Word Order, Intonation, and Noun Phrase Interpretation in Dutch
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1.   Introduction

It has long been known that an indefinite object like *illegalen* `illegal aliens' in (1), from Dutch, can have two readings.

(1)		De politie	arresteert	illegalen
		the police	arrests	illegals
		`The police arrests illegal aliens.'		

On one reading, *illegalen* refers to a group of illegal aliens that has not been previously mentioned, and which is introduced in the discourse by the very mentioning of the word *illegalen*. This is the *existential* reading (which will also be referred to as the *weak* reading, following De Hoop 1992).

On another reading, *illegalen* refers to the *kind* of people who are called `illegal aliens', and (1) describes a general property of this kind in relation to activities of the police (`what happens to illegal aliens is that the police arrests them'). This is a *generic* reading (one of the possible *strong* readings of indefinite noun phrases).

On the existential reading, (1) can be an answer to the questions in (2). On the generic reading, (1) is an answer to the question in (3):

(2)		What happens?
		What does the police do?
		Who does the police arrest?
(3)		What does the police do to illegal aliens?

It has been noticed that the position of the indefinite object in (1) with respect to sentence adverbials forces one of the two possible readings. Consider (4):

(4)	a.	De politie	arresteert	altijd	illegalen
		the police	arrests	always	illegals
	b.	De politie	arresteert	illegalen	altijd
		the police	arrests	illegals	always

(4a) is considered infelicitous as an answer to the question in (3), whereas (4b) is considered infelicitous as an answer to the questions in (2). Thus, indefinite objects appearing to the right of sentence adverbs receive a weak interpretation, whereas indefinite objects appearing to the left of sentence adverbs receive a strong interpretation.

Diesing (1990, 1992a) advances the hypothesis that the interpretation of indefinite noun phrases is a function of the position of the noun phrase in the syntactic structure. Assuming a semantic representation à la Heim (1982), consisting of a quantifier, a restrictive clause, and a nuclear scope, Diesing hypothesizes that the verb phrase in the syntactic representation corresponds to the nuclear scope of the semantic representation. A noun phrase in the VP therefore corresponds to a variable in the nuclear scope. In the absence of a quantifier and a restrictive clause, a variable in the nuclear scope is bound by an existential operator (`existential closure'). A noun phrase outside the VP corresponds to a variable in the restrictive clause of the semantic representation, and is bound by the quantifier. Crucially, Diesing assumes an immediate correspondence between the position of the noun phrase (inside or outside the VP) and the interpretation of the noun phrase (weak or strong, respectively). This is referred to as the *Mapping Hypothesis*:

(5)   *Mapping Hypothesis* (Diesing 1992a:10)
        Material from VP is mapped into the nuclear scope
        Material from IP is mapped into a restrictive clause

The interpretation of the sentences in (4) now follows on the assumption that sentence adverbials like *altijd* `always' mark the VP boundary. In (4a), then, the indefinite object *illegalen* is inside the VP, it corresponds to a variable in the nuclear scope, and it receives an existential interpretation. In (4b), on the other hand, the indefinite object is not inside VP (hence, inside IP), it corresponds to a variable in a restrictive clause, is bound by a generic quantifier, and receives a generic interpretation.

In this paper, I will present a slight modification of the analysis of (4) discussed above. This modification is necessary because factors of *intonation* seem to play an important (and, I believe, decisive) role in the mapping from syntactic representations to semantic representations. I will adopt Chomsky's (1993:42) suggestion that traces of noun phrase movement are in fact full copies of the moved noun phrase that receive no phonological interpretation. I would like to propose, however, that the `trace copies' may be relevant for semantic interpretation, and that the intonation provides the cue as to which of the two copies of the noun phrase is mapped onto the semantic representation.

This analysis allows us to maintain both the Mapping Hypothesis and a parsimonious theory of noun phrase movement, in which placement of subjects and objects is to be described in terms of syntactic features only (i.e., the strong/weak features of Chomsky 1993).

2.   Indefinite subjects in English

The relevance of intonation for the interpretation of indefinite noun phrases can be illustrated immediately by an example from English, which a naive implementation

of the Mapping Hypothesis would force us to describe in an unsatisfactory way. This example involves indefinite subjects:

(6)   Firemen are available

As discussed by Diesing (1992a:17), the sentence in (6) has at least two readings, one in which *firemen* receives an existential interpretation, and one in which *firemen* receives a generic interpretation. The example in (6) therefore is comparable to the example in (1).

However, according to current understanding of the syntax of English, *firemen* in (6) is outside VP on each interpretation of the sentence. This implies that it must be possible for an element outside VP to be mapped into the nuclear scope, in violation of (5).

Diesing (1992a:20) solves this problem by assuming that *firemen* may be lowered and adjoined to VP at LF. If that happens, *firemen* ends up inside VP and is mapped into the nuclear scope, yielding the existential reading. If not, the generic reading results. However, the lowering operation involved, though not without precedent in the literature, appears to be little more than an ad hoc device needed to bend the facts to the theory.

It seems to me that such a device is not needed. Assuming, as Diesing (1992a) does, that *firemen* in (6) is generated in a VP-internal position, the representation of (6) should at least contain two copies of *firemen* (in the following representation, both copies are in parentheses and the spelled out copy is underlined):

(7)   [$_{IP}$ (<u>firemen</u>) [$_{VP}$ <u>are</u> [(firemen) <u>available</u>]]]

All we need to derive the correct interpretations of (6)/(7) is a device telling us which of the copies of *firemen* in (7) to interpret.

The intonation clearly distinguishes the generic reading from the existential reading of (6) (in what follows, syllables carrying the nuclear pitch accent are printed in small caps):

(8)   a.   FIREmen are available   (existential)
       b.   Firemen are aVAILable   (generic)

We can therefore formulate the following hypothesis:

(9)   *Prosodic Mapping Hypothesis*
                       An indefinite noun phrase carrying the nuclear pitch accent is
                       interpreted in the position of its copy, i.e. is mapped into the
                       nuclear scope.
                       An indefinite noun phrase not carrying the nuclear pitch accent
                       is interpreted in its overt syntactic position.

3.   Indefinite subjects in Dutch and German

Indefinite subjects in Dutch and German likewise may receive both a strong and a weak interpretation:

(10)   ..weil   Kinder   auf der Straße   spielen   German
                        because   kids   on the street   play
                        `..because kids (always) play in the street'
                        `..because there are kids playing in the street'
(11)   a.   ..omdat   kinderen   op straat   spelen   Dutch
                        because   kids   on street   play
                        `..because kids (always) play in the street'
        b.   ..omdat   er   kinderen   op straat   spelen
                        because   there kids   on street   play
                        `..because there are kids playing in the street'

In the German example in (10), the indefinite noun phrase is ambiguous between a generic and an existential reading, just like (1) and (6). In Dutch, the presence of the expletive *er* has a disambiguating effect: in (11a), *kinderen* gets a generic interpretation, in (11b) *kinderen* gets an existential interpretation.

As expected under the hypothesis in (9), *kinderen* has the nuclear pitch accent in (11b), forcing interpretation of the VP-internal copy of *kinderen* (yielding an existential interpretation), whereas *kinderen* in (11a) does not, forcing interpretation of the VP-external copy (yielding a generic interpretation). The German example in (10) can be disambiguated in the same way (see also Krifka 1991):

(12)   a.   ..weil KINder auf der Straße spielen   (existential)
        b.   ..weil Kinder auf der STRAße spielen   (generic)

Accepting (9), there is no need to assume that the overt copy of *Kinder* in (12a) is in a VP-internal position (although it presumably is the case that *Kinder* in (12a) and (12b) are not in the same position, as the parallel facts from Dutch in (11) suggest, where the expletive in (11b) may be taken to occupy the structural subject position; we may assume that an empty expletive is present in (12b), forcing *Kinder* to occupy a position further down).

Evidence showing that *Kinder* in (12a) occupies a VP-internal position is rather thin. First of all, since *Kinder* in (12a) appears to the left of the adjunct *auf der Straße*, *Kinder* presumably does not occupy its *theta* position inside VP (see also De Hoop 1992:186 on Dutch). This makes it unclear what kind of VP-internal position *Kinder* in (12a) would occupy. Furthermore, as Diesing (1992a:32) notes, the standard test for deciding on the position of a noun phrase in Germanic, based on the position of the indefinite subject with respect to adverbials (cf. (4)), is not

fully reliable: it is not clear that the relevant adverbs have a fixed position in the structure. Finally, the status of the evidence adduced by Diesing (1992a:32f), involving extraction out of indefinite noun phrases, is not entirely clear either. In Den Besten's (1985) discussion of these *wat voor*-split facts, subextraction was considered to demonstrate that the relevant noun phrase occupies a deep structure object position. Subextraction is then made possible by the verb's governing the noun phrase. Since then, however, it has become clear that (at least in Dutch), subjects of unergative verbs and subjects and objects appearing to the left of sentence adverbs (albeit in an existential construction) permit subextraction as well (Reuland 1985, De Hoop 1992:182). This makes it less likely that `government by the verb' is the factor that makes subextraction possible in these cases. Consequently, it is not clear that we are dealing with a clear VP-constituency test here.

The advantage of the hypothesis in (9) is that we no longer need to make pronounciations about the position of the indefinite subject in overt syntax. Whatever its position, the intonation will ensure that the VP-internal copy of the indefinite subject in (12a) gets interpreted, leading to an existential interpretation.

4.   The Role of the Adverb

Not only the intonation, but also the position of adverbials serves to disambiguate sentences like (10) (Diesing 1992a:37):

(13) a.   ..weil   ja doch   KINder   auf der Straße   spielen
           because   PRT PRT   kids   on the street   pla
                                                                            y
           `..because there are children playing in the street, as you know'
     b.   ..weil   Kinder   ja doch   auf der STRAße   spielen
           because   kids   PRT PRT   on the street   pla
                                                                            y
           `..because children are always playing in the street, as you know'

The existential reading is forced in (13a), the generic reading in (13b). The intonation is still as in (12).

On the Mapping Hypothesis in (5), this would imply that *Kinder* is inside VP in (13a) and outside VP in (13b), perhaps concomitant with the modal particles *ja doch* `as you know' marking the VP-boundary.

However, as Diesing (1992b:370) notes, (13a) can have a generic reading "if the subject NP *Kinder* is deaccented." What in fact happens in this case is that the stress pattern of (13b) is applied to (13a):

(14)   ..weil ja doch Kinder auf der STRAße spielen
              `..because children are always playing in the street, as you know'

Diesing (1992b:369) assumes that in this case, the particles *ja doch* have been moved to the left. This makes it possible to analyze the subject *Kinder* as a VP-external element, mapping into the restrictive clause, yielding the required generic interpretation. On the hypothesis in (9), however, the placement of *ja doch* is completely irrelevant: it is the absence of nuclear pitch accent on *Kinder* which forces the higher copy of *Kinder* (i.e. the overt copy) to be interpreted, leading to a strong (generic) reading.

The hypothesis in (9) also predicts that applying the stress pattern of (13a) to (13b) leads to an existential interpretation (*..weil KINder ja doch auf der Straße spielen* `..because there are children playing in the street, as you know'). This prediction is hard to test, since noun phrases to the left of adverbials are less likely to be stressed (cf. Diesing 1992b:370). I have no explanation for this generalization, which appears to be correct for German and Dutch.

Nevertheless, it seems to me that in Dutch an indefinite subject preceding the modal adverb *immers* `as you know' can receive an existential interpretation, provided the subject carries the nuclear pitch accent:

(15) ?   ..dat   er   *KIN*deren   immers   op straat   spelen
              that   there kids   PRT   on street   play
              `..that there are children playing in the street, as you know'

In (15), the pitch accent on *kinderen* tells us that the VP-internal copy of *kinderen* must be interpreted in the mapping from syntax to semantics. Hence, there will be a variable in the nuclear scope, bound by existential closure, leading to an existential interpretation.

5.   Indefinite Objects in Dutch

Let us now return to the interpretation of indefinite objects in Dutch (cf. (1)-(4)). As the following facts show, the interpretation of indefinite objects is clearly linked to intonation:

(16) a.   ..dat   de politie   ille*GA*len   arresteert   (existential)
              that   the police   illegals   arrests
              `..that the police is arresting illegal aliens'
      b.   ..dat   de politie   illegalen   arres*TEERT*   (generic)
              `..that what the police does to illegal aliens is arrest them'

Adopting (9), we can say that the object has moved out of the VP in both (16a) and (16b), leaving a copy in its base position, the complement of the verb. In (16a), the intonation tells us that this VP-internal copy is the one that is relevant for the semantic interpretation, leading to an existential reading. Similarly, the intonation

forces the overt copy of the object to be interpreted in (16b), leading to a generic reading.

As shown in (4), a sentence adverb to the left of the indefinite object forces the existential interpretation, and a sentence adverb to the right of the indefinite object forces the generic interpretation. But notice that in the relevant examples the stress pattern could also be held responsible for the interpretation of the indefinite object:

(17) a. ..dat de politie altijd illeGAlen arresteert
          `..that the police is always arresting illegal aliens'
      b. ..dat de politie illegalen altijd arresTEERT
          `..that what the police always does to illegal aliens is arrest them'

What happens if we keep the word order as in (17), but change the stress patterns? As before, destressing the indefinite noun phrase leads to a strong interpretation, independently of the position of the noun phrase with respect to the adverb:

(18)   ..dat de politie altijd illegalen arresTEERT   (generic)
          `..that what the police always does to illegal aliens is arrest them'

Again, it appears to be the stress pattern rather than the word order which forces the interpretation of the indefinite noun phrase.

Applying the stress pattern of (17a) to (17b) as before leads to difficult judgments:

(19) ?   ..dat de politie illeGAlen altijd arresteert
          `..that the police is always arresting illegal aliens'

(19) is decidedly worse than (17a). For me, however, the sentence is far from unacceptable (cf. Zwart 1993:313f for further examples). (Notice that all syllables following the nuclear pitch accent must be deaccented in order to obtain the correct result.)

Taken together, (18) and (19) seem to support what we found earlier, namely that the intonation determines the interpretation of indefinite objects, not their position in overt syntax. Possibly, the unclear status of (15) and (19) is the result of some factor interfering with assigning the nuclear pitch accent to the preadverbial indefinite noun phrase. I will leave that issue for further study.

6.   Projection of Focus

So far, we have argued for a less naive version of the Mapping Hypothesis, one that avoids ad hoc syntactic operations and takes prosodic factors into account. We agree with Diesing (1992a:50) that "noting the correspondence between focus structure and [interpretation] is not sufficient to dismiss the Mapping Hypothesis."

However, it seems to me that the Mapping Hypothesis should be understood as in (9), rather than in (5), since the overt syntactic position of indefinite noun phrases appears to be less relevant than the intonation that accompanies them.

Arguing against the relevance of prosodic information, Diesing (1992a) notices that sentences like (6) (*firemen are available*) can have interpretations that are exactly the opposite of what the intonation would predict (cf. (8)). That is, there can be a layer of *contrastive* stress that destroys the pattern in (8):

(20) a. FIREmen are available (generic, contrastive)
      b. Firemen are a VAILable (existential, contrastive)

Consequently, the only way to derive the correct interpretation is to lower *firemen* in (20b) to the VP, feeding an existential interpretation, and by abstaining from such lowering in (20a).

But this conclusion is not warranted, since (20a) and (8a) do not have the same prosodic properties. In particular, (8a) but not (20a) can *project focus*, in the sense of Selkirk (1984, 1993). By focus projection, an element carrying the nuclear pitch accent ensures that a larger constituent of which that element is a part is in focus. A test for being in focus is association with *only* (inducing an understood contrast).

Thus, in (21a), which incorporates (8a), *firemen are available* is in focus, as it is associated with *only* and contrasts with the alternative in (21b):

(21) a. I only said that [FIREmen are available]
      b. ...not that [smoking is good for your health]

Crucially, *firemen* in (21a) must have an existential reading, and cannot have a contrastive generic reading. That is, the contrastive generic reading of (20a) is not able to project focus.

This ties in with the observation made by Diesing (1992a:52) that sentences of individual level predication in which the subject is contrastively stressed (in deviation from the normal stress pattern, in which the predicate has the nuclear pitch accent) do not project focus.

Thus, although (8a) and (20a) on the surface look alike, the two sentences have entirely different prosodic properties. This allows us to maintain (9), provided the pitch accent relevant for the Prosodic Mapping Hypothesis is of the type that projects focus.

This leads to the question whether the pitch accent carrying indefinite nou phrases in (15) and (19) project focus. It seems to me that inasmuch as (15) and (19) are acceptable, they do project focus (the adverb *immers* has been changed into *altijd* in (22)):

(22) a. Ik zei alleen maar dat [er KINderen altijd op straat spelen]

I only said that there are always children playing in the street

    b.   ...niet dat de hele straat autovrij moet worden

        ...not that the entire street should be free from motor vehicles

(23)   a.   Ik zei alleen maar dat [de politie illeGAlen altijd arresteert]

        I only said that the police is always arresting illegal aliens

    b.   ...niet dat Nederland in wezen een repressieve samenleving is

        ...not that the Netherlands essentially is a repressive society

(This result contrasts with what Selkirk (1993:fn 10, quoting A. Kratzer, p.c.) reports on scrambled objects in German, namely that they do not project focus. It seems to me that this is not true of scrambled objects in Dutch.)

    If these judgments hold up, the stress on the indefinite noun phrases in (15) and (19) cannot be purely contrastive. The phenomena are therefore relevant for the Prosodic Mapping Hypothesis, and confirm that intonation, rather than syntactic position, determines the interpretation of indefinite noun phrases.

7.   Further Evidence for the Relevance of Intonation

It is a well-known fact that intonation forces reconstruction for purposes of anaphor binding. Thus, whereas the indirect object has to precede the direct object in Dutch, and cannot be an anaphor bound by the direct object, stressing the indirect object creates the possibility for the direct object to bind the indirect object:

(24)   a.   *   Jan heeft *elkaar de DEELnemers* voorgesteld

                John has each other (IO) the participants (DO) introduced

                `John introduced the participants to each other.'

    b.   Jan heeft *elKAAR de deelnemers* voorgesteld

        John has each other (IO) the participants (DO) introduced

        `John introduced the participants to each other.'

We may now assume that the nuclear pitch accent on the indirect object *elkaar* indicates that not the overt copy of *elkaar* is relevant for interpretation, but the covert copy inside the VP (in (25), the noun phrase in boldface is considered to be relevant for the interpretation):

(25)   Jan heeft (elkaar)(**de deelnemers**) [VP ... (**elkaar**)(de deelnemers)]

A similar interaction of binding and intonation is apparent in (26) (from Diesing 1992a:25):

(26)   *Firemen* seem to *their* employers to be available

In (26), where *firemen* binds the pronoun *their*, only the generic reading is available. Under our assumptions, the existential reading is not available, since that reading can only be obtained if the VP-internal copy of *firemen* is considered to be the one relevant for interpretation (including now both binding and mapping onto a semantic representation). This would destroy the configuration needed for the bound variable interpretation of *their*, since the VP-internal copy of *firemen* does not c-command the pronoun *their*.

Again, adopting the copy theory of movement, in connection with (9), we do not need a lowering operation to derive this result.

8.   Conclusion

It has always been clear that intonation plays a role in the interpretation of indefinite noun phrases. The Prosodic Mapping Hypothesis (9) says that the presence of a nuclear pitch accent on an indefinite noun phrase forces interpretative processes to concentrate on the VP-internal copy of the indefinite noun phrase. This hypothesis appears to be more successful in deriving the possible interpretations of indefinite objects than the naive Mapping Hypothesis (5), in which the overt syntactic position of indefinite noun phrases is taken to be relevant for interpretative processes. In particular, a proper understanding of the input of prosodic factors allows us to dispense with LF-lowering and other instances of noun phrase adjunction to VP. At the same time, (9) maintains what seems to be the core of the Mapping Hypothesis, namely that clearly delineated syntactic domains map into the various parts of the semantic representation à la Heim (1982).

Moreover, the Prosodic Mapping Hypothesis has certain distinct advantages in the domain of syntax.

First, we are now no longer forced to assume, as Diesing (1992a) does, that subjects of Stage Level Predicates are generated VP-internally, whereas subjects of Individual Level Predicates are generated outside the VP. If we ignore contrastive stress, we can observe that Individual Level Predicates require the nuclear pitch accent to be absent from their subject (perhaps by some link between Individual Level Predication and genericity, cf. De Hoop 1992:191). Adopting (9), this excludes an existential reading in combination with Individual Level Predication (a robust fact, as it seems). Assuming that subjects of Individual Level Predicates are generated outside the VP raises questions concerning the assignment of a theta role to the subject (which Diesing assumes is performed by INFL), and concerning the status of the PRO subject Diesing assumes to occupy the Spec,VP in Individual Level Predication sentences (cf. Diesing 1992a:26, 1992b:363).

Second, loosening the relation between syntactic structure and semantic interpretation allows us to maintain an extremely simple syntax of noun phrase movement. In a given language, noun phrases will either remain in their theta position (inside VP), or they will move to their Case position (outside VP). This is a maximally simple instance of parametric variation. If we adopt (9), we need to

make no provisos for indefinite noun phrases in combination with their required interpretation.

More concretely, we may now assume that in Dutch, the N-features of Agr are strong (in the sense of Chomsky 1993, cf. Zwart 1993). This is the way to describe that subjects in Dutch move to Spec,AgrSP (barring special cases) and objects move to Spec,AgrOP. The pattern in (4) then points to a certain freedom of adverb placement, not unlike what Diesing (1992b:369) assumes. The interpretation of the indefinite noun phrases follows from independent properties of the prosodic system, in combination with the Mapping Hypothesis.

Finally, this view on the relation between syntax and semantics allows us to maintain, as proposed in Kayne (1994) and Zwart (1994), that the Germanic SOV languages (including Dutch and German) are underlyingly SVO, just like (at least) all other Germanic languages. Taking this hypothesis seriously, we must conclude that *all* sentences of Dutch and German in which an indefinite object appears to the left of the verb in embedded clauses involve object movement. The distribution of indefinite noun phrases with respect to adverbials, and the interpretation of indefinite noun phrases must then be accounted for independently of this general noun phrase movement. It is my hope that the study of prosodic factors, of which the surface has barely been scratched here, will lead to a better understanding of the phenomena involved.

References

Chomsky, N. (1993) `A Minimalist Program for Linguistic Theory.' In *The View from Building 20,* K. Hale and S.J. Keyser, eds. MIT Press, Cambridge.

De Hoop, H. (1992) *Case Configuration and Noun Phrase Interpretation.* Dissertation, University of Groningen.

Den Besten, H. (1985) `The Ergative Hypothesis and Free Word Order in Dutch and German.' In *Studies in German Grammar*, J. Toman, ed. Foris, Dordrecht.

Diesing, M. (1990) *The Syntactic Roots of Semantic Partition.* Dissertation, University of Massachusetts, Amherst.

Diesing, M. (1992a) *Indefinites.* MIT Press, Cambridge.

Diesing, M. (1992b) `Bare Plural Subjects and the Derivation of Logical Representations.' *Linguistic Inquiry* 23, 353-380.

Heim, I. (1982) *The Semantics of Definite and Indefinite Noun Phrases.* Dissertation, University of Massachusetts, Amherst.

Kayne, R.S. (1994) *The Antisymmetry of Syntax.* MIT Press, Cambridge.

Krifka, M. (1991) `Focus, Semantic Partition, and Dynamic Interpretation.' Paper presented at the 8th Amsterdam Colloquium, December.

Reuland, E.J. (1985) `Representation at the Level of Logical Form and the Definiteness Effect.' In *Grammatical Representation*, J. Guéron, H. Obenauer, J.-Y. Pollock, eds. Foris, Dordrecht.

Selkirk, E.O. (1984) *Phonology and Syntax: The Relation between Sound and Structure.* MIT Press, Cambridge.

Selkirk, E.O. (1993) `Sentence Prosody: Intonation, Stress, and Phrasing.' Ms., University of Massachusetts, Amherst.

Zwart, C.J.W. (1993) *Dutch Syntax. A Minimalist Approach.* Dissertation, University of Groningen.

Zwart, C.J.W. (1994) `Dutch is Head Initial.' *The Linguistic Review* 11, 377-406.