BARE NOMINALS: NON-SPECIFIC AND CONTRASTIVE READINGS UNDER SCRAMBLING

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1. Introduction

This article explores the empirical validity of the generalization that scrambling of indefinites correlates with the loss of non-specific readings.[1] There are two issues relevant to the generalization that have not been fully investigated in previous literature. The first is the status of contrastive readings, which do survive scrambling. If contrastive readings are non-specific, and it is argued here that in some cases they must be, the generalization has to be restated to prohibit non-specific indefinites from scrambling *without* the additional support of contrast. It will be shown, furthermore, that a more liberal notion of contrast than is generally assumed is sufficient to license the scrambling of non-specifics. The second issue relevant to the generalization is the directionality of scrambling. The constraint on scrambling of nonspecifics must be restricted to leftward scrambling since rightward scrambling readily allows non-specific readings without contrast.

The article uses these empirical facts to assess current approaches to the question of how syntactic displacement relates to interpretation. The fact that non-specific readings are preserved under scrambling, albeit with contrast, suggests that scrambling cannot be restricted to a class of expressions we may be willing to classify as specific. Approaches that take scrambled nominals to be mapped outside the domain where non-specific readings could arise also appear to be untenable. An approach that allows expressions to scramble, regardless of their inherent or compositional semantics, but imposes discourse requirements appears more promising. Obviously, such requirements would have to be sensitive to the directionality of scrambling, since contrast behaves differently in the two cases. The ultimate goal is to identify discourse principles which would explain why contrast plays a crucial role in preserving non-specific readings of leftward scrambled nominals, but is not required for preserving such readings of rightward scrambled nominals. This paper is an attempt in this direction.

The primary data is drawn from scrambled bare nominals in Hindi. Nominals without overt determiners are of particular importance to this study since they can be shown not to have specific indefinite readings. Bare plurals in English, for example, cannot take scope over negation, adverbials or attitude verbs. If such nominals have indefinite readings under scrambling, they would have to be characterized as non-specific. Since English does not allow scrambling it is not possible to test the effects of scrambling on bare plurals, though discussion of scrambling in other Germanic languages

can be used to illustrate our current understanding of the issue. Hindi bare nominals are similar in relevant respects to English bare plurals and the language freely allows both leftward and rightward scrambling, providing adequate paradigms for testing the validity of the generalization and its theoretical consequences.

The paper begins by outlining current views on non-specific readings of English bare plurals and discussing current treatments of scrambled bare plurals in German and Dutch. Diesing 1992 and de Hoop 1992 propose two ways of dealing with the semantic impact of syntactic displacement but neither account can deal with contrastive readings of scrambled bare plurals. We conclude that accounts limited to sentential semantics cannot adequately explain the possibility of non-specific contrastive readings.

The next section expands the empirical base by including bare nominals from Hindi, a language which reveals a difference in interpretive possibilities based on directionality of scrambling. It is shown how an approach connecting word order variation to discourse contexts, such as Vallduví 1992, might handle the directionality question. The extension of Vallduví's theory proposed here is similar in spirit to Choi's 1999 account of contrastive readings for scrambling of German and Korean indefinites but differs crucially in not making scrambling dependent on any semantic feature of the nominal itself. Rather, it proposes that contrast is one of several features that allows the fulfillment of relevant discourse principles. That is, the connection between leftward scrambled nominals and the marking of contrast is less direct than one may expect. This change, argued for on the basis of the Hindi facts, should be applicable to other languages as well. A distinction between leftward and rightward scrambling is also suggested that may account for their interpretive difference but rightward scrambling is not analyzed at length.

The paper ends by relating these claims to a recent study of children's acquisition of indefinites under scrambling. Acquisition data appears to be consistent with the view espoused here that non-specific indefinites are not barred from scrambling as long as certain discourse constraints are satisfied.

2. Non-specificity and Constrastiveness

2.1. Quantification and Bare Plurals

I will begin this section by laying out the special semantic properties of bare nominals and outlining current views on the proper analysis of those properties. In doing so, I will focus on bare plurals in English but the facts generalize to other Germanic languages (see Krifka et al 1995 for an in-depth survey). This is relevant since English does not allow scrambling but scrambling of bare plurals in German and Dutch has been studied at some length.

As the discussion in Carlson 1977 made clear, English bare plurals have a variety of readings. They can be arguments of kind-level predicates, i.e. those that can hold of a species but not of an ordinary individual:

1a. Dogs are common/rare/extinct
 b. *A dog is common/rare/extinct
 c. *Some dogs are common/rare/extinct

d. *Fido and Rover are common/rare/extinct

Additionally, bare plurals can be arguments of object-level predicates, those that hold of ordinary individuals. Here there is a difference in their quantificational force, depending on whether the predicate is individual-level or stage-level. With individual-level predicates bare plurals have generic, or quasi-universal force whereas in stage-level contexts they have existential force. (2a) suggests that all/most (at least typical) dogs have the property of barking. (3a) says so of only a subset of dogs in the given context:

2a. Dogs bark.
  b. A dog barks
 **c.** Some dogs bark.
  d. Fido barks.

3a. Dogs are barking.
  b. A dog is barking.
  c. Some dogs are barking.
  d. Fido is barking.

     Carlson argued that since sentences like (1) cannot be reduced to quantification over individuals (cf. the contrast between (1a) and (1d) in particular), bare plurals have to be recognized as names of kinds. Semantically, they denote intensional entities linked to their individual instantiations in given worlds:

4.   Dogs   *Kinds*

      Fido   Rover   Jack   Boxer   Hobbes   *Instantiation*
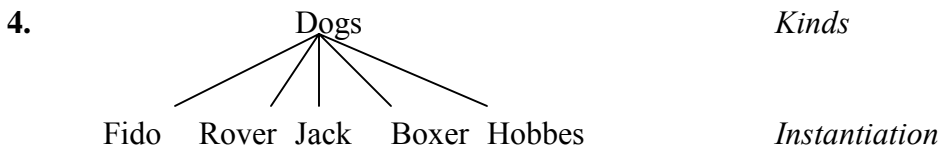
He further argued that the bare plural itself has no inherent quantificational force, its generic and existential readings deriving from the lexical and aspectual properties of the predicate. The individual instantiations associated with the kind term, accessible for predication, achieves quantificational force in virtue of the compositional semantics.
     One of the key arguments against positing inherent quantificational force for bare plurals was the differential behavior of bare plurals and ordinary indefinites:

5a. Mary didn't see spots on the floor.
  b. Mary didn't see a spot/some spots on the floor.

6a. Mary wants to meet movie stars.
  b. Mary wants to meets a movie star/some movie stars.

7a. Mary killed rabbits for an hour.
 **b.** Mary killed a rabbit/some rabbits for an hour.

As shown above, the bare plural necessarily takes narrow scope in each case while the regular indefinite is able to scope over another operator. (5a) is not compatible with there being spots seen by Mary while (5b) is, showing the inability of the existential associated

with the bare plural to scope over negation. The same fact is shown in relation to the attitude verb *want* in (6). The version with the bare plural does not have a reading in which there are particular individuals who Mary wishes to meet. The examples in (7) present a somewhat different angle on the phenomenon. Unlike (5) and (6) where the indefinite has an extra reading in addition to a shared reading with the bare plural, here the two have distinct readings. As expected by now, the bare plural takes scope under the adverbial, allowing for the plausible reading where different rabbits are involved in each killing. The indefinite, on the other hand, only takes wide scope leading to the implausible reading where iterative killing of the same rabbits must occur. The narrow scope reading is missing.

On the basis of such facts Carlson argued that indefinites are existential quantifiers while bare plurals denote kinds. It follows from this that indefinites can scope over other operators while bare plurals cannot. Further, given the intensional nature of kinds, it is possible for semantic operations to access their instantiations. Due to this, though bare plurals are non-quantificational they are able to obtain (distinct) quantificational force in individual and stage level contexts.

While Carlson's claim that bare plurals denote kinds has been maintained, an alternative account for the generic/existential readings was proposed by Krifka 1988 and Wilkinson 1991. Noting that the behavior of bare plurals mirrors that of (singular) indefinites in this respect, they argue that bare plurals are ambiguous between kinds and properties.[2] The former meaning comes into play with kind level predicates but with individual and stage level predicates their property level meaning is relevant. By positing lexical ambiguity, this line of approach could draw on the influential analysis of Kamp 1981 and Heim 1982 (see also Lewis 1975), where (singular) indefinites get universal or existential force depending on whether they are mapped into the restrictor or the nuclear scope of a tripartite structure. The general schema and the logical representations of (2a)-(2b) and (3a)-(3b) under this approach are shown below:

8a.

$$\overbrace{\text{OP} \qquad\qquad \text{[Restrictor]} \qquad\qquad \exists \text{[Nuclear Scope]}}$$
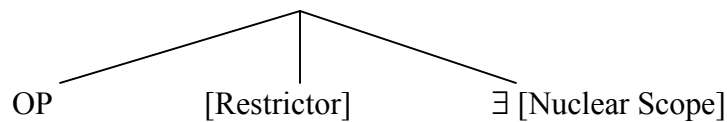
b.   Gen x   [dogs/dog(x)] $\exists$ [bark/barks(x)]

c. $\exists$x [dogs/dog(x) & are/is barking(x)]

Apart from providing a unified explanation for the parallel behavior of two sets of expressions, this move has another welcome consequence. The quantification is no longer fully determined by properties of the verb, as in Carlson's original proposal. The ambiguity of sentences like (9), due to Barbara Partee (Carlson 1989), was shown to be problematic for that approach:

9a. Computers compute weather forecasts

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[2] (2a)-(2b) have universal force but not (2c). Bare plurals, therefore, are parallel to indefinites with *a*.

b. Gen x [computers(x)] ∃y [weather-forecasts(y) & compute(x,y)]
c. Gen x [weather-forecasts(x)] ∃y [computers(y) & compute(y,x)]

By loosening the tie between the lexical and aspectual properties of the verb and the quantificational force of its arguments, it becomes possible to map the bare plurals more freely. Under one mapping, we get the reading where it is a property of computers in general to compute some the weather forecast, under another the more salient reading is captured whereby it is a general property of weather forecasts that they are computed by some computer. Of course, identifying the principles behind the mapping of arguments is not trivial and considerable research has gone into understanding what governs the tripartite representation in different cases (see Krifka et al 1995 and section 2.2 below).

While treating bare plurals along the lines of singular indefinites has obvious advantages, it blurs the distinction between them shown in (5)-(8), a major motivation for Carlson's treatment of bare plurals as kinds. These two approaches, however, are not necessarily incompatible. The account advocated by Chierchia 1998 can be seen as combining elements of both (see also Carlson 1989). Briefly, Chierchia argues for a Carlsonian approach to bare plurals as uniformly kind denoting. Bare plurals are predicative terms which can combine with determiners to yield quantified DP's if they are projected in the syntax as common nouns (cf. (10a)). In argument positions, however, they must type-shift to kind terms via the nominalizing operator defined in (10b). The noun phrase can now combine with kind level predicates without further adjustment but when it occurs with individual or stage level predicates, the rule of DKP (10c) is triggered. DKP utilizes the predicativizing operator which takes a kind and yields the set of its instantiations in the given world (10d) (see Partee 1987 for the general picture of flexible types for noun phrases):

10a. $[_{DP}$ every$[_{NP}$ dog$]] = \lambda Q\ \forall x\ [dog(x) \rightarrow Q(x)]$,
   where *every* $= \lambda P\ \lambda Q\ \forall x\ [P(x) \rightarrow Q(x)]$ and *dog* $= \lambda x\ [dog(x)]$
  b. For any property P and world/situation s, $^{\cap}P = \lambda s\ \iota P_s$
  c. Derived Kind Predication (DKP):
    If P applies to objects and k denotes a kind, then $P(k) = \exists x\ [^{\cup}k(x)\ \&\ P(x)]$
  d. For any kind k and world/situation s $^{\cup}k = \lambda x\ [x \leq k_s]$, where k is the plural individual that comprises all of the atomic members of the kind.

The empirical force of these operations can be best understood with the help of concrete examples:

11a. extinct ($^{\cap}$dogs)
  b. Gen x $[\exists x\ [^{\cup\cap}dogs(x)]]\ \exists\ [bark(x)]\ \rightarrow$ Gen x $[^{\cup\cap}dogs(x)]\ [bark(x)]$
  c. $\exists x\ [^{\cup\cap}dogs(x)\ \&\ are\text{-}barking(x)]$

In (11a) the kind term is an appropriate argument for the predicate but not in (11b) or (11c). In these cases, the kind term is of the right semantic type (entity type *e*) but it is of the wrong semantic sort (a *kind* entity instead of an *object* entity) -- the predication is about regular individuals, not the species. Semantic access to instantiations due to DKP comes into play, giving us existential quantification over instantiations. Now, depending

on whether the argument is mapped into the nuclear scope or the restriction, it gets existential or generic force. This is because existential quantifiers in Dynamic Predicate Logic are so defined that their quantification can be undone by operators having scope over them (see Chierchia 1992 for discussion). (11b)-(11c) encode essentially the same truth conditions as the bare plurals in (8b)-(8c).

Although Chierchia's approach and the Krifka/Wilkinson approach converge on the semantics of bare plurals in the basic cases, there is a substantive difference between them with respect to the source of the quantificational force. For Chierchia, existential quantification comes in as part of the local sort adjustment that bare plurals as kind terms undergo in the context of predicates that apply to regular individuals. As such, existential quantification necessarily takes narrowest scope. In the case of indefinites, existential quantification comes from the meaning of the determiner. The noun phrase being quantificational, it is free to interact scopally with other operators. For Krifka/Wilkinson bare plurals and singular indefinites gain their quantificational force from the same source, that is, by being bound by NP external operators, predicting parallel behavior. The distinction between the two approaches can be seen by examining the contrast between (5a)-(5b). For Chierchia, (5a) is interpreted as (12) while (5b) is structurally ambiguous between (13a) and (13b). For Krifka/Wilkinson (5a) and (5b) are predicted to have the same readings, namely (13a)-(13b), since bare plurals and singular indeifnites are treated as identical:

12. $\neg see(m, {}^{\cap}s\text{-}o\text{-}t\text{-}f) \rightarrow$ *(via DKP)* $\neg\exists x\ [{}^{\cup\cap}s\text{-}o\text{-}t\text{-}f(x)\ \&\ see(m,x)]$

13a. $\exists x\ (s\text{-}o\text{-}t\text{-}f(x)\ \&\ \neg see(m,x)]$
  b. $\neg\exists x\ (s\text{-}o\text{-}t\text{-}f(x)\ \&\ see(m,x)]$

Diesing 1992, working within the Krifka/Wilkinson approach, provides a potential solution to the scope problem. Indefinites, in addition to their predicative meaning which allows binding by generic operators or existential closure, are clalimed to be quantifiers with inherent existential force. Under this view, negation could be obligatorily assigned scope over existential closure. In cases like (12b) the wide scope existential would, then, be due to the quantifier meaning of the indefinite. A similar option would not be available to the bare plural.

This proposal would still be unable to account for the differential behavior of indefinites and bare plurals with respect to adverbials, illustrated in (7a)-(7b):

14a. Mary killed rabbits for an hour.
   $\forall t\ [t\ \varepsilon\ one\text{-}hour \rightarrow killed\text{-}at\text{-}t(m, {}^{\cap}rabbits)]$
    $\rightarrow$ *(via DKP)* $\forall t\ [t\ \varepsilon\ one\text{-}hour \rightarrow \exists x\ [{}^{\cup\cap}rabbits(x)\ \&\ killed\text{-}at\text{-}t(m,x)]]$
  b. Mary killed a rabbit/some rabbits for an hour.
    $\exists x\ [rabbit/rabbits(x)\ \&\ \forall t\ [t\ \varepsilon\ one\text{-}hour \rightarrow killed\text{-}at\text{-}t(m,x)]]$

We can infer from the missing narrow scope reading for the indefinite that the adverbial takes scope under the domain of existential closure. Taking the lexical semantics of the adverbial to induce quantification over relevant occasions within an interval, the verb-adverb complex denotes $\forall t\ \varepsilon\ one\text{-}hour \rightarrow kill\text{-}at\text{-}t(x,y)$. The kinds-based approach

predicts different readings for the bare plural and the indefinite. In the first case, the kind term replaces the variable *y* followed by *DKP*-induced existential quantification. In the second case, the indefinite is quantified in. The problem for the alternative approach is the following. Since bare plurals and indefinites are both predicative, and bare plurals can only get existential force via existential closure, it is impossible to block a parallel derivation for indefinites.

It might be worth pointing out that it is not essential for deriving the scope facts in Chierchia's approach that indefinites be treated as quantified noun phrases whose existential operator can be wiped out by the generic operator. The explanation could be maintained even if indefinites were taken to get the relevant reading through existential closure. Crucial to Chierchia's explanation is the definition of the sort adjusting operation *DKP*. As in Carlson's original version, the bare plural does not scope over other operators since it is a name but it differs from ordinary names in allowing *DKP* to introduce existential quantification over its instantiations. Note also that since Diesing takes the bare plural and the indefinite to be ambiguous (in different ways), her position on indefinites comes closer to that of Chierchia 1992 than the original Kamp/Heim view of indefinites. She would get the same coverage if she took indefinites to unambiguously denote dynamic existential quantifiers able to be bound by generic or existential closure.

Let us assess, against this background, the status of bare plurals with respect to specificity. While it remains an open issue what exactly constitutes specificity, an influential early account states that a noun phrase is specific if it takes widest scope in relation to other operators (Fodor and Sag 1982). By this criteria, proper names canonically qualify as specific. Since bare plurals under the Carlsonian view are names of kinds, they could in some sense be considered specific. However, if we focus on their existential reading and use the scope facts as diagnostic they must clearly be classified as non-specific. Though the noun phrase denotes a kind-level individual, it cannot be used to refer to any particular set of instantiations. This may be worth keeping in mind as we turn to the behavior of bare plurals under scrambling.

I have summarized in this section the basic generalizations about the interpretation of bare nominals and the primary approaches developed to account for them. I personally adopt a Carlsonian view of bare plurals as uniformly kind denoting, partly due to its success in explaining the scope effects and partly having to do with evidence from Hindi discussed in Dayal 1999 and in prep. It should be clear, however, that not all aspects of one approach are necessarily at odds with the other. Unless the differences are relevant to the issue under discussion, I do not make reference to kinds in this paper.

2.2. *Bare Plurals under Scrambling*

Current understanding of the semantic behavior of bare plurals under scrambling is based largely on German and Dutch since English does not allow scrambling. English does allow optional syntactic displacement in the form of topicalization. Although the results of scrambling and topicalization overlap to some extent, we will confine our discussion here to scrambling. In doing so, we will focus on analyses proposed by Diesing 1992 and de Hoop 1992 (see also Kratzer 1995 whose account is close to

Diesing's).[3]

The basic generalization about scrambling can be demonstrated with the following German examples. (15a) with the bare plural in base position asserts the existence of some children playing in the street while (15b) with the bare plural scrambled makes a statement about children in general:

15a. ...weil [$_{IP}$ ja doch [$_{VP}$ Kinder   auf der Strasse spielen]]
              since   indeed   children in the street   play
         "Since indeed there are children playing in the street."
  b. ...weil [$_{IP}$ Kinder$_i$ ja doch [$_{VP}$ t$_i$ auf der Strasse spielen]]
         "Since indeed children play in the street."

        Diesing argues on the basis of such facts for the Mapping Hypothesis in (16):

16.   Material from VP is mapped into the nuclear scope.
           Material from IP is mapped into a restrictive clause.

17a. $\exists x$ [children(x) & playing-in-the-street(x)]
  b. Gen x [children (x)] [play-in-the-street(x)]

Subjects of stage-level predicates such as the one in (15) originate in Spec of VP. In German they may remain in that position or appear outside the VP boundary, marked by the particle *ja doch*, due to scrambling. Diesing's point is that movement of this kind results in the difference in interpretation noted above. The Mapping Hypothesis derives (17a) as the representation of (15a) and (17b) as the representation for (15b).[4]

        Before going further into the semantics of scrambling, let us make note of some underlying assumptions about the creation of tripartite structures and the mapping of arguments. A crucial factor is the aspectual specification of the predicate, where a broad distinction can be made between aspects that support generic/habitual readings and those that yield episodic readings.[5] The simple present in English, for example, supports the kind of generic interpretation we see in (17b) while the progressive forces the episodic interpretation of the kind seen in (17a). In German the present tense morphology in (15) is compatible with both construals.

        To understand the full import of the Mapping Hypothesis, we must distinguish

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[3] (15a) also has another reading, as we will see. I thank Markus Hiller, Cecile Meier and Susanne Preuss for discussion.

[4] Subjects of individual level predicates originate in Spec IP and, being outside VP, lack existential readings. Also, mapping of arguments in English differs from mapping in German in not being constrained by S-structure. Subjects of stage-level predicates in English obligatorily move at S-structure to Spec IP but have the option of reconstructing to the base position before interpretation.

[5] For quantificational structures created by quantified noun phrases in the absence of genericity, see Heim 1982 and Kamp 1981.

between two close but distinct readings possible in generic sentences. The difference between the two readings can be brought out once a variable over times and locations (or situations) is introduced. The truth conditions are affected by whether the bare plural is mapped into the nuclear scope or the restrictor. Consider the logical representations in (18a)-(18b). (18a) says that for most contextually relevant times there are children playing in the street while (18b) says that for most contextually relevant times and children, the children play in the street at the time. In a situation where most children do not in fact play in a particular street, but it is still true that at most contextually relevant times the street is occupied by children playing, (18b) would be false. This is because it counts the number of children who play in the street. In the same situation (18a) would be true since it counts the number of relevant situations when the street is in use to see if there are children playing there. The Mapping Hypothesis in (16) predicts that the scrambled bare plural in (15b) should only have the logical representation in (18b):

18a. Gen t [times(t) & C(t)] $\exists$x [children(x) & play-in-the-street(x) at t]
  b. Gen t x [times(t) & C(t) & children(x)] [play-in-the-street(x) at t]

One question that immediately arises has to do with the behavior of scrambled bare plurals in sentences with episodic interpretations. Here there is a difference between bare plurals and regular indefinites. The following Dutch examples from de Hoop show that scrambling of bare plurals leads to ungrammaticality while the scrambling of indefinites leads to the loss of a weak or non-specific reading. (19a) with a scrambled bare plural is unacceptable. (19b) with a scrambled indefinite has a partitive reading, presupposing a known set of linguists. The non-scrambled version of the sentence would also be compatible with a situation where the speaker had no particular set of linguists in mind, i.e. with a non-specific or weak reading:

19a. *dat de politie taalkundigen$_i$ gisteren   t$_i$ opgepakt heeft
       that the police linguists   yesterday   arrested   has
       "that the police arrested linguists yesterday"
  b. dat de politie [veel taalkundigen]$_i$ gisteren t$_i$ opgepakt heeft
       that the police   many linguists   yesterday arrested   has
       "that the police arrested many *(of the) linguists yesterday."

In order to explain such contrasts, Diesing introduces the distinction between bare plurals and indefinites discussed in section 2.1 in relation to the scope problem. According to her, (19a) is unacceptable because the bare plural is outside the domain of existential closure. Since there is no generic operator in the construction, the variable cannot be bound. (19b) is acceptable because the indefinite is not dependent on a binder for its quantificational force, it can get a partitive reading by virtue of its quantificational meaning.

Let us turn now to the explanation proposed for these facts in de Hoop 1992. Her conception of the relation between scrambling and semantic interpretation is substantively different from Diesing's. She makes a three-way correlation between scrambling, case assignment and interpretation. According to her, verbs can assign strong or weak case. NP's with strong case have strong readings while those with weak case have weak readings. Strong readings of indefinites include partitive, referential (or

specific), generic and generic collective readings. Their weak readings involve predicate modification. Finally, NP's with weak case cannot move from their base position which has the consequence of restricting weak readings to base positions. She extends her account to include subjects, claiming that in Dutch and German weak nominative case is assigned to Spec VP where subjects of unergative verbs may appear; strong nominative case is assigned to Spec IP for subjects that move. Consequently, VP-internal subjects have weak readings while VP-external subjects have strong readings.

Obvious differences notwithstanding, de Hoop's and Diesing's, accounts make similar predictions for the cases considered so far. Instead of going into facts that separate the two accounts (see de Hoop) I would like to present some data bearing directly on the question of how syntactic displacement impacts interpretation which remain elusive under both accounts. Examples like (19a) which are unacceptable because a bare plural has scrambled in the absence of a generic operator, are known to become acceptable with the aid of contrastive focus. (20), with the scrambled bare plural phonologically stressed, implies that some other comparable group of individuals was not arrested. As de Hoop herself notes, the only plausible reading for the bare plural in these cases is of a non-specific existential. Under either account this should not be possible:

20. dat de politie TAALKUNDIGEN$_i$ gisteren t$_i$ opgepakt heeft
"that the police arrested LINGUISTS (not physicists) yesterday"

Let us consider the interpretation one might associate with contrastive focus, basing our discussion on in-situ contrastive focus in English. (21a) has three distinct components of meaning (21b-21d):

21a. John ate APPLES.
  b. $\exists x$ [apples(x) & ate(j,x)]
  c. $\exists x$ [ate(j,x)]
  c'. {John ate apples, John ate pears, John ate oranges…}
  d. $\forall x$ [C(x) & ate(j,x)] [apples(x)]
  d'. $\forall x$ [C(x) & ate(j,x)] $\exists y$[apples(y) & y=x]
  e. $\forall x \forall y$ [apples(x) & ate(j,y)] [ate(j,x)]

(21b) encodes the minimal truth conditions of the statement, asserting the existence of apples that John ate. (21c) captures the presupposition that John ate something, and is derivable from the focus semantic value of (21a) (Rooth 1985), given in (21c'). There is, of course, a standard contextual restriction on the relevant set of objects but it should minimally include at least one other item. (21d)-(21d') are slightly different ways of encoding the intuition that the statement excludes the possibility of John eating something else, where C refers to the set in (21c'). While (21b) and (21c) are non-controversial, it is not clear whether (21d)-(21d') is part of the semantics or an implicature that need not be semantically represented. Note that (21d)-(21d') will entail (21b), assuming with von Fintel 1994 that natural language quantification presupposes non-empty domains of quantification. Deciding whether exhaustivity is an entailment or an implicature is a non-trivial task but it is not essential to settle the question in order to

make the point relevant for the present discussion.[6] Whether we take (21b) or (21d)-(21d') as the correct logical representation for (21a), the focused phrase crucially is not interpreted in the restrictor. Any attempt to do so leads to wildly incorrect truth conditions, as would be obvious from examining (21e).

Taking note of the position at which the focused phrase is interpreted is particularly relevant in the case of scrambling, since it has often been claimed in the literature that focused phrases move to operator positions, typically at the left periphery of the clause. If so, one might be able to argue that it is such movement that forces the creation of a tripartite structure of the kind seen in (21d)-(21d'). The fact that the scrambled focused phrase must still be interpreted in the nuclear scope, however, shows quite clearly that Diesing's simple tree splitting algorithm in (16) is not adequate. To maintain de Hoop's account, one could perhaps recast the notion of strong readings for indefinites to include contrastive readings but that would not be in keeping with the conceptual underpinning of the notion *strong reading*.

Given the availability of contrastive readings for scrambled bare plurals, then, we are forced to revise the generalization that scrambling leads to loss of non-specific readings. We must instead look for an approach that allows scrambling, regardless of the specificity of the noun phrase and find alternative explanations for the fact that scrambling is not unrestricted. In the next section I turn to the task of developing such an alternative. The crucial respect in which this alternative approach will differ from the approaches considered so far is in looking for explanations not only in the internal properties of scrambled sentences but also in their relationship to prior discourse.

3. Scrambling as a Discourse Regulated Phenomenon

3.1. Hindi Bare Nominals and Scrambling

Switching to Hindi, a language with freer word order than German or Dutch, let me begin by establishing the connection between Hindi bare nominals and English bare plurals. I will then discuss the impact of scrambling on interpretation before introducing a discourse-theoretic approach to word order variation as a way of handling the problem of contrastive non-specific readings under scrambling.

In addition to bare plurals, Hindi also has bare singulars and both types of bare nominals display a familiar range of readings. They are compatible with kind-level predicates, and have generic or existential interpretations with object-level predicates. While bare singulars and bare plurals do not have identical behavior, the differences do not affect the point under discussion here (see Dayal 1999 and in prep). I demonstrate

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[6] Discussions of exhaustivity in cleft constructions underscore the nature of the problem. Horn 1981 does not include exhaustivity in the semantics, claiming that it enters when focus in clefts is combined with *only*: *I know Mary ate a pizza, but I've just discovered that it was only a pizza that she ate* but # *I know Mary ate a pizza, but I've just discovered that it was a pizza that she ate*. Kiss 1998, however, includes exhaustivity: *It was a hat and a coat I bought* does not entail *It was a hat I bought* while *A hat and a coat I bought* entails *A hat I bought*.

only with the singular case, which in some cases is better translated with the definite singular generic in English and in some cases with an indefinite:

22a. *kutta   aam   jaanvar hai*
       dog   common animal   be-PR
       'The dog is a common animal.'
  b. *kutta bhauNktaa hai*
       dog   bark-PR
       'The dog barks.' / 'Dogs bark.'
  c. *anu kitaab paRh rahii hai*
       Anu book   read-PROG-PR
       'Anu is reading a book.'

One respect in which the Hindi bare nominal differs from the Germanic bare nominal is in its ability to refer to a contextually salient antecedent, as demonstrated in (24). At an intuitive level, the possibility of definite readings for the bare nominal correlates with the absence of a definite determiner in the language. For purposes of this paper let us assume that the Hindi bare nominal is ambiguous between kinds and definites, though in Dayal 1999 and in prep the two meanings are related in principled ways:

23.   Some children$_i$ came. *Children$_i$ were happy

24.   *ek baccaa$_i$ aayaa. baccaa$_i$ bahut khush lagaa*
       one child   came   child   very happy seemed
       'A child came. The child seemed very happy.'

What this means is that in generic and existential contexts like (22b) and (22c) the bare nominal has, in addition to the readings discussed above, also a definite reading where it refers to a contextually salient entity in the discourse. (22b) can also be a habitual sentence about a particular dog or set of dogs, (22c) a statement about a familiar book or set of books.[7]
        Limiting ourselves to the range of readings that aligns Hindi bare nominals with English bare plurals, the following examples show that they too display obligatory narrow scope:[8]

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[7]   I set aside the role of case-markers in establishing (in)definiteness since the correlation between them is not straightforward (Dayal 1999).

[8]   Consider the relation between existential and definite readings:

(i) $\exists x$ [book(x) & ¬read(a,x)]
(ii) ¬$\exists x$ [book(x) & read(a,x)]
(iii) ¬read(a, ιx[book(x)])

The two existential readings are compatible with there being several books salient in the context. Sentences with these representations should be felicitous as continuations to

25a. *anu kitaab nahiiN paRhegii*
Anu book   not   read-F
"Anu won't read any book."

  b. *anu   ek kitaab nahiiN paRhegii*
Anu   one book   not   read-F
'There's a book Anu will not read a book' and 'Anu won't read any book."

26a. *anu kitaab paRhnaa cahtii hai*
Anu book read-INF want-PR
"Anu wants to read a book (no particular book)."

  b. *anu   ek   kitaab paRhnaa cahtii hai*
Anu one book read-INF want-PR
"Anu wants to read a (particular) book."

27a. *anu puure din machhlii pakaRtii rahii*
Anu whole day fish   catch-PAST
'Anu kept catching fish the whole day.'

  b. *anu puure din ek   machhlii-ko pakaRtii rahii*
Anu whole day one fish-ACC   catch-PAST
'Anu kept catching a fish the whole day.'

Having established the basic properties of Hindi bare nominals, let us turn to their behavior under scrambling. While the canonical order in Hindi is SOV, it has leftward and rightward scrambling. The OSV order is shown in (28) and SVO order in (29):

28a. kitaab anu paRh rahii hai
 book   Anu read-PROG-PR
  "Anu is reading the book."
  b. tofaa anu-ne   ravii-ko   bhejaa hai
    gift   Anu-ERG Ravi-ACC send-PERF-PAST
  "Anu has sent Ravi the gift."

29a. anu   paRh rahii hai, kitaab
  Anu read-PROG-PR book
   "Anu is reading a/the book."
  b. anu-ne   ravii-ko   bhejaa hai   tofaa
    Anu-ERG Ravi-ACC send-PERF-PAST gift
    "Anu has sent Ravi a/the gift."

There are many books here... Those with the representation in (ii) could also continue *There are no books here...*The definite, however, carries a uniqueness and existence presupposition. Sentences with the representation in (iii) could not be felicitously uttered in the above contexts. The existential readings are, of course, truth conditionally distinct, only (i) is compatible with there being books that Anu will read. (25a) allows readings (ii) and (iii), (25b) allows (i) and (ii).

As we can see from the translations, there is a difference between leftward and rightward scrambling with respect to the preservation of non-specific readings. This has been noted previously by Gambhir 1981 and Mohanan 1995 (see also Mahajan 1990 Kidwai 1995). The bare nominal scrambled to the left only has a definite reading, in conformity with what we know from German and Dutch. In contrast, nominals scrambled to the right retain both the definite and the non-specific existential reading. (30) shows that contrastive focus on the nominal restores the non-specific reading of leftward scrambled nominals:[9]

30a. KITAAB anu paRh rahii hai
    book   Anu read-PROG-PR
    "Anu is reading a book (not a newspaper)."
 b. TOFAA anu-ne   ravii-ko   bhejaa hai
    gift   Anu-ERG Ravi-ACC send-PERF-PAST
    "Anu has sent Ravi a gift (not something else)."

It is clear how Diesing's and de Hoop's accounts would apply to leftward scrambling in Hindi, the facts being essentially parallel to German and Dutch, but let us see how they would extend to rightward scrambling. I have assumed so far that leftward scrambling involves movement, a position consistent with most leading accounts of the phenomenon. The same might be expected to apply to rightward scrambling. In the wake of Kayne's 1995 proposal, however, this is no longer a given. Mahajan 1997, for example, has argued that Hindi is SVO, with apparent cases of rightward scrambling being cases of stranding (see also Dwivedi 1999 for this view and Dayal 1996 for arguments against it).

In de Hoop's account movement of indefinites should correlate with loss of non-specific readings. The fact that rightward scrambling does not display this effect might suggest that it could be explained within her theory if the Kaynean view of Hindi syntax is adopted. Note, however, that this position would become inconsistent with the explanation for weak readings in SOV structures since those orders would have to be derived by movement. Thus, the difference between leftward and rightward movement with respect to non-specific readings of bare nominals appears problematic for de Hoop's account whether the base order of Hindi is taken to be SOV or SVO.[10]

Let us see how the paradigm fits into Diesing's approach. The availability of non-specific readings with rightward scrambled nominals suggests that they are within the VP when mapping to semantics occurs. Under the traditional SOV account of Hindi,

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[9] The phonological stress on the scrambled *gifts* (30b) may be interpreted as simple emphasis, appropriate in contexts where the word may have been inaudible in a previous utterance. It is somewhat hard to think of alternatives to gifts but if the relevant set of alternatives can be constructed, the expected contrastive meaning surfaces readily.

[10] Alternatively, Hindi may generate complements in both directions, predicting weak readings in SVO and SOV orders since neither would involve movement. This is doubtful, however, since wh questions, for example, are sensitive to the SOV/SVO distinction (Dayal 1996 and Mahajan 1997).

rightward scrambling must then be analyzed as adjunction to a maximal phrase, which we might take to be VP. However, Diesing argues explicitly against adjoined elements being treated inside the VP for mapping. Again, we must also consider how Diesing's approach would work under a Kaynean analysis of Hindi. Her account might be expected to fare better than de Hoop's since it is not tied to case. Bare nominals, generated to the right, could fall within the domain of existential closure. More importantly, they may be said to remain within this domain even when moved to the left of the verb in SOV structures. It is only when movement goes beyond the VP boundary, as in the OSV cases we considered, that it would move out of the domain of existential closure and lose its non-specific reading. While this explanation appears promising, it breaks down on further investigation. Consider the case of a rightward scrambled subject, an OVS structure, where the direct object is interpreted non-specifically:

31a. kitaab paRh rahii hai, anu
"Anu is reading a book."
  b. [$_{XP}$ book$_j$ read$_v$ [$_{VP}$ Anu [$t_{v\text{-read}}$ $t_{j\text{-book}}$]]]

Without getting into the nitty gritty of the derivation, we might still assume that if all cases of rightward scrambling are, in fact, cases of stranding, a derivation for (31a) would involve movement of the direct object and the verb outside the phrase marker that contains the subject. Taking the subject to be generated in Spec VP, this would minimally have to be a case of VP adjunction. The non-specific reading for the direct object would incorrectly be ruled out by the Mapping Hypothesis.

It would appear, then, that the difference between leftward and rightward scrambling remains recalcitrant on both approaches. This may well be because directionality does not have formal status in either account. In the next section we will see whether an approach to word order variation in which directionality plays a more central role provides a better handle on the phenomenon.

3.2. A Discourse-based Approach to Word Order Variation

Work on word order variation within the functionalist tradition relates order of elements to discourse contexts. There are many different proposals for determining the units of the sentence relevant to the principles governing discourse. Instead of summarizing them here, I will take one recent proposal and try to show how it would approach the problem posed by contrastive and non-specific readings of bare nominals under scrambling.

Vallduví 1992 argues that word order variations do not encode truth conditional differences but are still informationally distinct. Such variations are sensitive to the discourse contexts in which they can be appropriately uttered. A proper analysis of such phenomena involves an independent level of grammar, Information Structure (IS) that relates to the other components as given below. The point to note is that there is no direct connection between IS and LF, the level that mediates between syntax and interpretation. This captures Vallduví's claim that word order variation is related to discourse without having any impact on truth conditional semantics, a significant departure from Diesing's and de Hoop's positions:

32.

```
                    DS
                     |
   PF ——————— SS ——————— IS
                     |
                    LF
```
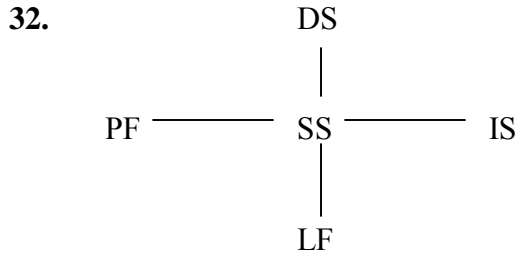
Vallduví further argues for three informational units at the sentential level, as given in (33). Of these, the two Ground elements represent old information, while Focus encodes new information. The distinction between Ground: Link and Ground: Tail has to do with the relative salience in discourse of old information. Sentences obligatorily have Focus, and may optionally have Link and Tail. This yields four different informational structures, each with its own processing routine. The processing required for each sentence type constrains the contexts in which they may be embedded:

33.   S = {Focus, Ground}
         Ground = {Link, Tail}

34a. All-Focus: RETRIEVE-ADD (focus)
  b. Link-Focus:GO-TO (link), RETRIEVE-ADD (focus)
  c. Link-Focus-Tail: GO-TO (link), RETRIEVE-SUBSTITUTE (focus)
  d. Focus-Tail: RETRIEVE-SUBSTITUTE (focus)

35. The boss hates broccoli.

To get an intuitive sense of what the different routines involve, consider a sentence like (35) and its relation to different contexts. If uttered against a background where the speaker starts by saying something like *Things at the office party last night went really badly...*, none of the key pieces of information contained in the three syntactic units *[the boss]*, *[hates]* and *[broccoli]* would be informationally old, making (35) an All-Focus sentence. If the same sentence were uttered in a context where the speaker and hearer are talking about the boss, *[the boss]* would be the link to the previous discourse and *[hates broccoli*] the new information. Here, (35) would instantiate Link-Focus, requiring update of information for the linked element as a first step in the processing. If the context makes salient some relation between the boss and broccoli and (35) is uttered as information about what that relation is, it would be a Link-Focus-Tail sentence, requiring the particular relation to be substituted for a variable. It is also possible for *[the boss]* and *[hates]* to be new information and *[broccoli]* to be old but not prominent information. That would be a case of Focus-Tail and would not require *[broccoli]* to provide the anchor for the processing.

In English the primary manifestation of information status is intonation but there is also some correlation with directionality, with old information tending to precede new information (see, for example, Sgall et al 1986). There are languages, however, where the connection between directionality and information status appears to be tighter and Vallduví uses Catalan as an example. He postulates the domain of Focus in Catalan to be IP, with left detachment corresponding to topicalization, acceptable in contexts where the

left detached expression is under discussion. Right detachment is an instance of old information relegated to a less prominent role than the topic of discussion. It is now possible to predict that certain information structures will be unacceptable in certain contexts. Neither (36b) nor (36c) could be acceptable responses to *What does the boss hate?* because the constituent that conveys new information would be in positions reserved for old information:

36a. L'amo   odia   el broquil
      The boss 3s-hate the broccoli
     "The boss hates broccoli."
  b. El broquil l'amo l_1' odia t_1
  c. L'amo l_1' odia t_1, el bròquil$_1$

      Two features of Vallduví's theory are clearly relevant to the issues in scrambling of concern here. One is the formal status of directionality in explanations using IS, the other is the disassociation of fronting with any particular semantic feature (though constraints may enter as a consequence of the processing requirements of informational units). Clarifying the relation between the notion of old vs. new information in the literature on IS and the distinction between familiar vs. novel entities in File Change Semantics/DRT may be useful here. The fundamental difference is that the classification of a syntactic unit as representing old or new information is relational while the familiarity or novelty requirements associated with syntactic units is internal to that unit. The internal semantics of a nominal, of course, may have a bearing on its ability to play particular informational roles. Consider, for example, how the inherent semantics of definite and indefinite noun phrases impacts on their ability to function as Ground:Link elements:

37a. The book fell.
  b. A book fell.

38. What happened?

(37a) has a definite in subject position and this means that the sentence can only be embedded in contexts where the existence of a unique salient book is part of the common ground. (37b) has an indefinite and this means that it can only be embedded in contexts where the intended referent of the noun phrase is not part of the common ground. Now, consider how Ground:Link elements function. They encode the instruction to update information about an (pre-existing) address/entity. For the nominal to qualify as Link, then, its referent must be in the immediate context. This means that an indefinite, by virtue of its inherent semantics, is not a potential Link. The inherent semantics of definites, on the other hand, readily lends itself to being a Link. It should be kept in mind, however, that familiarity of definites is not a sufficient condition for being a Link or even a Ground element. As shown by the fact that (37a) is a completely acceptable answer to (38), an All-Focus interpretation for a sentence with a definite is quite possible. This is because satisfaction of the inherent requirement of familiarity does not entail satisfaction of the relational requirement of givenness. It is only compatible with it.
      Let us turn now to the task of determining how an IS account of word order

variation might help with the issues in scrambling discussed above. Gambhir 1981, in the first extensive study of Hindi word order within the generative tradition, articulates a position that clearly anticipates Vallduví's. Her central claim is that scrambling does not affect truth conditions but is constrained by discourse considerations. In particular, she identifies leftward movement as motivated by the need for emphasis. We might take this to be akin to Vallduví's idea that left dislocation is for purposes of Linking to discourse. Her discussion of right rightward movement makes it clear that it is harder to identify a single discourse function for it. The list she gives includes movement for emphasis, de-emphasis, expression of afterthought, ease of processing and creation of suspense. While each of these functions is empirically justified, it is not obvious what the common denominator might be. In the next section I will focus on leftward scrambling of bare nominals and show why non-specific readings are incompatible with their role as Link elements and how contrast reconciles the conflict. I will not discuss rightward scrambling any further, except to characterize it in negative terms as Non-Link. While I consider a proper analysis of rightward movement important to a full understanding of scrambling as a discourse-sensitive phenomenon I must be content here with demonstrating the usefulness of the approach on the basis of leftward scrambling alone.[11]

3.3. *Leftward Scrambled Nominals as Ground:Link Elements*

Let us begin with the claim that leftward scrambled nominals are Ground: Link elements. This can be justified on the basis of paradigms like (39). The question in (39a) can be answered with (39b) under a definite or an indefinite reading for the bare nominal in base position. It cannot be answered with (39c) even under the definite reading for the scrambled bare nominal:

39a. anu kyaa kar rahii hai?
Anu what do-PROG-PR
"What is Anu doing?"
  b. anu kitaab paRh rahii hai
Anu book   read-PROG-PR
"Anu is reading the book."
  c. # kitaab anu paRh rahii hai
   book   Anu read-PROG-PR
   "Anu is reading the book."

Though the sentence is grammatical, it is not informationally appropriate. Scrambling

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[11] Gambhir's (i) shows that rightward scrambled nominals can be the locus of new information. It cannot therefore be equated with the Ground:Tail analysis of Catalan right detachment:

(i) aaj kaa   programm pesh kar rahe haiN, ek bahut mashoor kalaakaar
   today-GEN program   present-PROG-PR a   very famous   artist
    "A very famous artist is presenting today's program."

requires update of information regarding a contextually salient book, but the question makes it clear that the information provided by the scrambled nominal is new.

It would be obvious, then, that non-specific readings should not be available with leftward scrambling. Such readings, by definition, are not associated with any particular discourse entity to which the update function associated with their discourse role as Links could apply.[12] Turning to the role of contrast in redeeming the situation, one might now pose the question in the following way. What is it about contrast that provides the necessary link to discourse? My claim, which I will elaborate and refine below, is that this follows from the semantics of contrastive focus. The focus semantic value of the scrambled nominal in (40a), for example, would be a set of alternatives of the kind given in (40b). The Link condition can now be satisfied if the update looks for some entity in this set and deletes the non-focused information from that address before entering it correctly. In other words, (40a) would be acceptable in contexts where the statement has been made about something other than a book that Anu is reading it. (40a) is, overtly or implicitly, a negation of that statement:

40a. KITAAB anu paRh rahii hai (akhbaar nahiiN)
   book   Anu read-PROG-PR (newspaper not)
   "Anu is reading a BOOK (not a newspaper)."
  b. {book, newspaper, magazine}

A similar account for the loss of non-specific readings for scrambled indefinites has been proposed in Choi 1999. She differs, however, in her explanation of the role of contrast in making such readings available. Briefly, she modifies Vallduví's classification by distinguishing two types of Focus, Contrastive and Completive Focus. She also adopts the notion of prominence as significant in characterizing four units, as shown in (41). By restricting leftward scrambling to +prominent elements, she allows indefinites with contrastive focus but not completive focus to participate in it:

41. Topic: -New, +Prominent
   Tail: -New, -Prominent
   Contrastive Focus: +New, +Prominent
   Completive Focus: +New, -Prominent

Choi also presents an Optimality Theoretic account of cross-linguistic variation in scrambling, focusing primarily on differences between German and Korean. Keeping our discussion of her work limited to the problem at hand, her account of contrast makes the same predictions as mine for the data we have looked at so far. There are further facts, however, that separate them, having to do with acceptable cases of non-specific non-

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[12] Hindi questions like *Which book is Anu reading?* with OSV order do not pose a problem for Linkhood of the fronted object, if we take questions to have existence presuppositions (Dayal 1996). The question could be uttered in a context where an entry for a book being read by Anu was available and the update function would include an instruction to enter information about the book's identity after the question is answered.

contrastive scrambled nominals. In each case, we will see, there are semantic cues from other elements that seem to be relevant.

The first case in (42) differs from (40a) in having contrastive focus not on the scrambled nominal but on the subject. It says that it was Anu (not someone else) who was reading a book. No particular book need be in the common ground. That is, the scrambled nominal is easily construed as non-specific. The relevant reading can be made clearer by embedding the sentence in a context where two people are arguing whether Ravi is at work. Person A says that he couldn't be because he just looked through the window and saw Ravi reading a book. B may now respond with (42):[13]

42. kitaab ANU paRh rahii hai   (ravi nahiiN)
   book   Anu   read-PROG-PR (Ravi not)
    "Anu is reading a BOOK (not Ravi)."

The second case of a non-specific non-contrastive scrambled bare nominal is (43), fashioned after examples from Gambhir. Here the subject occurs with the particle indicating that someone other than the subject has also lied. The point to keep in mind is that the speaker and hearer are not talking about any specific lie:

43. jhuuTh anu-ne   bhii bolaa
   lie   Anu-ERG also spoke
   "Anu also told a lie/lied."

What is common to these cases of unexpected scrambling, I would like to claim, is that the sentences they occur in contain semantic cues that assist the update function associated with Ground:Link. (42), for example, has focus on the subject and, as discussed earlier, this invokes the alternative set {anu, ravi}. One member of this set is claimed to have an erroneous entry *is reading a book*. The update function removes this before proceeding with entering the information at the correct address. By virtue of the wrong entry, however, *book* may be taken to be a Ground element. In the case of (43) the particle *also* can only be felicitously used in a context where there exists at least one other individual for whom the information *tells lies* has been entered, again making *lies* a Ground element. Though the scrambled nominal is not a link, it is included in the link and this appears to be sufficient to license scrambling.

Note that satisfaction of the givenness associated with Ground:Link does not require referential identity. For example, in (43) *lies* qualifies for scrambling because it is old information, due to the implicature that someone else also told lies. However, the particular lies told must be distinct for it to qualify as non-specific. In a theory of bare nominals using kinds, the kind term $^\cap lies$ in each entry could be identical without the two existential instantiations $\exists x\ ^{\cup\cap} lies$ being the same. In theories treating bare nominals as

indefinites, the properties would be identified, not the output of existential closure.[14]

  Finally, there are cases of generic sentences where the presence of some adverbial element seems obligatory. (44a), similar to an example from Gambhir, does not mean that for all days and decisions, it is the speaker who makes them. It is quite compatible with other people also making decisions. Similarly, (44b) says that for many contextually relevant times Anu lies, for example, at times when she thinks she will get into trouble, not that she tells many of the relevant lies:

44a. faislaa ham *(roz) kartee haiN
  decisions we everyday do-PR-PROG
  "We make decisions everyday."
 b. jhuuTh anu *(aksar) boltii hai
   lie Anu often speak-PR
   "Anu often tells lies."

45a. ALL t x [day(t) & decision (x)] [we make x at t]
 b. MANY t x [C(t) & lies (x)] [anu tells x at t]

46a. ALL t [day(t)] ∃x [decision (x) & we make x at t]
 b. MANY t [C(t)] ∃x [lies (x) & anu tells x at t]

A relevant fact about these data is that they involve verbs of creation. Logical representations of the kind given in (45), with the scrambled nominal in the restrictor, presuppose the prior existence of decisions and lies, which is incompatible with their being objects of creation verbs. The only reasonable interpretation for these sentences, therefore, would be the ones given in (46) where the relevant objects are interpreted in the nuclear scope.[15]

  The explanation for (44) is somewhat different. Let us take the unacceptable version first and try to understand what is at the root of its unacceptability. If *[we make decisions]* in (44a) were all new information, as in answer to the question *What do you do?*, scrambling would not be acceptable. Taking *[decisions]* to be Ground:Link and *[we make]* to be Focus, then requires *[decisons]* to be in prior discourse. Note that there are no plausible alternatives to *make* since decisions in the sense relevant here cannot be read or written. One possibility for there to be another entry involving *decisions* would be to have *[make decisions]* be predicated of another individual, say *them* as in *They make decisions*. But in that case, we would get contrastive focus on the subject. In the case under consideration, it is the adverbial that provides an alternative way of satisfying the

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[14] Dayal 1999 and in prep posits distinct denotations for singular and plurals kinds, not relevant here. See Kiss 1999 for connections between focus and the representation of indefinites as properties.

[15] See von Stechow 2000 for issues concerning existential quantification and verbs of creation. Such verbs do not allow scrambling in German, as predicted by Diesing. Scrambled nominals are mapped into restrictor and treated as presuppositional, which is incompatible with their status as objects of creation. See also de Hoop.

discourse requirement for scrambling. It does so by evoking a different set of alternatives, namely {everyday, on certain days, seldom, never}. Given such an alternative set, (44a) can be understood to be a possibly implicit negation of a statement like *You seldom make decisions*. An explanation along the same lines can be given for (44b). It may be worth noting here that in discussing scrambling of objects in Dutch and German de Hoop also proposes a *Principle of Contrastiveness* that is meant to deal with similar effects. The account I am outlining may be seen as providing the conceptual motivation for such a principle.

To sum up the main claims of this section, I have argued that fronting of nominals cannot be explained in terms of the inherent semantic features of the nominal. In particular, there is no absolute ban on nominals that cannot be classified as specific. However, since fronting signals a link to previous discourse it is easy to construct appropriate contexts for definites. Their inherent semantics already requires them to be familiar in the context and the discourse requirement is simply a stronger version of that. Scrambled definites are therefore deemed acceptable when presented without a context. As we have seen, if they are embedded in particular contexts, acceptability is contingent on the nature of their relation to prior discourse. In the case of bare nominals, and by extension regular indefinites, the inherent semantics is at odds with the discourse requirement. This means that unless a link can be formed via other means, they will be judged unacceptable. Contrast, either on the nominal itself or on other expressions, provides the bridge that allows the inherent novelty requirement and discourse givenness to be simultaneously satisfied. While I have argued that leftward scrambling forms a Ground:Link structure at some length, I have not attempted a characterization of rightward scrambling beyond defining it negatively as Non-Link. This minimally allows non-specific readings without contrast for rightward scrambled nominals, of immediate concern to us here.

4. Conclusion

I would like to conclude by relating the main claims of this paper to a recent study of children's acquisition of indefinites by Kraemer 1998a, 1998b showing that children's understanding of Dutch scrambled nominals is at odds with that of adults. (47a) has the indefinite object in base position, with negation and the indefinite article incorporated. In (47b) the indefinite object has scrambled before negation. Adult grammar assigns a narrow scope interpretation for the indefinite in base position and a wide scope interpretation for it in scrambled position:

47a. De   jongen heeft geen vis gevangen
     The boy   has   no   fish caught $\neg\exists$
  b. De   jongen heeft [een vis]$_i$ niet t$_i$ gevangen
     The boy   has   a   fish not   caught $\exists\neg$

Krämer found that children between the ages of 4 and 7.10 agreed with adults on the interpretation of the unscrambled sentence, but not on the interpretation of the scrambled sentence. 84% of the children tested interpreted (47b) as $\neg\exists$.

There are two questions about the acquisition of indefinites raised by these data. How can children assign an interpretation to the scrambled indefinite that is unavailable

in adult grammar? Why is the specific reading of the scrambled indefinite not available to them? Let us see how these questions could be answered in light of the analysis presented here. What we have argued for here is that scrambled nominals can, in principle, have the same interpretations that they have in their base position as long as they can satisfy the discourse requirement on Ground:Link. This meaning is derived via the standard compositional semantics for moved elements operative at LF, namely, by positing a variable in trace position and by lowering the meaning of the moved expression into that position by lambda conversion at the adjunction site. What comes in the way of such interpretation for adults, we have shown, is the need for satisfaction of the discourse requirement. If children do not acquire the IS constraint till later stages of acquisition they would be expected to have precisely the response they do. Turning to the other question, the fact that they are unable to assign specific readings for indefinites does not follow directly from anything we have said so far. Kraemer notes that children by the age of four produce scrambled objects, showing that the problem lies with the interpretation of a construction they have acquired rather than incomprehension of a structure they have yet to acquire. It may be that specific readings of indefinites are marked and the acquisition of marked meanings follows the acquisition of discourse constraints that would make the unmarked meaning of the indefinite infelicitous. Even though these remarks do not explore the issues in adequate detail, I believe they indicate that acquisition data support the central thesis of this paper.

In conclusion, then, I have argued on empirical grounds against the generalization that scrambling leftwards is restricted to expressions which are inherently specific or results in loss of non-specific readings. The perceived restriction is an artefact of the discourse principles that regulate such movement. I have shown that this requires a theory separating discourse conditions from semantic interpretation. In future work, I hope to elaborate on the formal implementation of the ideas presented here.

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