* ERG-ACC *structures*
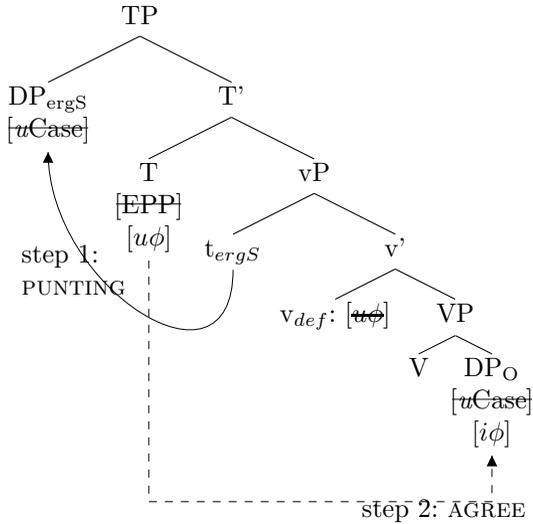
In order to only allow T-object agreement it is crucial that movement of the subject to SpecT has to apply *before* T probes for ϕ-features.

Sentences with ergative marked subjects and objective marked objects (i.e. *-ne* and *-ko*, respectively) are derived in the following way. Again v, being perfective/passive, cannot assign the accusative but assigns the ergative to its specifier. In contrast to ERG-ACC patterns the object is not case marked by T but by an additional projection – EncP:

(19)   *Derivation of* ERG-OBJCTV *structures*

$$
\begin{array}{c}
\text{TP} \\
\diagup \quad \diagdown \\
\text{DP}_{\text{ergS}} \qquad\qquad \text{T'} \\
[u\text{Case}] \qquad\qquad \diagup \quad \diagdown \\
\qquad \text{T}_{\text{checked}} \qquad \text{vP} \\
\qquad [\text{EPP}] \qquad \diagup \quad \diagdown \\
\qquad\qquad \text{t}_{\text{ergS}} \qquad \text{v'} \\
\qquad\qquad\qquad \diagup \quad \diagdown \\
\qquad\qquad \text{v}_{def}:[u\phi] \quad \text{VP} \\
\qquad\qquad\qquad\qquad \diagup \;\diagdown \\
\qquad\qquad\qquad\qquad \text{V} \quad \text{EncP} \\
\qquad\qquad\qquad\qquad\qquad | \\
\qquad\qquad\qquad\qquad\qquad \text{DP}_{\text{O}} \\
\qquad\qquad\qquad\qquad\qquad [i\phi] \\
\qquad\qquad\qquad\qquad\qquad [u\text{Case}]
\end{array}
$$
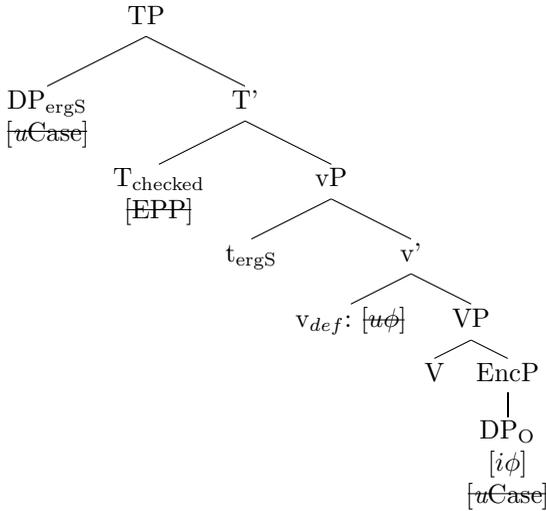
Since in this derivation the case features of the subject as well as the object are valued lexically, i.e. by v or Enc, it is crucial that T does not assign a case feature for it would not be checked, leading to a crash of the derivation. To achieve this, Anand & Nevins assume that in such cases a special head T_{checked} can be selected, that bears no uninterpretable features and thus does not require agreement. Morphologically, this is instantiated by default agreement.

This analysis, however, faces several problems. Firstly, the identity of passive and perfective v, meant to account for the fact that perfective v cannot assign accusative case, is difficult to maintain as soon as the ergative is encountered: While perfective v can assign the ergative (and does so in most cases), passive v can never. Both heads behave alike with respect to the accusative but differently with respect to the ergative. While this in principle might be the case there is no reason for why the identical behavior breaks down for the ergative. Thus a certain distinction between both v's has to be introduced nevertheless.

Furthermore, the specific orderings of operations appears to be purely stipulative: For ERG-ACC derivations to yield the correct sentences, i.e. agreement with the object instead of the subject, movement of the subject has to apply *before* T probes for ϕ-features. On the other hand, if the subject of a clause is zero marked, the verb agrees with it, independently of the aspect. Now if movement to SpecT renders the

subject incapable of valuing T's ϕ-features, EPP-driven movement has to apply *after* ϕ-feature valuation in the case of zero marked subjects, exactly the opposite order. Since for *ne*-marked subjects T never shows agreement with the subject, but T always agrees with zero marked subjects, it must not only be the case that both rule orderings are in principle possible but that one of both is systematically excluded, depending on the case that is assigned to the subject. While this approach is feasible, such shifts in the order of operations do not follow from any property of the grammar in Anand & Nevins' system and hence turn out to be stipulations.

Another problem concerns Spec-head relations. In the derivation of ERG-ACC structures the subject was moved to SpecT because if it stayed in Specv it would block agreement between T and the object. In SpecT, the subject is no longer c-commanded by the probe T and hence no longer intervenes between T and the object. But in ERG-ACC structures it is not only the case that T *can* agree with the object but furthermore that T *cannot* agree with the subject, so the element in SpecT must be invisible to T probing for a goal. This seems reasonable if agreement is constrained to goals c-commanded by the probe. But now consider ergative assignment: If the ergative on the subject stems from v, an agreement relation between a head and its specifier has to be possible, since the subject originated in Specv, thus never occupying a position within the c-command domain of v. The dilemma looks as follows: If one allows Spec-head agreement, verb agreement with a *ne*-marked subject is incorrectly predicted to be grammatical. If, on the other hand, agreement is restricted to the c-command domain of a head, v cannot assign its ergative feature to the subject, yielding crash for all derivations with *ne*-marked subjects. It would be possible to constrain agreement to a head's c-command domain for ϕ-features but to its m-command domain for case features, though there does not appear a principled reason for doing so.

A related point concerns ergative marking of the subject in Specv by v. It is unclear why this case feature cannot be assigned to the object in the complement position of V and hence within the c-command domain of v, if it is not embedded within an EncP and therefore still lacking case, as in the derivation of ERG-ACC structures above. In this case the subject could get its case feature valued by T. The result of such a derivation would be NOM-ERG structures but *ne*-marked objects are ungrammatical without exceptions. To salvage this derivation a feasible way out would be to link ergative assignment to Θ-roles, i.e. the

ergative can only be assigned to the element receiving the external Θ-role. Again, such an assumption works but again it would introduce an asymmetry between the ergative and another case feature: as depicted above, the nominative can be assigned to the complement of V by T, not depending on Θ-assignment.

The distribution of EncP appears to be problematic, as well. Since EncP assigns objective case, realized as *-ko*, it has to be present if and only if the object is specific or human. Humanness will be a feature of the noun rather than Enc, hence Enc has to have an uninterpretable feature [±human]. Verbs that allow for both zero and *ko*-marked objects should have either the feature [*u*Enc] or [*u*DP]. But then a verb could select a human DP, eliding the EncP. In this case the subject is zero marked since EncP, that is responsible for *ko*-marking, is not present within the structure created, undermining the generalization that for human objects, -ko is obligatory. The intuition seems to be that whenever Enc can be inserted it has to be. But it is unclear how this can be accomplished.

4.   Analysis

This section sets forth the theoretical implementation of the main claim of this paper, i.e. that Hindi split ergativity is properly analysable as a morphological phenomenon. The system outlined below makes several claims: First, Hindi has active alignment – subjects on the one hand and objects on the other are marked homogeneously. This accounts for the fact that *-ne* is only attached to DPs that are interpreted as volitional actors and, furthermore, that *-ko* is confined to objects. Second, the marker *-ko* is a lexical case marker attached to objects in all of its occurences. Two cases can be assigned to the object of a transitive verb: absolutive, marked by the null marker, and accusative, normally realized by *-ko*. Third, the subject is always marked by the ergative, which is standardly realized by *-ne*. Fourth, subjects and objects can be marked with the zero marker if impoverishment rules by means of feature deletion render insertion of the standard markers impossible. The context of these impoverishment rules is exactly the triggering condition for split ergativity.

Put more concrete, the impoverishment rule for objects only affects accusatives, yielding zero marking instead of *ko*-marking if the object is not human and non-specific. Absolutive case can, independently

of impoverishment rules, only marked by the zero marker, hence no marker alternation arises for this case. Subjects receive the ergative, which is standardly realized by *-ne*. In non-perfective sentences, however, a second impoverishment rule applies, rendering *ne*-insertion impossible. As a consequence, only the zero marker can be attached, confining the appearance of *-ne* to perfectives alone. The system is then slightly extended for datives in ditransitives, marked by *-ko*, in order to account for the fact that they never alternate with -∅. Both the accusative in transitives and the dative in ditransitives are lexical cases, distinguished by some feature. The context of the impoverishment rule for accusatives is enriched so that it only applies to transitive clauses. This yields the observation that indirect objects are marked with *-ko* independently of specificity or humanness.

I agree with Bittner & Hale (1996), Bobaljik (1993), Chomsky (1993) and Davison (2004) among many others in analysing the ergative as a structural case. Furthermore, I assume perfect clauses to be the standard form and non-perfect clauses to be derived through *impoverishment rules* (within the framework of Distributed Morphology) or *rules of referral* (as in Paradigm-Function Morphology). For this kind of rules to be useful, morphology must be seen as *realizational* in nature. Hence, inflectional markers *never* add information to a given stem, but can only be attached if the set of features characterized by that inflectional marker is a *subset* of the set of features of the stem. It is further assumed that these markers can be *underspecified*. Consequently, they compete with each other for being attached to a stem. In such cases, the most specific of all applicable markers is chosen, where specificity is determined on the basis of cardinality of sets: Out of all competing markers, the one with the highest number of features is attached to the stem. Since feature deleting operations can erase syntactically relevant information they must apply post-syntactically. For these operations to influence the attachment of inflectional markers (as is their very purpose), these markers have to be inserted after those rules have applied. Thus, inflectional markers are inserted post-syntactically. This is termed *late insertion* in Distributed Morphology.[4]

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[4]More mechanisms have been proposed, such as *fusion*, *merger* and *fission* (Halle & Marantz 1993, Noyer 1992), but the present analysis only relies on impoverishment rules.

4.1. Active Alignment in Hindi

Hindi has an active alignment pattern with Θ_{ext} being *ne*-marked and Θ_{int} being zero-marked. The general structure of active alignment is demonstrated in (20):

(20) *Active alignment*

DP_{ext}-V_{intr}	DP_{int}-V_{intr}
DP_{ext}-V_{tr}	DP_{int}-V_{tr}

  ERGATIVE ABSOLUTIVE
    -ne   *-∅*

With this assumption, the subject marking of sentences in the perfect can largely be explained: In standard transitive sentences the subject must receive Θ_{ext}, since Θ_{int} is assigned to the object. Therefore, in these cases *-ne* is always attached to the subject. The above mentioned case of the verb 'bring', which only allows for zero-marked subjects can be accounted for by the lexical idiosyncrasy that this particular verb subcategorises for a direct and an indirect object but no subject, thus departing from the *Uniformity of Theta Assignment Hypothesis* (Baker 1988, Adger 2003):

(21) UNIFORMITY OF THETA ASSIGNMENT HYPOTHESIS (UTAH)
      Identical thematic relationships between predicates and their
      arguments are represented syntactically by identical structural
      relationships when items are Merged.

The structure of (5) can thus be schematized as in (22):

(22)

```
                    vP
                   /  \
                  v    VP
                      /  \
                    Ram   V'
                         /  \
                    šiišaa  laayaa
```
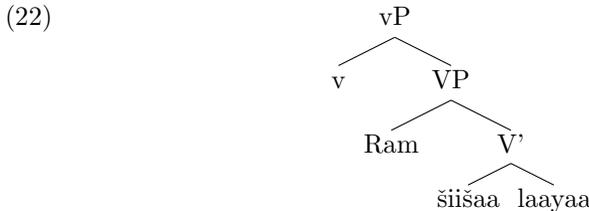
As for intransitive verbs, the so-called subject can receive either Θ-role. If UTAH holds true, it is a natural prediction that with certain verbs only one Θ-position should be available. For those verbs whose semantics license assignment of either Θ-role and thus external merge within VP or vP respectively the two options should result in different inter-

pretations. These predictions are borne out. Obligatorily unaccusative verbs such as 'fall' only license zero-marked subjects, which falls into place straightforwardly since unaccusatives by definition only assign an internal Θ-role:

(23)   a.   raam   giraa
            Ram.NOM fall.PERF
       b.   *raam-ne giraa
            Ram-ERG fall.PERF
            'Ram fell hard.'   (Mohanan 1994: 71)

On the other hand, unergative verbs, which assigns only an external Θ-role, only allow for *ne*-marked subjects:

(24)   a.   raam-ne   nahaayaa
            Ram-ERG bathe.PERF
       b.   *raam   nahaayaa
            Ram.NOM bathe.PERF
            'Ram bathed.'   (ibid.: 71)

If verbs permit assigment of Θ_{int} as well as Θ_{ext} a semantic contrast is attested as exemplified by (3), repeated here.

(3)   a.   raam-ko acaanak šer   dik^{h}aa.   vah/
            Ram-DAT suddenly lion.NOM appear-PERF he.NOM
            *us-ne cillaayaa
            he-ERG scream-PERF
            'Ram suddenly saw a lion. He screamed.'
       b.   us-ne/ *vah   jaan buuj^{h}kar cillaayaa
            he-ERG he.NOM deliberately   shout-PERF
            'He shouted deliberately.'

As noted above, a semantic analysis of these contrasts remains to be worked out, but the intuition behind those patterns is that, at least in Hindi, Θ_{ext} is associated with volitional interpretation: In (3-b) Ram screamed intentionally and thus in some sense was the semantic causer of this event. In (3-a) Ram's screaming was not caused by Ram himself but rather by the appearance of the lion. If a verb does not allow for these two kinds of readings due to its semantics, the optionality of the ergative marker breaks down. One cannot fall purposefully (cf. (23)) and bathing must be an intentional activity ((24)). Note that this claim is supported by independent arguments that v° has a semantic impact,

i.e. it yields a causative interpretation. It also immediately follows that the ergative codes "prototypical agent properties" (Lee 2006: 93). This is because Θ_{ext} *is* the agentive role.

The proposal that Hindi has active argument encoding therefore leads to the following system: On the semantic side, Θ_{ext} receives a volitional interpretation. On the syntactic side it is homogenuously associated with the case feature ERGATIVE, as will be demonstrated below. The appropriate marker for this feature environment is *-ne*. As a consequence, *ne*-marking and volitional interpretation are connected to each other, which derives this empirical generalization.

(25) Θ_{ext} ⟨ *semantic interpretation:* +volitional

                          case feature: [ERG] → *-ne*
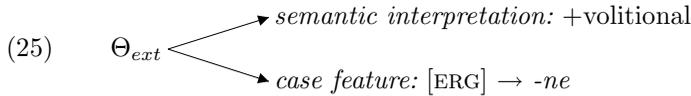
4.2.   The status of -ko

Viewing Hindi as being actively aligned immediately raises one problem concerning the marker *-ko*. In many analyses (e.g. Butt & King 2004, Mohanan 1994) *-ko* is treated as being ambiguous between an accusative and a dative marker. Given the empirical evidence, this seems reasonable at first glance: It can mark the direct object of a transitive verb (cf. (2)) as well as the indirect object of a ditransitive verb ((6)).

(2)   a.   raam-ne   ravii-ko   piiṭaa
                Ram-ERG Ravi-ACC beat.PERF
                'Ram beat Ravi.'
    b.   raam   ravii-ko   piiṭaa   hai
                Ram.NOM Ravi-ACC beat.IMPERF be.PR
                'Ram beats Ravi.'   (Mohanan 1994: 70)

(6)   ilaa-ne mãã-ko   yah   haar /   *is
    Ila-ERG mother-DAT this.NOM necklace.NOM this.NONNOM
    haar-ko   diyaa
    necklace-ACC give.PERF
    'Ila gave this necklace to mother.'   (ibid.: 85)

If Hindi in fact shows active alignment, this poses the question why *-ko* never occurs on any subject.[5] The system behind active alignment consists in the uniform marking of Θ_{int} and Θ_{ext}. (2) seems to demonstrate that Θ_{int} is marked with *-ko* for objects, but on subjects Θ_{int} is zero-marked ((3-a)). The problem boils down to the observation that only two instances of case can be involved in active marking, but in Hindi three markers (*-ne*, *-ko* and *-∅*) appear. Therefore, I will argue that only *-ne* and *-∅* are structural case markers and *-ko* constitutes a lexical marker in all instances.

The main difference between lexical and structural case is that the former but not the latter has to be coded explicitly on the assigning head, e.g. V° (see Marantz 1991 among many others). The reasoning behind this distinction is based on the different distributions of these cases: Structural case is the default, so one would lose a generalisation if it had to be annotated on every single verb. Thus, it is introduced by general rules (e.g. Marantz 1991) or by functional heads (e.g. Bobaljik 1993, Chomsky 1993, Chomsky 2001). In contrast, lexical case is exceptional in the sense that it only occurs if a verb is specifically marked for it. Thus, it constitutes a retreat from the general case.

Several phenomena are accounted for if *-ko* is treated as a lexical case marker:

First, (9) shows that the appearance of *-ko* is dependent on the verb.

(9) ilaa-ne yah kʰat / *is kʰat-ko
     Ila-ERG this.NOM letter.NOM this.NONNOM letter-ACC
     likʰaa
     write.PERF
     'Ila wrote this letter.'   (Mohanan 1994: 81)

While for all verbs objects can be zero-marked, some verbs arbitrarily do not allow for *ko*-marked objects. These verbs behave exceptionally, which has to be annotated lexically. Therefore, *-ko* but not zero marking shows properties of lexically governed case, since it does not conform to rules in some instances. This fact constitutes an argument in favor of *-ko* being a lexical case marker and *-∅* a structural case marker.

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[5]In fact, *-ko* can appear on subjects in the context of *quirky case marking*. Some special mechanism is necessary to account for this phenomenon. I will not try to implement such cases.

Second, in ditransitive structures the direct object can never be *ko*-marked[6], even if the semantic conditions are met (cf. (6)). If *-ko* was an accusative marker it would be mysterious why it can appear on direct objects of transitive verbs but not on direct objects of ditransitive verbs.

Third, a theory that analyses *-ko* as a lexical case marker predicts it to be maintained in passive structures. This prediction is borne out for ditransitives as well as for transitives:

(26) anil-ko   haar   b^{h}ejaa   gayaa
      Anil-DAT necklace.NOM send.PERF go.PERF
      'Anil was sent a/the necklace.'   (Mohanan 1994: 93)

(27) anil-ko   (raam-se) uṭ^{h}aayaa jaaegaa
      Anil-ACC Ram-INSTR carry.PERF go.FUT
      'Anil will be carried (by Ram).'[7]   (ibid: 94)

However, this behavior of *-ko* is found only in some dialects of Hindi. While in ditransitives *-ko* is maintained troughout all variants, a contrast is observed for passivization of transitive structures. Some dialects only allow for the preservation of *-ko* in passives, in others only zero marked subjects are grammatical. This constitutes a challenge for any theory treating *-ko* as one and the same marker in all of its appearances. I consider (27) to provide evidence for the claim that *-ko* marks a lexical case, noting the complications with (26). Nevertheless, something will have to be said about such cases. In section 4.5 I provide the theoretical means to at least formulate this contrast.

In order to capture these otherwise surprising properties of *-ko* I will treat it as a lexical marker throughout all of its occurences. Thus,

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[6]Admittedly, this turns out to be wrong at least for some dialects. Consider (i):

(i) hɛm is   bɛ   ko   uskī   mã   ko   sɔ̃   dẽ
     we   this child.OBL DOBJ he.POSS.F.OBL mother IOBJ handover give.PL.OPT
                                                          (Kachru 2006: 197)

Kachru states that double *ko*-marking is possible if both objects are human, a claim that is in conflict with (10). I do not know of any account or convincing empirical generalization about double *ko*-marking and hence will ignore these cases here, adhering to the standard claim that *-ko* can only be attached to the indirect object.

[7]The glosses follow Mohanan. Within the present analysis, of course, both appearances of *-ko* are considered two instances of the very same marker.

in the present analysis *-ko* is not ambiguous between a dative and an accusative marker.

4.3.   The zero marker

If the distribution of *-ko* and the zero marker is conditioned by morphological impoverishment rules, i.e. one marker being underlying, the other being introduced by the application of a rule, the question arises wether *-ko* or *-∅* is underlying. Two arguments favor *-ko*: Firstly, if *-ko* was introduced by a rule, this rule would have to include a disjunction. It would have to apply if the element is either human or specific, since it marks objects that are human *or* specific (yielding the disjunction [+human] $\vee$ [+specific][8]). In the contrary scenario, however, a conjunction is sufficient, i.e. the zero marker is attached if the noun is not human and unspecific ([−human] $\wedge$ [−specific]), clearly a conceptually simpler rule. Secondly, the complexity of the grammar is considerably reduced if morphological rules can only yield the conditions for attaching phonetically less marked elements. Consider a very restrictive iconicity principle, stating that the internal structure of an affix correlates with its external, i.e. phonetic, structure. This means that a zero marker must *always* be constituted of fewer grammatical features than a non-null marker. If in addition a principle similar to the *Inclusiveness Principle*[9] (Chomsky 2005) in syntax is also active in morphology (cf. Trommer 2003), perhaps in every domain of the grammar,[10] this derives the restriction that morphological rules can only exchange zero markers for non-zero markers and never the other way around. While possibly too strong, this conclusion constrains the capacity of the grammar in

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[8]See the empirical patterns illustrated in section 2.3

[9]The inclusiveness principle states that syntactic operations do not add information not present within the elements involved into this operation, such as indices, traces etc. Deletion, however, must inevitably still be possible, for in the framework of Minimalism all syntactic operations are driven by the need to get rid of uninterpretable features.

[10]The *Compositionality Principle* active in semantics can well be seen as another instantiation of this principle. As for phonology, *containment* (McCarthy & Prince 1995) appears to be a principle quite similar in nature.

a straightforward and natural way. If -*ko* is analysed as the underlying marker, the grammar is considerably more restrictive.

If -*ko* is treated as underlying and the zero marker as being attached if an impoverishment has applied and rendered the insertion of -*ko* impossible, the marker specification of -∅ must be a proper subset of that of -*ko*. Consequently, I will argue that the zero marker is the default marker. Note that the zero marker can appear on both subjects and objects, whereas -*ne* or -*ko* can only be attached on either the subject or the object. Furthermore, -∅ can in principle appear on the object of *all* verbs, its usage being restricted by the factors [±human] and [±specific]. -*ko*, on the other hand, is only available on the objects of a subclass of verbs, cf. (9). Those verbs rule out -*ko*-marking on their objects regardless of specificity. No transitive verbs, however, allow only for *ko*-marked objects, despite of the factors [±human] and [±specific]. Hence the zero marker has a larger distribution than both -*ne* and -*ko*. It therefore seems straightforward to treat this marker as the default, being maximally underspecified.

4.4.   The system

The case features relevant to this analysis are ERGATIVE, ABSOLUTIVE and ACCUSATIVE. These three cases are assigned by three different heads respectively:

(28)   *Case assignment* (cf. Bobaljik 1993, Chomsky 1993, among others)
ERGATIVE: by T°
ABSOLUTIVE:[11]   by v°
ACCUSATIVE: by V°

In order to define natural classes of cases, I will resort to *decomposition* (Bierwisch 1967, following the Jakobsonian tradition). This means that case features are not viewed as primitive grammatical entities but as being constituted by smaller features. The motivation behind our doing so is the same as in phonology: Regarding sounds as made up

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[11] This marker is generally called *nominative*, though this would suggest assignment by T. To avoid confusion I will use the term absolutive instead. This matter, however, is purely terminological. The glosses in the examples will be kept unchanged, referring to nominative in place of absolutive.

by smaller features allows one to define *natural classes*. Consider a rule
that applies to all voiceless sounds. Instead of merely listing all rele-
vant sounds, decomposition allows us to refer to one relevant feature,
i.e. [–voiced]. Within morphology, the reasoning is similar: If e.g. two
cases are marked by the same affix (i.e. they behave identical in this
respect), both are decomposed to smaller features of which they share
at least one.

Secondly, with decomposed features *impoverishment* (see below)
does not yield an all-or-nothing option. If, for example, [ERGATIVE] was
a primitive feature impoverishment could only delete this entire fea-
ture, yielding an element that is non-specified for case. If, on the other
hand, [ERGATIVE] consists of two features, say $[+\alpha, -\beta]$, impoverish-
ment could only delete $[+\alpha]$, leaving $[-\beta]$ intact. The resulting element
$[-\beta]$ would neither be fully specified for case no radically underspeci-
fied. This allows us to predict that this element shares distribution with
the ergative elements in certain aspects (i.e. whenever the feature $[-\beta]$
is relevant) while behaving differently in other aspects (when $[+\alpha]$ is
relevant).

Decomposition of these cases yields the following features:

(29)   *Case decomposition*[12]
         ABSOLUTIVE: [–oblique, –subject]
         ACCUATIVE: [+oblique, . . .]

The inflectional markers are decomposed into:

(30)   *Decomposition of inflectional markers*
         (/-ko/, [+obl, . . .])
         (/-∅/, [ ])

A second devise employed here are *impoverishment rules*. The job of
impoverishment rules is to delete features in certain contexts, thus in-
fluencing marker competition. Since all markers (viewed as a set of
features) that constitute a subset of the features of a given syntac-
tic head compete for insertion into this position. The marker with the
most features gets inserted. By deleting features of the syntactic head,
impoverishment rules diminish the set of markers that are a subset of

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[12]Of course, as for the accusative, more features are necessary to distinguish it
from the other lexical cases (cf. (1)), but they are irrelevant since these cases are
abstracted away from in this analysis.

this head and hence make the set of markers that compete for insertion smaller. Now it might be the case that due to impoverishment is excluded from competition and therefore another marker wins whenever the impoverishment rule applies. So if markers behave differently depending on the presence of other features this connection can be expressed be impoverishment.

There is one impoverishment rule that influences the insertability of the marker *-ko*:

(31)   *Impoverishment rules for accusatives*
         [+oblique] → ∅ / [–specific, –human]

The functioning of the system is illustrated by means of the following examples:

(7)   a.   ilaa-ne ek   bacce-ko   ut^{h}aayaa
             Ila-ERG one child[+obl, ...] lift/carry.PERF[ACC]

       b.   ilaa-ne ek   haar-∅   ut^{h}aayaa
             Ila-ERG one necklace[+̶o̶b̶l̶, ...] lift-PERF[ACC]

(9)   ilaa-ne yah   k^{h}at   lik^{h}aa
       Ila-ERG this.NOM letter[–obl,–subj] write.PERF[ABS]

Since the object of 'lift' can in principle be marked with *-ko*, it has to assign the accusative to its complement. Therefore, in both (7-a) and (7-b) the object receives the abstract syntactic feature bundle [+oblique, ...]. The difference arises due to whether the impoverishment rule (31) has applied or not. Only in (7-b) the context for deletion of [+oblique] is given, since only here the object is [–specific] as well as [–human]. Thus, in (7-a) but not in (7-b) is the feature set of *-ko* a subset of the feature set of the head. Therefore, in (7-b) only the zero marker fullfills the condition for being inserted. The same argumentation applies to (8).

(8)   a.   nadya=ne   gari   cala-yi
             Nadya.F.SG=ERG car.F.SG.NOM drive-PERF.F.SG
             hɛ
             be.PRES.3SG
             'Nadya has driven a car.'

    b.   nadya=ne   gaṛi=ko   cɑla–ya
         Nadya.F.SG=ERG car.F.SG=ACC drive–PERF.M.SG
         hɛ
         be.PRES.3SG
         'Nadya has driven the car.'   (Butt & King 2004: 161)

The object of 'write' in (9), however, can never bear the *ko*-marker, hence it can be concluded that this verb never provides the correct features for *ko*-insertion but assigns the absolutive case. Out of the two markers in (30), only -∅ stands in a subset relation to the absolutive. Thus, no other marker than the zero marker can be attached to the object of 'write', as desired. The impoverishment rule (31) does not apply to this class of verbs.

    That the crucial condition for the application of (31) is humanness rather than animacy can be demonstrated by the following contrast:

(32)   a.   ravii   (ek) gaay   kʰariidnaa caahtaa   hai
          Ravi.NOM one cow.NOM buy.NONFIN wish.IMPERF be.PR
          'Ravi wished to buy a cow (with no particular cow in mind)'.
    b.   ravii   ek gaay-ko kʰariidnaa caahtaa   hai
          Ravi.NOM one cow-ACC buy.NONFIN wish.IMPERF be.PR
          'Ravi wished to buy a (particular) cow.'
    c.   ravii   gaay-ko kʰariidnaa caahtaa   hai
          Ravi.NOM cow-ACC buy.NONFIN wish.IMPERF be.PR
          'Ravi wishes to buy a particular cow.'
    d.   ravii   us gaay-ko kʰariidnaa caahtaa   hai
          Ravi.NOM that cow-ACC buy.NONFIN wish.IMPERF be.PR
          'Ravi wishes to buy that cow.'   (Mohanan 1994: 80)

The object is homogeneously non-human but animate. If the relevant contextual features of the impoverishment rule was [±animate] instead of [±human], we would expect *ko*-marked objects in all four sentences, contrary to fact. Furthermore, (32) shows that it is specificity rather than definiteness that is relevant for the distribution of *-ko*. While only the object in (32-d) is definite, the objects in all examples except (32-a) are interpreted specifically. Since the objects in (32-b), (32-c) as well as (32-d) bear the marker *-ko*, specificity is the feature that is relevant to distinguish these cases. So since only in (32-a) the object bears the feature [−human,−specific], (31) applies only here, yielding zero marking.

This analysis of *-ko* as a single marker has several advantages: First, it can be treated uniformly throughout its appearances. No distinction between a dative marker *-ko* in ditransitives and an accusative marker-*ko* in transitives has to be drawn. Second, the semantic impact of the appearance vs. non-appearance of *-ko* can be captured indirectly, i.e. by means of an impoverishment rule that only applies if certain semantic conditions are met. As a consequence, there is no need to retreat from the widely held position that case is a semantically uninterpretable feature. Third, the dependence on the verb is accounted for via different case features on some verbs. Fourth, under this account the proposal that Hindi is actively aligned can be maintained. *-ko* can never occur on subjects because lexical case is never involved in active alignment, which only generalises over the distribution of structural case, in the case of Hindi *-ne* and *-∅*. Fifth, the fact that in ditransitives only one *ko*-marked object can appear is given a principled explanation since only one argument receives lexical case (the other is valued with the structural case absolutive) and is hence capable of bearing the marker *-ko*.

Consider as a contrast the analysis in Mohanan (1994: 85f.). She stipulates two properties of Hindi case marking: Firstly, "the language disfavours identical case marking on more than one nominal"; secondly, the indirect object is given priority over the direct object. Note first that it is unclear how these principles can be derived. Second, it does not appear to capture the correct empirical patterns in the first place. It is not clear what "disfavours" means in particular. Furthermore, this generalisation fails to apply to ditransitives since, as Mohanan herself argues, *-ko* is not one and the same marker but ambiguous between a dative and an accusative marker. Thus, the indirect object is dative marked, receiving the marker *-ko$_1$* and the direct object in contrast bears the accusative, with *-ko$_2$* being attached. Hence, her generalisation allows for double *ko*-marking. This analysis would work if both appearances of *-ko* were instantiation of the same case so that *-ko* on one object excluded *-ko* on the other one. This, however, is argued against by Mohanan. In addition to overgenerating, Mohanan's analysis also undergenerates, since it does not allow for perfectly grammatical instances of zero-marked subjects and objects, as in (33):

(33) nadya-∅   gaṛi-∅   cala-ti   hɛ
      Nadya.F.SG.NOM car.F.SG.NOM drive-IMPF.F.SG be.PRES.3SG
      'Nadya drives a car.'   (Butt & King 2004: 161)

As will be outlined outlined in section 5.2 Mohanan argues that zero-marked objects are *not* allomorphs of accusative marking but bear the very same case marker as zero-marked subjects, which shuld in turn rule out zero marked subjects and objects within the same clause.

4.5.   Transitives vs. ditransitives

As matters stand now, all *ko*-marked DPs are expected to behave alike, but in fact they do not: The impoverishment rule in (31) applies to lexically case marked DPs in transitive and ditransitive clauses alike, allowing both to alternate with -∅. This, however, is empirically wrong. In transitive clauses -*ko* is exchanged or the zero marker in the context of [–human,–specific]. The indirect object of ditransitives, on the other hand, always has to be marked with -*ko*, regardless of humanness and specificity. To capture this difference, (31) has to be modified in order to only apply to the lexical case assignes by transitive verbs. Any analysis must be capable of somehow expressing this difference by introducing a distinction between lexical cases in transitives and ditransitives. But with such a distinction the advantage of a homogenuous treatment of all instances of -*ko* seems to be lost. In order to resolve this tension, the present system can be slightly modified as follows. The easiest way is to just postulate two different abstract cases, that I will call ACCUSATIVE and DATIVE. Dative refers to the case assigned to the indirect object of ditransitives. Accusative is the lexical case that transitive verbs assign to their objects, i.e. the case that is compatible with *ko*-marking. There has to exist at least one feature [±α] which has different values for each case. Consider the following schematic feature decomposition:

(34)   *Case decomposition*
         ACCUSATIVE: [+oblique, +α]
         DATIVE: [+oblique, −α]

The impoverishment rule (31) now can be enriched in the following way:

(35)   *Impoverishment rule for accusatives*
         [+oblique] → ∅ / [–specific –human, +α]

In this way only *-ko* in transitives is affected. In order to capture the fact that both cases bear the same marker, *-ko*'s feature specification is left unchanged:

(36)   *marker decomposition*
         (/-ko/, [+oblique])

The present dilemma looks as follows: Both cases behave differently with respect to case reduction (accusative undergoing reduction, while datives never do). On the other hand, however, both bear by the same marker (*-ko*). Hence they share behavior in one respect while showing different properties in other respects. This tension can be resolved by realizational theories of morphology with the means of underspecification and impoverishment, as employed here. In such theories there naturally arises a distinction between case as an abstract grammatical feature (*abstract case*) and the surface case marker actually attached to the stem (*m-case*). So e.g. in (9) the abstract case assigned to the object is [–obl,–subj] (absolute) and the m-case marker is -∅.

(9)   ilaa-ne yah   k^{h}at   lik^{h}aa
        Ila-ERG this.NOM letter[–obl,–subj] write.PERF[ABS]

Now since accusatives and datives are constituted by different features but the very same marker is attached to both, they are an instance of two abstract cases that correspond to one m-case, i.e. the difference between the two only shows up on the level of abstract case, never on the level of m-case.

Because of underspecification a single m-case marker can match several abstract cases, thus constituting a one-to-many-relation. Impoverishment rules, on the other hand, modify the syntactically assigned features and thus allow for several markers for one and the same abstract case in different contexts. Conflating these two yields a many-to-many relation between abstract and m-case. Deriving a mismatch between abstract and surface features is exactly the reason behind introducing this distinction into grammar theory (cf. Zaenen, Maling & Thráinsson 1985 for Icelandic and Bobaljik & Wurmbrand 2006 for a general overview). Therefore, it would appear to be an unexplained phenomenon if it turned out that in spite of this relation the number of abstract and m-cases is the same. This would not follow from anything and would have to be stipulated externally. If it was the case that the number of abstract and m-cases was identical then the distinction

between both levels would appear doubtful since to a certain extent it would be redundant. Insofar the scenario depicted above turns out to be a natural one in the context of realizational morphology.

A similar state of affairs can be observed in German. Only in passivization structures with *bekommen* ('get') can the dative object be reduced to a nominative and constitute the subject of the clause. As for transitives, no such structure can be formed:

(37) a. Maria   schenkt   ihm   ein Buch.
          Maria.NOM give as a present he.DAT a   book.ACC
          'Maria gives him a book.'

      b. Er   bekommt ein Buch   geschenkt.
          he.NOM get   a   book.ACC give as a present
          'He is given a book.'

(38) a. Maria   hilft ihm.
          Maria.NOM help he.DAT
          'Maria helps him.'

      b. *Er   bekommt geholfen.
          he.NOM get   helped
          'He is helped.'

Hence, datives in ditransitives and datives in transitives behave differently on the level of abstract case (i.e. with respect to case reduction in passives) but both bear one and the same marker in active voice (i.e. both are marked by *'ihm'* in the example above). The general reasoning about Hindi thus also applies to German.

Let us summarize the different object cases briefly: The analysis distinguish between absolutive, accusative and dative. Their properties are listed below:

(39) **Overview over cases assigned to objects**

case	abstract case features	assigned by	m-case markers
ABS	$[-\text{obl},-\text{sub}]$	v°	always -∅
ACC	$[+\text{obl},+\alpha]$	transitive V°	-∅ or *-ko*
DAT	$[+\text{obl},-\alpha]$	ditransitive V°	always *-ko*

4.6.   The distribution of the ergative

Against this background only some extensions are necessary to account for the distribution of the ergative. First, the case decomposition in (29) can be extended to include the ergative[13]:

(40)   *Case decomposition*
        ERGATIVE: [–oblique, +subject]
        ABSOLUTIVE: [–oblique, –subject]
        ACCUSATIVE: [+oblique, $+\alpha$]
        DATIVE: [+oblique, $-\alpha$]

The marker decomposition of the full system is displayed in (41).[14]

(41)   *Marker decomposition*
        (/-ne/, [–oblique, +subject])
        (/-ko/, [+obl, . . .])
        (/-∅/, [ ])

Again, one impoverishment rule suffices to capture the distributional patterns of the marker *-ne*:

(42)   *Impoverishment rule for ergatives*[15]
        [+subject] → ∅ / [–PERFECT]

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[13]This decomposition of the ergative is somewhat reminiscent of Lee (2006)'s constraint ERG_{perf}, which states that the highest argument role in a perfective clause must be in the ergative (cf. also Kiparsky 1999, Wunderlich 2000). The similiarity is due to the fact that [+subject] indicates the highest argument in a clause.

[14]This approach also captures the insights of the following default principles of Butt & King (2004: 185):

(i)   a.   Wellformedness principle: KP: (↑CASE)
        b.   Default: ((↑SUBJ CASE)=NOM)
        c.   Default: ((↑OBJ CASE)=NOM)

Both Butt & King's analysis and the one presented here treat zero marking (i.e. the nominative) as the default marking, which is instantiated if no more specific principle or marker can be attached.

[15]Two possibilities for formulating this rule are discussed by Woolford (2007): Firstly, a faithfulness constraint outranking a general ban on ergatives states that perfective marking in the input must be preserved in the output in the perfective

The effect of this rule is that whenever a sentence stands in the non-perfective aspect, only the zero marker can be attached:

The algorithm functions as follows ((2)):

(2)   a.   raam-ne   ravii-ko piiṭaa
              Ram-[–obl,+subj] Ravi-ACC beat.PERF[ERG]

    b.   raam-∅   ravii-ko piiṭaa   hai
              Ram-[–obl,~~+subj~~] Ravi-ACC beat.IMPERF[ERG] be.PR

---

aspect. In the second version the ergative is prohibited in the imperfect, which outranks a general constraint forcing the ergative to appear. The first possibility thus enhances a constraint *demanding* ergative with a contextual feature, the second one enriches a constraint *prohibiting* ergative marking with a context specification. Clearly, the analysis pursued here is an example of the second type. Woolford, instead, favors the first alternative. While they are empirically indistinguishable for Hindi, Woolford bases her argument on Nepali, which exhibits the same aspectual split as Hindi but furthermore preserves ergative marking in the imperfect if the predicate is individual-level. To illustrate this, consider the two examples below:

(i)   a.   Raam=le (#aajaa) angreji jaan-da-cha
            Ram=ERG today   English know-IMPF-NONPAST.M.3.SG
            'Ram knows English (#today).'   (Individual-Level)
    b.   Raam (aajaa) angreji bol-da-cha
            Ram today   English speak-IMPF-NONPAST.M.3.SG
            'Ram will speak English (today).'   (Stage-Level)
            (Woolford 2007: 6)

In (i-a) a property is ascribed to Ram, whereas in (i-b) an event is depicted. Ergative marking in the imperfect is possible in Individual-Level but not in Stage-Level predication. On the basis of these data Woolford argues that if one prohibits ergative marking in the non-perfect (cf. the second alternative above), (i-a) is inevitably ruled out. Further constraining does not help since it would only further reduce the contexts in which the ergative occurs. On the other hand, if the ergative is allowed for by faithfulness constraints, a second contraint to the one demanding ergative in perfectives can be made use of to account for (i).

But note that while this might be the case for optimality-theoretic approaches it does not extend to analyses employing impoverishment rules. If simply a second constraint allowing the ergative in Individual-Level predication is used there is no connection between these two contexts. This reduces to a disjunction stating that the ergative has to show up in the output in the context of *either* perfective aspect *or* Individual-Level predication. Under the point of view adopted here the alternative would be to formulate an impoverishment rule deleting the ergative in the context of imperfective aspect *and* Stage-Level predication. This would avoid a disjunction or, equivalently, only make use of one rule instead of two.

In (2-b) but not in (2-a) the context for applying (42) is provided. This rule renders *ne*-insertion impossible so that only the zero marker can be attached.

Within the set of perfective sentences the applicability of (42) depends on the base position of the 'subject', cf. (3):

(3)   a.   raam-ko   acaanak   šer   dik^{h}aa.
            Ram-DAT suddenly lion.NOM appear.PERF
            [$_{vP}$ ∅ [$_{VP}$ vah-∅   cillaayaa]]
                  he[–obl,–subj] scream.PERF[ABS]

     b.   [$_{vP}$ us-ne   jaan buuj^{h}kar cillaayaa]
            he-[–obl,+subj] deliberately   shout.PERF[ERG]

In (3-a) 'he' is base generated within the VP and receives Θ_{int} because here a non-volitional instance of screaming is depicted. Within the VP absolutive is assigned as the standard case, hence the case feature of the DP is valued with [–oblique, –subject]. Of the case markers in (41) only -∅ is attachable. (3-b) denotes a deliberate action. Consequently, 'he' is generated in SpecvP and case-marked with [–oblique, +subject]. Since the verb is perfective the context for deletion of [+subject] is not satisfied, and hence -*ne* remains attachable, outranking -∅ for specificity reasons. Hence, this contrast is not connected to an impoverishment rule but depends on the claim that Hindi has active argument encoding. (42) only handles the perfect-nonperfect distinction.

This analysis accords with that of Bittner & Hale (1996) (and others, see above), which states that the ergative is assigned by I°. Butt & King (2004) criticise Bittner & Hale's treatment with the objection that under this account it is unexplained why the ergative is obligatory in transitive clauses and optional in intransitive clauses. If Hindi has active alignment as argued above this critism is void. In transitive clauses Θ_{ext} is assigned to one argument, in intransitive clauses it may (unergative verbs) or may not (unaccusative verbs).

This rule seems to be non-local since the feature changed is present on the subject noun, while the context information is situated within T. Nevertheless, there are at least two ways out: (42) can either be seen as an *inner-syntactic* rule, applying *before* the abstract case feature is assigned to the subject by T. In this case the affected information and

the context would be present on the same head, yielding locality.[16] This solution, however, is incompatible with the main claim of this paper, i.e. that the distribution of structural case markers in Hindi can be fully accounted for by means of *post-syntactic* morphology.[17] I will thus neglect this nevertheless feasible approach and suggest a second solution: treating case (i.e. at least the case assigned by T) as uninterpretable tense on D (cf. Pesetsky & Torrego 2001, Williams 1994). In this case the contextual information as well as the information deleted by (42) is present on one and the same head ({D, [–oblique, +subject], $u$perfect, . . . }) and hence (42) is a strictly local rule, adhering to the claim that morphology becomes active after finishing the syntactic derivation.

Note that this analysis conforms to the iconicity and inclusiveness principles mentioned for the case of *-ko*: a zero marker substitutes a non-null marker. Consider, on the contrary, Anderson (1992: 357)'s treatment of the ergative in Hindi:

(43) $NP_i \rightarrow$ [+Ergative] (when properly governed by)
             $[_V +Perfect, i[X])$

Here the ergative substitutes the zero marker if certain conditions are met. Apart from the iconicity principle, this treatment also violates the inclusiveness principle for a second reason: A distinction, i.e. a new marker, is introduced during the course of the derivation, hence new information is added. By contrast, under the analysis proposed here a distinction between markers is eliminated, adhering to the

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[16]See Heck & Richards (2007) for another analysis involving intrasyntactic impoverishment for Southern Tiwa.

[17]This mechanism might turn out not to be incompatible if certain assumptions about cyclic TRANSFER of phases (e.g Chomsky 2005, 2006) are met: In such a system AGREE applies at the very moment the structure is transferred to PF and LF. In such a model, AGREE does not interact with structure building operations but applies after the whole phase is built up. A second option would be to assume, with Epstein & Seely (2002), that every operation, as characterized by their input and output, constitutes a domain in which information about input and output are present simultaneously. In this case, AGREE between T and the DP in its specifier would constitute a local connection of the features of T and the DP, hence the feautures relevant to (42). I will not pursue these ideas any further.
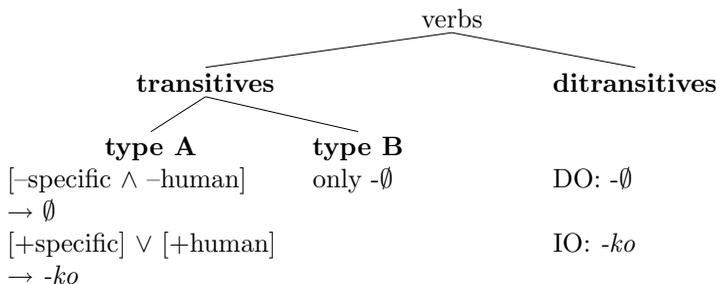
inclusiveness principle (also cf. Trommer 2003).[18]

Since the impoverishment rules relevant for the distribution of *-ko* , *-ne* and the null marker operate independently from each other, nothing prevents simultaneous application of both if the relevant features provide the appropriate context. Such an example can be seen in (33).

(33) nadya-∅   gaṛi-∅   cɑla-ti   hɛ
      Nadya.F.SG.NOM car.F.SG.NOM drive-IMPF.F.SG be.PRES.3SG
      'Nadya drives a car.'   (Butt & King 2004: 161)

As for *-ne*, as well as for *-ko*, the case marker in itself is semantically vacuous. Semantic effects merely arise since the relevant impoverishment rules are semantically conditioned.

4.7. Summing up

In order to briefly set out the main claims argued for in this section, let us recapitulate the schematic outline of the empirical facts from section 2.3, repeated here, and line out how each point is accounted for within the present framework.

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[18] Analyses resembling the one presented here in this respect are Woolford (2001)'s in assuming the constraints FAITH-LEX$_{perf}$ ≫ *ERG and Stiebels (2000, 2002)'s *[+lower role]/[-perf]* ('Avoid ergative marking in non-perfective contexts.'). In these analyses the case feature *perfective* is present within the input but possibly not realized in the output. But note that in these approaches nominative could in principle also be replaced by the ergative if the relevant constraint would be modified in a way to exclude nominative marking. This means there is no principled constraint on what can be exchanged for what. On the contrary, the analysis presented here is certainly more restrictive in only allowing a zero marker to be inserted instead of a non-null marker, adhering to inclusiveness.

(11)   *-ne:*

> • only on subjects of perfective clauses

$$
\begin{array}{ccc}
 & \text{verbs} & \\
\diagup & & \diagdown \\
\textbf{intransitives} & & \textbf{transitives} \\
[+\text{volitionality}] & & \text{virtually always } ne\text{-} \\
\downarrow & & \text{marking in simple} \\
\textit{-ne} & & \text{verb forms} \\
[-\text{volitionality}] & & \\
\downarrow & & \\
\text{-}\emptyset & &
\end{array}
$$

-ne can only be attached to subjects because due to active alignment subjects are one homogenuous class with respect to case assignment in Hindi, all receiving the ergative from T. As for the ergative, *-ne* and -∅ both fulfill the subset principle and hence both compete for insertion. All else being equal, *-ne* wins against -∅, but as soon as the impoverishment rule (42) applies, only -∅ can be inserted. (42) applies in the non-perfective aspect, so *-ne* can only appear in perfective clauses. The factor [±volitionality] also triggers *-ne* or zero marking which is subsumed indirectly. External arguments receive a volitional interpretation, internal do not. Since Hindi is assumed to exhibit active alignment, Θ_{ext} and Θ_{int} are distinctly case marked – ergative and absolutive, respectively. The connection between markers and semantics thus arises because internal and external Θ-roles receive specific markers and specific interpretations. The fact that subjects of intransitives alternate between zero and *ne*-marking whereas transitive subjects are almost always marked by *-ne* in the perfect is again captured by active alignment. Only Θ_{ext} can be marked with the ergative. Transitives on the one hand always assign an external Θ-role, intransitives on the other hand can alternate between assigning Θ_{ext} or Θ_{int}.

(12)   *-ko:*

   • only on objects

```
                          verbs
              ┌─────────────┴──────────────┐
         transitives                  ditransitives
       ┌───────┴───────┐
    type A          type B
[–specific ∧ –human]   only -∅         DO: -∅
→ ∅
[+specific] ∨ [+human]                 IO: -ko
→ -ko
```

That *-ko* can only appear on objects is due to the fact that the dative and the accusative are lexical cases that can only be assigned to the complement of V. In the case of ditransitives the indirect object is marked with the dative, realized by *-ko* and the direct object receives the absolutive, expressed by the zero marker. In the case of transitive verbs, two verb classes have to be distinguished: Class B assigns the absolutive case to its object which inevitably results in zero marking. Class A assignes the absolutive to its object, which hence can be marked with *-ko*. The impoverishment rule (31) renders *ko*-insertion impossible in the context of [–specific,–human] which in turn derives the apparent semantic impact of the case markers, that is derived indirectly in the present system. That *ko*-zero alternation is possible only in transitive clauses is ensured by enriching the context of the relevant impoverishment rule so as to yield (35).

5.   Theoretical implications

The present system predicts *ne*-marked subjects in the perfect and zero-marked subjects in nonperfect clauses to behave alike with respect to syntax, since both bear the same abstract case feature [–oblique, +subject] before impoverishment and occupy the same structural position. The distinction imposed by the impoverishment rule only arises *post*-syntactically. The analysis thus makes the following prediction: Subjects bearing *-ne* and unmarked subjects should exhibit similar behavior with respect to syntactic tests, but as for post-syntactic operations, they should show different properties. The goal of this section is to test these predictions. In section 5.1 classical tests for subjecthood, i.e.

binding of anaphors and control, are applied. Section 5.2 considers an argument from Mohanan (1994) in favor of treating *identically marked* DPs as bearing the *identical case features* and a solution of how the advantages of her analysis can be captured within the present system. Finally, section 5.3 presents an argument from Anand & Nevins (2006) who, making use of quantifier scope ambiguities, argue that zero and *ne*-marked subjects are not to be analysed alike.

5.1.   Tests for subjecthood

The tests for subjecthood adopted by Anand & Nevins are binding and control. Following Ura (2001), they propose that these properties are inherited by virtue of being in SpecTP. Since zero-marked and *ko*-marked subjects of transitive clauses are assumed to get their case feature valued by T in the present analysis, the view that occupying SpecT is the trigger for passing these tests is consistent with the analysis here. Whether the subjects of unaccusative verbs behave alike or not depends on whether or not one assumes T in Hindi to bear an EPP-feature. If it does the highest DP has to move to SpecTP, predicting that internal DPs of intransitive clauses exhibit the same properties as external arguments. This problem is independent from the treatment suggested here. Anand & Nevins assume that SpecTP has to be occupied by a DP.

   The classical tests for subjecthood all show that subjects marked with -*ne* and unmarked ones behave alike:

(44)   *Binding of 'apna' (subject-oriented anaphor)*

   a.   Salmaa   Raam-se   Mohan-ko   apnii kitaab
        Salma-NOM Raam-INST Mohan-DAT self's book-NOM
        bhijvaayegii
        send-CAUSE-FUT
        'Salma$_i$ will get Raam$_j$ to send Mohan$_k$ self's$_{i/*j/*k}$ book.'

   b.   Salmaa-ne Raam-se   Mohan-ko   apnii kitaab
        Salma-ERG Raam-INSTR Mohan-DAT self's book-NOM
        bhijvaayii
        send-CAUSE-PERF
        'Salma$_i$ will get Raam$_j$ to send Mohan$_k$ self's$_{i/*j/*k}$ book.'

(45)   *Obviation with the pronominal 'uskii'*

a. Salmaa   Raam-se   Mohan-ko   uskii kitaab
   Salma-NOM Raam-INSTR Mohan-DAT self's book-NOM
   bhijvaayegii
   send-CAUSE-FUT
   'Salma$_i$ will get Raam$_j$ to send Mohan$_k$ self's$_{*i/j/k}$ book.'

b. Salmaa-ne Raam-se   Mohan-ko   uskii kitaab
   Salma-ERG Raam-INSTR Mohan-DAT self's book-NOM
   bhijvaayii
   send-CAUSE-PERF
   'Salma$_i$ will get Raam$_j$ to send Mohan$_k$ self's$_{*i/j/k}$ book.'

(46)   *Control into participal adjuncts*

a. Salmaa   Raam-se   Mohan-ko   [PRO adres
   Salma-NOM Raam-INST Mohan-DAT [PRO address
   khoj   kar] uski kitaab   bhijvaayegii
   search do   self's book-NOM send-CAUSE-FUT
   'PRO$_{i/*j/*k}$ having searched for the address, Salma$_i$ got
   Raam$_j$ to send Mohan$_k$ his$_{*i/j/k}$ book.'

b. Salmaa-ne Raam-se   Mohan-ko   [PRO adres   khoj
   Salma-ERG Raam-INST Mohan-DAT [PRO address search
   kar] uski kitaab   bhijvaayii
   do   self's book-NOM send-CAUSE-PERG
   'PRO$_{i/*j/*k}$ having searched for the address, Salma$_i$ got
   Raam$_j$ to send Mohan$_k$ his$_{*i/j/k}$ book.'

The same phenomenon can be observed for Control structures (Pandharipande & Kachru 1977: 225):

(47)   a.   lərke ne caha   [lərka jae]
        boy   ag. wanted boy   go
        'The boy wanted [the boy go].'

     b.   lərke ne jana   caha
        boy   ag. to go wanted
        'The boy wanted to go.'

     c.   lərka cahta hɛ [lərka jae]
        boy   wants   boy   go

     d.   lərka jana   cahta hɛ
        boy   to go wants

As expected, no matter what marker the subject bears, it behaves alike with respect to innersyntactic properties, namely binding.

Whether this is to be attributed to identical case features or identical structural positions, as Anand & Nevins argue, remains to be seen. Both generalizations conform to the analysis suggested here.

5.2.   Allomorphy of the accusative?

Independently of the marker they bear, subjects of transitives are assigned the same syntactic case feature (namely, [+subj,–obl]) and hence similiarities in grammatical properties are expected. Note that, however, the features of subjects and objects bearing the zero marker are different even if impoverishment rules have applied. To see this, recapitulate that the case marker assigned to the subject ([+subj,–obl]) becomes [–obl] if the impoverishment rule (42) has applied. Direct objects are either marked with the absolute ([–subj,–obl]) or the accusative ([+obl,+α,...]), that is reduced to [+α,...] if the impoverishment rule (35) applies. As can be seen, zero marked DPs can bear the abstract case features [–obl], [+α,...] or [–subj,–obl], due to the fact that the zero marker has no grammatical features that would have to adhere to the subset principle and hence fits into every context. On the other hand, internal arguments of verbs assigning the accusative are valued with the same abstract case features ([+subj,+α,...]) *prior* to impoverishment (i.e. innersyntactic), no matter if *-ko* or *-$\emptyset$* is attached.

Mohanan (1994) argues against treating the relation between *-ko* and *-$\emptyset$* on objects as an instance of allomorphy. Furthermore, she notes that zero marked subjects and objects behave alike with respect to verb agreement and stem form selection. Therefore, she concludes that both must be marked with the same case feature syntactically and that the distribution of the case endings under consideration must be explained in syntactic terms. In the following, her arguments will be illustrated and a way of implementing these observations in the present analysis will be suggested. The line of reasoning will be that these properties can be expressed on the basis of the marker actually attached, and hence are determined post-syntactically.

1. *stem forms*

    Some nouns and pronouns have two stem forms, one a nominative form, the other the form for non-nominatives. Only the case marker that is actually attached is relevant for this distinction; consider (48):

(48)   a.   kaccaa   **kelaa**   sastaa   hai
unripe.NOM banana.NOM inexpensive be.PR
'Unripe bananas are inexpensive.'

        b.   ravii-ne   kaccaa   **kelaa**   kaaṭaa
Ravi-ERG unripe.NOM banana.NOM cut.PERF
'Ravi cut the / an unripe banana.'

        c.   ravii-ne   kacce   **kele**-ko   kaaṭaa
Ravi-ERG unripe.NONNOM banana-ACC cut.PER
'Ravi cut the / *an unripe banana.'

        d.   kacce   **kele**-mẽ   kiiḍaa   hai
unripe.NONNOM banana-LOC worm.NOM be.PR
'There is a worm in the unripe banana.'

        e.   raam   kacce   **kele**-se   kyaa
Ram.NOM unripe.NONNOM banana-INSTR what
banaaegaa?
make.FUT
'What will Ram make with the unripe banana?'

                                        (Mohanan 1994: 87f.)

Generally speaking, the nominative form appears whenever there is no marker attached. However, there is one exception, namely the locative. It is not overtly marked but nevertheless the non-nominative form is chosen:

(49)   a.   **kalkattaa**   bahut duur hai
Calcutta.NOM very   far   be.PR
'Calcutta is very far away.'

        b.   raam   **kalkatte**   gayaa
Ram.NOM Calcutta.NONNOM go.PERF
'Ram went to Calcutta.'   (Mohanan 1994: 88)

These observations also extend to modifier agreement. The modifier is not case marked by itself but shows stem form alternations nevertheless:

(50)   a.   **meraa**   **g^{h}ar** gã$\tilde{a}$w-mẽ   hai
I.GEN.NOM house village-LOC be.PR
'My house is in a/the village.'

        b.   raam-ne   **meraa**   **g^{h}ar** k^{h}ariidaa
Ram-ERG I.GEN.NOM house buy.PERF

'Ram bought my house.'

c. raam   **mere**   **g^{h}ar** aayaa
   Ram.NOM I.GEN.NONNOM house come.PERF
   'Ram came to my house.'   (ibid.: 89)

For this reason Mohanan argues that the alternation cannot be due to whether the noun is inflected or not but must be dependent on the actual syntactic case feature. Since zero marked subjects and objects behave alike (cf. (48-a) and (48-b)) she concludes that both must bear the same abstract case feature. Marked and unmarked objects ((48-b) vs. (48-c)), however, appear in different stem forms and therefore are best accounted for if the former is marked with accusative and the latter with nominative in the syntax.

This analysis is incompatible with the treatment of the case markers outlined here. The key proposal outlined here is that the distribution of the markers under consideration can be explained in terms of post-syntactic morphology. Thus, inner-syntactic shifts in feature valuation cannot be employed.

2. *verb agreement*

The verb agrees with the subject in gender, number and person if the subject is nominative; if it is not, it agrees with the object if the object is nominative (cf. (51-a), (51-c)); if neither the subject not the object is nominative the verb appears in the default form ((51-b)) (Mohanan 1994: 89). Zero-marked subjects and objects therefore can in principle trigger verb agreement but *ne*- or *ko*-marked arguments cannot, the same state of affairs as for stem form selection.

(51)   a. ilaa-ne   kelaa   ut̪^{h}aayaa
        Ila.FEM-ERG banana.MASC.NOM lift.PERF.MASC
        'Ila picked up the/a banana.'

        b. ilaa-ne   roṭii-ko   ut̪^{h}aayaa
        Ila.FEM-ERG bread.FEM-ACC lift.PERF.MASC
        'Ila picked up the bread.'

        c. ilaa-ne   roṭii   ut̪^{h}aaii
        Ila.FEM-ERG bread.FEM.NOM lift.PERF.FEM
        'Ila picked up the/a bread.'   (ibid.: 90)

3. *coordinative structures*

In coordinations of two nominals only nominals with the same marker can be conjoined:

(52)   a.   raam-ne   bacce-ko   aur aske   juute-ko
            Ram-ERG child-ACC and pron.GEN shoes-ACC
            ut^{h}aayaa
            lift.PERF
            'Ram picked up the child and its shoes.'
       b.   *raam-ne   bacce-ko   aur uskaa   juutaa
            Ram-ERG child-ACC and pron.GEN shoes.NOM
            ut^{h}aayaa
            lift.PERF

(ibid.: 90)

In light of this evidence, Mohanan (1994: 90) argues that "[m]odifier agreement, verb agreement, and coordination show that the distinction between inflected and uninflected objects must be treated as a distinction in syntactically relevant case features, not merely in morphological case marking". Therefore she concludes that the *ko*-zero-alternation on objects cannot be an instance of syncretism but must be seen as different case features assigned to the DP syntactically.

This conclusion, however, is not mandatory given contemporary assumptions about the architecure of the grammar. As argued in section 4.5 above, realizational theories of morphology are compatible with a distinction drawn between grammatical case ('abstract case') and surface case ('surface case'). The relation between the two is many-to-many.

Bobaljik (2007) argues that agreement is not an inner-syntactic operation but feeds on m-case. Hence, it is part of the post-syntactic morphology. Assuming that this claim is motivated independently Mohanan's observations concerning stem form agreement and verb agreement follow immediately. As for the stem form alternation, a rule is needed that states that whenever a case marker other than $-\emptyset_{absolutive}$ is attached the non-nominative form is chosen, where $-\emptyset_{locative}$ is distinct from $-\emptyset_{absolutive}$:

(53)   *Stem form selection*
       Select the nominative stem form whenever an element bears the marker $\emptyset_{absolutive}$.

This informal principle is not meant to fully explain the stem form distribution in Hindi but merely serves as an exemplification. It ensures that stem forms are correlated with inflectional markers. Since by assumption *Agree* applies post-syntactically and hence *after* impoverishment rules have applied. The result is that all modifiers within a DP agree with the head (or the noun) *after* impoverishment has taken place, yielding the effect that if the head bears the nominative stem form, all modifiers do. (53) makes no reference to the abstract case markers that provide the environment of marker insertion and hence accounts for the fact that the nominative stem form is chosen independently of the innersyntactic case marking of a DP.

As for verb agreement, no further assumptions are necessary. Only an absolutive m-case can trigger verbal agreement; if both the subject and the object are unmarked the verb agrees with the higher DP; if no DP fullfills this condition default agreement is instantiated on the verb. Consider the tentative version in (54):

(54)   *Verbal agreement*[19]
        The verb agrees with the highest nominal element bearing the marker $-\emptyset_{absolutive}$.

Again, abstract case marking is irrelevant for verb agreement. Since the verb can in principle agree with subjects and objects, this treatment appears natural.

The same argumentation applies to coordination: Only identically m-case marked NPs can be conjoined, deriving (52).

5.3.   Quantifier Scope

Nevins & Anand (2006) propose that reconstruction in Hindi depends on whether the verb agrees with the subject or not. Firstly, they assume that quantifier raising (QR) alone is not sufficient for giving rise to scope ambiguity. The second condition that has to be met is that the item with higher surface scope has to reconstruct to a position lower than the raised object. Both operations have to apply, otherwise only the rigid reading is available. This is schematized in (55)

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[19]This analysis for agreement in Hindi has also been put forward in Bobaljik (2007).

(55) $[Q_A \ldots [Q_B \ldots [t_A \ldots t_B] \ldots]]$
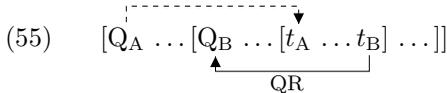
The relevant distinction in Hindi can be seen in (56). In the perfective sentence (56-a) only the surface scope orders are available, but the non-perfective (56-b) turns out to be ambiguous.

(56)   a.   kisii shaayer-ne har   ghazal   likhii
              some poet-ERG   every song-NOM write.f-PERF
              'Some poet wrote every song.'   ($\exists > \forall$, *$\forall > \exists$)
   b.   koi   shaayer   har   ghazal   likhtaa   hai
              some poet-NOM every song-ACC writem-IMPF be-PRES
              'Some poet writes every song.'   ($\exists > \forall, \forall > \exists$)
              (Anand & Nevins 2006: 5)

The idea pursued by Nevins & Anand is to attribute this distinction to verbal agreement rather than aspect, since zero-marked subjects of perfectives that hence trigger verb agreement also exhibit scopal ambiguity:

(57)   koi   aadmii   har   kitaab   laayaa
       some man-NOM every book-ACC bring-PERF
       'Some man brought every book.'   ($\exists > \forall, \forall > \exists$)
       (ibid.: 12)

Since Anand & Nevins assume reconstruction of the subject to be a necessary condition for scopal ambiguity, they propose that reconstruction of the subject into its base position (Specv) is possible only if the verb agrees with it.

(58)   *Agreement allows Reconstruction*
       Reconstruction of an XP from a head H is possible iff H agrees with XP.

In (56-b) as well as (57) does the verb agree with the subject and hence allow reconstruction, giving rise to the non-surface scope order. In (56-a), however, since the verb does not show agreement, reconstruction of the subject is impossible and therefore no ambiguity arises.

This account as such is incompatible with the analysis proposed here because if agreement is seen as acting post-syntactically, applying only to the PF-branch, the agreement information is not present at LF and hence cannot play a role in determining semantic, i.e. scopal, prop-

erties. To compensate this possible problem, I will outline a possible implementation of (58)[20] that is consistent with the assumptions made here and makes the same predictions for the data under consideration. Aftre that I will call into question the main underlying assumptions pursued by Anand & Nevins, namely that ambiguity depends on reconstruction.

Of the Hindi case markers under consideration only two can be attached to subjects: *-ne* and -∅. The verb agrees with the subject if and only if the zero marker is attached. Now note that if verbal agreement and case markers are correlated, statements making reference to agreement features can be reformulated as statements about case markers. And since the case marker actually attached is determined by abstract case features and the contextual features of the impoverishment rules, m-case properties can be reanalysed as properties of abstract case, a gain within the present theory since in this case we are able to refer to LF properties by means of inner-syntactic features, overcoming the problem that m-case is only relevant for PF. To see this on the basis of an example, consider (56). In (a) the subject is syntactically marked with the features [+subj,–obl] (the specification for the ergative assigned by T). The impoverishment rule (42) does not apply. In (b) the subject is marked with [+subj,–obl] as well but (42) can apply since the sentence is not perfective. Now it is possible to state the following generalisation:

(59)   Subjects marked with [+subj,–obl,+perfective] (i.e. valued by perfective T) and only those cannot reconstruct.[21]

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[20] I am grateful to Gereon Müller for pointing this out to me.

[21] One *subject* case marker that has been abstracted away from in the present analysis is the dative marker *-ko*. Since dative is a lexical case the relevant feature specification for abstract case cannot be [+subj,–obl,–perfective]. Hence, according to (59), reconstruction should be possible, predicting ambiguity. Anand & Nevins' analysis makes the opposite prediction: Since the verb does not agree with *ko*-marked subjects reconstruction should be barred. Interestingly, sentences with *ko*-marked subjects are ambiguous:

(i)   kisii bacce-ko har   kitaab   milii
        some child-DAT every book-NOM.F meet-PERF.F
        'Some child received every book.'   ($\exists > \forall, \forall > \exists$)
        (Anand & Nevins 2006: 13)

If reconstruction is a necessary condition for scopal ambiguity we predict (56-a) to only exhibit the rigid reading, while (56-b) should be ambiguous. This prediction is correct. The difference lies in the fact that the features [+subj,–obl,
–perfective] are *inner*syntactic features that are relevant for PF (marker insertion) and LF (availability of reconstruction) as well. Now consider (57): Again, also the non-rigid reading is available. This is predicted since the subject of *'bring'* is not marked by T but by v[22], bearing the features [–subj,–obl]. According to (59) the subject is predicted to be able to reconstruct, allowing for ambiguity. This prediction is borne out.

Conceptually, the differences between both formulations are minor: Both focus on a valuation relation between T and a DP. While Anand & Nevins' account makes reference to the head T that has undergone agreement with a DP and hence got valued for ϕ-features, the analysis outlined here refers to the DP that has entered in a case valuation relation with T and therefor bears case features.

There are, however, some independent problems for Anand & Nevins' claim that in Hindi agreement is a necessary condition for reconstruction and reconstruction in turn a necessary condition for ambiguity. First, consider the following example:

(60) Sumita   saare darvaaze kholnaa bhuul gayii
      Sumita-NOM all   doors-ACC open-INF forget go-PERF
      'Sumita forgot to open all the doors.' (forget $> \forall, \forall >$ forget)
      (Anand & Nevins 2006: 12)

In (60) the ambiguity lies between the matrix verb and the quantified object of the embedded clause. This ambiguity is unexpected. If the embedded object is not capable of moving into the matrix clause it is unclear why it can take scope over the matrix predicate. If it moves into the higher clause, however, based on (58) we would expect it to obligatorily take scope over the matrix verb since the embedded verb

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To account for this surprising property, Anand & Nevins assume that the structural relation between ERG and NOM is variable. Due to this structural ambiguity both readings can be treated as rigid and hence no reconstruction is necessary.

[22]See (22) in section 4.1 above.

does not agree with it (and the matrix verb agrees with the matrix subject) and hence reconstruction should be barred. Either way, based on (58) we would predict (60) to be unambiguous, contrary to fact. A possible solution pointed out to me by Andrew Nevins (p.c.) is that movement of the quantified DP into the matrix clause is optional. If it occurs, no reconstruction is possible, yielding scope over *forget*. If it does not move, only narrow scope is available. But note that this severely challenges the claim made by Anand & Nevins (p. 10): "[I]nverse scope requires two operations: reconstruction of the higher QP and raising of the lower QP [...]. *The failure of either operation to apply will yield scopal rigidity.*"[23] In (60), in contrast, reconstruction can never apply since agreement, the necessary condition, is not met but the non-rigid reading is available nevertheless.

Scrambling structures constitute another problem. If the linear order of subject and object DP is turned around and all else, especially verb agreement, is left identical, one would expect scopal ambiguity or rigidity to remain the same. This, however, is incorrect:

(61)   a.   *Subj – Obj – Verb*
        [kisi   laṛkii]-ne [har   laṛke]-ko ḍã:ṭaa
        some girl-SUBJ every boy-OBJ scolded
        'Some girl scolded every boy'   ($\exists > \forall$, *$\forall > \exists$)
        b.   *Obj – Subj – Verb*
        [har   laṛke]-ko [kisi   laṛkii]-ne ḍã:ṭaa
        every boy-OBJ some girl-SUBJ scolded
        'Some girl scolded every boy'   ($\exists > \forall, \forall > \exists$)
        (Bhatt 2003)

Independently of how to analyse scrambling structures in Hindi, in both (61-a) and (61-b) does the verb agree with neither the subject nor the object since both are not zero marked. So in both cases reconstruction of either DP should be ruled out. But since Anand & Nevins treat reconstruction as a necessary condition for ambiguity, both sentences should only exhibit the rigid reading, contrary to fact. Even if QR is optional as in the analysis of (60), this might possibly explain the ambiguity of (61-b), but it would would leave the rigidity of (61-a) and (56) unaccounted for. So (61) poses another problem for the claim that

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[23]My emphasis.

scopal ambiguity arises only of reconstruction is possible, which in turn is only possible if the verb agrees with certain DP. Hence it might be the case that verbal agreement is in fact irrelevant for computating scope in Hindi, as is expected if agreement is seen as a post-syntactic phenomenon only relevant for the PF branch.

6. Concluding remarks

The analysis presented here focuses on a morphological treatment of split-ergativity in Hindi-Urdu, rendering the syntactic mechanism secondary. The main proposal is that contemporary morphological theories are powerful enough to account for the case patterns in Hindi. After that it was shown how some seemingly problematic positions argued for in the literature can be integrated into the analysis smoothly.

Interestingly, the relevant impoverishment rules, repeated here, can be seen as being *functionally motivated*.

(35)   *Impoverishment rule for accusatives*
       $[+\text{oblique}] \rightarrow \emptyset$ / $[-\text{specific}, -\text{human}, +\alpha]$

(42)   *Impoverishment rule for ergatives*
       $[+\text{subject}] \rightarrow \emptyset$ / $[-\text{PERFECT}]$

Both constitute a case of *differential object marking* (cf. Aissen 2003) or *differential subject marking* (Aissen 1999, Anand & Nevins 2006), respectively. Note that (35) substitutes for a zero marker for a non-null marker whenever the object is *'typical'* (nonhuman and non-specific) and *traceable* (the feature $+\alpha$ is assigned only by transitive verbs and hence to the only object, which in turn is traceable). Therefore, the context of the impoverishment rule is an array of the Animacy and Definiteness Scale:

(62)   a.   *Animacy Scale*
            Human $\succ$ Animate $\succ$ Inanimate
       b.   *Definiteness Scale*
            Personal Pronouns $\succ$ Proper name $\succ$ Definite DP $\succ$ Indefinite specific DP $\succ$ Non-specific DP

The system as outlined above captures the fact that zero marking on objects appears if the object is non-human on the animacy scale and non-specific on the definiteness scale, i.e. if the object is unmarked and

has the properties of a 'standard' object. Thus, the above impoverishment rules code Differential Object Marking (DOM) and hence are funtionally motivated.

The same reasoning arguably holds for Differential Subject Marking (DSM) as well. Kiparksy (1998) shows that in Finnish the relevant notion for DOM is aspect. If this is correct one might expect that aspect also plays a role for DSM, as predicted by the impoverishment rule (42). Woolford (2007) discusses another functional approach to case markers sensitive to aspect. In her view, such a construction can be used to code aspect without an additional aspect marker on the verb. In the case of Hindi, when the subject bears the marker *-ne* the hearer knows that the sentence is perfective. Therefore, information about aspect can be provided by other means than verbal morphology. Woolford terms this *Parasitic Marking.*

When put into a larger context, this approach lies within the research program of Anderson (1992) because it treats a seemingly syntactic phenomenon as morphological in nature.

If the assumption that split-ergativity in Hindi, i.e. departures from "purely" accusative, ergative or active alignment, is due to morphological principles operating after the syntactic derivation is on the right track, the more general question arises whether – in the best case – *all* instances of split-ergativity can be analysed along these lines. In this case argument encoding in all languages would be accusative, ergative, active or threefold and departures from such systems would emerge if due to morphology the connection between abstract case and m-case becomes "loose", thus giving rise to split-ergativity. This is a strong claim, though it would systematize the great variety of argument encoding patterns and thus seems worth pursuing.

7. Appendix – A translation into Paradigm Function Morphology

While all of the analysis presented above was formulated within Distributional Morphology (DM), nothing hinges on that particular framework. As has already been emphasized, the only necessary condition is that morphology operates realizationally. To demonstrate this claim, a brief translation of the main technical issues into Pradigm Function Morphology (PFM, Stump 2001) is provided in this appendix.

The main difference between DM and PFM is that PFM is *rule-*

based. Hence, morphemes do not have an independent status but are introduced through rules that attach phonological material to a stem if certain conditions are met. A largely equivalent version of the present analysis assumes the following rules:

(63) *Realizational Rules*
$RR_{,\{ergative\},N}(< X, \sigma >) =_{def} < Xne', \sigma >$
$RR_{,\{accusative\},N}(< X, \sigma >) =_{def} < Xko', \sigma >$
$RR_{,\{absolutive\}, N}(< X, \sigma >) =_{def} < X', \sigma >$

In addition, *rules of referral* are needed to account for the shift from ergative to nominative in the non-perfect and from accusative to absolutive in the context of the feature bundle [–specific,–human], in analogy to the impoverishment rules of section 4:

(64) *Rules of referral* (informal notation)
  a. In the non-perfect aspect, a noun's ergative forms are inflected however its absolutive forms are inflected.
  b. In the context of [–specific,–human], a noun's accusative forms are inflected however its absolutive forms are inflected.

(65) *Rules of referral* (formal notation)
  a. Where τ is any complete extension of {ASP: imperfect, CASE: erg}, and $\sigma'=\sigma/\{CASE: abs\}$, $RR_{\tau,N}(< X, \sigma >) =_{def}< Y, \sigma >$, where $NAR_n(< X, \sigma'>) =< Y, \sigma'>$.
  b. Where τ is any complete extension of {–specific, –human, CASE: dat}, and $\sigma'=\sigma/\{CASE: abs\}$, $RR_{\tau,N}(< X, \sigma >) =_{def}< Y, \sigma >$, where $NAR_n(< X, \sigma'>) =< Y, \sigma'>$.

In contrast to DM, in PFM no subanalysis of the abstract cases is necessary. But on the other hand, the above stated rules of referral are considerably more complex than the impoverishment rules in DM, since those only delete information, whereas the PFM rules add or modify given information.

These conceptual issues put aside, the system is compatible with both theories and hence does not solely depend on one specific framework. The only condition that has to be met is that a morphological theory be realizational, a point independently argued for by Stump (2001).

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