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Pied Piping and the Word Orders of English and Dutch

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1. Introduction

A remarkable aspect of the word order of Dutch is that, in V-final non-root clauses, the verb serves as a "mirror center" for series of PPs, i.e., the unmarked order of PPs to the left of the final verb is mirrored on the right (Barbiers 1995, Koster 1974):

- (1) a. Hij heeft tijdens de pauze *aan zijn vader* gedacht
he has during the break of his father thought
"He thought of his father during the break"
b. *Hij heeft *aan zijn vader* tijdens de pauze gedacht
- (2) a. Hij heeft gedacht *aan zijn vader* tijdens de pauze
b. *Hij heeft gedacht tijdens de pauze *aan zijn vader*

Mirror symmetry is caused by parallel construal (my alternative for extraposition; see Koster 1999b) and is "broken" in root clauses, which was one of the main arguments for the verb movement rule known as Verb Second (see Koster 1975).

In English, we find only one possible order, namely the Dutch order (2a):

- (3) a. He thought *of his father* during the break
b. *He thought during the break *of his father*

As in Dutch root clauses, there is no mirror symmetry in English here, since the PPs cannot appear to the left of the verb (apart from topicalization):

(4) *He during the break of his father thought

Under the antisymmetry theory of Kayne (1994), which is adopted here, these facts are puzzling because the surface word orders of Dutch and English must be derived from the same underlying SVO order. Supposing that the mirror image orders observed in (1) are common to both English and Dutch at some level, the problem to be solved is: how is the underlying mirror symmetry broken in English?

The answer to the same question given for Dutch, the postulation of a rule of Verb Second, does not work for English, as is well-known: English is simply not a verb second language, as all kinds of material can intervene between the first constituent and the finite verb in root clauses. In this respect, English is in sharp contrast with Dutch.

The solution to the observed problems can be based on recent analyses of the structure of Dutch. The key idea goes back to Vanden Wyngaerd's (1989) insight that the Dutch object in OV structures is not in its base position, but in a derived position in order to check its case features. This position was identified as the Spec of AgrOP by Vanden Wyngaerd, i.e., a position in the functional shell containing the VP.

As was first concluded by Jan-Wouter Zwart, Vanden Wyngaerd's rule makes it possible to derive Dutch OV orders from Kayne's universal underlying VO order. This derivation, apart from bringing Dutch more in tune with universal grammar, happened to have a number of empirical advantages (see Zwart 1993, and also Kaan 1992, Koster 1994 and Den Dikken 1996).

An immediate problem arising in the analyses in question is that, at first sight, English does not show overt object shift for case checking at all. This led to the arbitrary and therefore unsatisfactory idea that English case features are "weak" (as opposed to the "strong" features of Dutch) and checked by covert movement at LF.

In this paper, I will show that English checking for case features is just as overt as in Dutch, but that instead of the object, the whole VP containing the object is "moved" to the checking position. In other words, English overt movement involves Pied Piping of the whole VP (see Koopman and Szabolcsi 1998 for similar cases of "massive" Pied Piping).

Recall that the mirror symmetry of PPs with respect to the verb was broken in Dutch by movement of the verb. The Pied Piping solution for English case checking solves the old problem why the symmetry is broken in English, too. As in Dutch, the underlying pattern is blurred by verb movement, but in English the verb is moved as part of the entire VP. Other word order puzzles appear to be solved as well this way.

2. The Facts

Comparing English with Dutch (and implicitly also with German) we observe the following facts:

- (5) a. English is VO, Dutch is OV
 b. Neither English nor Dutch has rightward scrambling
 c. Unlike Dutch, English has no leftward scrambling
 d. In Dutch *all* Adv's can appear to the left of the VP, in English only a subclass
 e. English Adv order shows a *scope paradox* (absent from Dutch)

In the remainder of this section, I will illustrate these classes of facts one by one.

2.1 English is VO, Dutch is OV

If we compare English and Dutch non-root clauses, we observe that the object is to the right of the verb in English (6a) and to the left in Dutch (6b). The English order is sharply ungrammatical in Dutch (6c):

- (6) a. that John read *the book*
 b. dat Jan *het boek* las
 that John the book read
 c. *dat Jan las *het boek*

2.2 Neither English nor Dutch has Rightward Scrambling

Before Kayne (1994), theories of Universal Grammar often did not exclude adjunction of APs or NPs to the right of the sentence. This makes the following elementary facts of English very puzzling:

- (7) a. John read *the book* yesterday
 b. *John read yesterday *the book*
 c. John gave *Bill* a book
 d. *John gave a book *Bill*
 e. Mary made *Sue* happy
 f. *Mary made happy *Sue*
- (8) c. Mary was *happy* yesterday
 d. *Mary was yesterday *happy*

It is simply impossible to adjoin NPs or APs to the right and exactly the same can be observed in Dutch:

- (9) a. Jan heeft *het boek* gelezen
 John has the book read
 "John has read the book"
 b. *Jan heeft gelezen *het boek*
 John has read the book

- (10) a. Jan heeft *Mary* een boek gegeven
 John has Mary a book given
 "John has given Mary a book"
 b. *Jan heeft een boek gegeven *Mary*
 John has a book given Mary
- (11) a. Mary heeft Suus *gelukkig* gemaakt
 Mary has Sue happy made
 "Mary has made Sue happy"
 b. *Mary heeft Suus gemaakt *gelukkig*
 Mary has Sue made happy
- (12) a. Mary is *gelukkig* geweest
 Mary is happy been
 "Mary has been happy"
 b. *Mary is geweest *gelukkig*
 Mary is been happy

2.3 Unlike Dutch, English Has No Leftward Scrambling

Although English and Dutch behave exactly the same with respect to rightward adjunction, we see a very striking difference with respect to movement to the left ("scrambling"). In English, apart from Wh-movement and related rules, it is impossible to move VP-internal material to the left around VP-external adverbials such as *probably*:

- (13) *that John *the book* probably read *t*

In Dutch, however, such forms of scrambling lead to very natural word orders:

- (14) dat Jan *het boek* waarschijnlijk las
 that John the book probably read
 "John probably read the book"

In fact, the English VP behaves like a cage for its constituents: apart from frontings such as Wh-movement, the VP-internal constituents (except the non-V-specific subject) can be moved neither to the right nor to the left. The VP is closed on both sides. Dutch and German, in contrast, only seem closed to the right.

2.4 In Dutch All Adv's Can Appear to the Left of the VP, in English Only a Subclass

A very curious fact of English is that only a subclass of the adverbials can appear to the left of the VP. Thus, *probably* can appear to the left of the VP, while *yesterday* etc. cannot. Under a theory which assumes that adverbials are freely adjoined to VPs, these facts are totally unexpected:

- (15) He probably [_{VP} saw Bill]
 (16) *He yesterday [_{VP} saw Bill]
 (17) *He everywhere [_{VP} saw Mary]
 (18) *He very hard [_{VP} worked]

In Dutch, in contrast, all adverbials in question can appear to the left of what is traditionally considered the VP (actually a bigger constituent such as AgrOP):

- (19) dat hij waarschijnlijk [_{VP} Wim zag]
 that he probably Bill saw
 "that he probably saw Bill"
 (20) dat hij gisteren [_{VP} Wim zag]
 that he yesterday Bill saw
 "He has saw Bill yesterday"
 (21) dat hij overal [_{VP} Mary zag]
 that he everywhere Mary saw
 "He has seen Mary everywhere"
 (22) dat hij erg hard [_{VP} werkte]
 that he very hard worked
 "He worked very hard"

2.5 English Adv Order Shows a Scope Paradox (Absent from Dutch)

Very often, the scope order of adverbials is linear in both English and Dutch, i.e. the wider the scope of an adverbial the more it appears to the left. Thus, in the following Dutch example, *twee keer* ("twice") has wider scope than *op zijn verjaardag* ("on his birthday") to its right:

- (23) Hij heeft Wim twee keer op zijn verjaardag gezien
 he has Bill twice on his birthday seen
 "He saw Bill twice on his birthday"

If we reverse the linear order of the adverbials, the scope can be reversed as well:

- (24) Hij heeft Wim op zijn verjaardag twee keer gezien
 he has Bill on his birthday twice seen
 "He saw Bill on his birthday twice"

These facts are unproblematic under the traditional assumptions that adverbials are successively adjoined to the left of the VP, i.e. "being in a higher, c-commanding position" corresponds with linear order:

- (25) [Adv [Adv [VP]]]

Also, according to traditional assumptions, nothing much changes when adverbial material is VP-internal, like *hard* ("hard") in (26):

- (26) dat hij [gisteren [_{VP} hard werkte]]
 that he yesterday hard worked
 "that he worked hard yesterday"

As before, the adverbial with the wider scope, *gisteren*, precedes the VP-internal adverbial *hard*, which has the narrower scope. So, a reasonable assumption is that adverbial scope is always linear in underlying structure, i.e., the wider an adverbial's scope, the more it is to the left in the structure.

The fact that English is extremely irregular from this point of view has not received the attention it deserves. Just consider the facts corresponding to the Dutch examples (" $>$ " means: "has wider scope than"):

- (27) a. He saw Bill twice on his birthday [*twice* $>$ *on his birthday*]
 b. He saw Bill on his birthday twice [*on his birthday* $>$ *twice*]

(I will here ignore the fact that the opposite scope order is also possible, thanks to the mechanisms underlying the mirror effect mentioned at the beginning of this article). Until recently, it was very often assumed that one can add adverbials to the right of the VP by adjoining them successively, yielding the opposite from the Dutch pattern illustrated by (25):

- (28) [[_{VP}] Adv] Adv]

This would be entirely anomalous, because usually "being in a higher c-commanding position" means wider scope. So, if (28) were right, we would expect the rightmost adverbial to always have the widest scope. This is contrary to fact, as illustrated by (27): the scope facts can be exactly the same as in Dutch, i.e., the rightmost adverbial can have the narrower scope rather than the wider scope. If we look at VP-internal adverbials, however, we find exactly the opposite pattern:

- (29) He [_{VP} worked hard] yesterday]

For this case, the traditional assumption (rightward adjunction) would work, because *yesterday* –the element with the wider scope– would be in a c-commanding position higher than *hard* in (29).

This situation is paradoxical because, proceeding from left to right, scope sometimes becomes narrower (as in (27)) and sometimes wider (as in (29)). In fact, we find the Dutch pattern (25) in English, except when the adverbial is VP-internal (as in (29)). In the latter case, the Dutch order is in fact impossible:

- (30) *He worked yesterday hard

The same is true for other cases in which traditionally the adverbial is analyzed as part of the VP (Jackendoff 1972, 64):

- (31) a. Steve dressed elegantly yesterday
 b. *Steve dressed yesterday elegantly

The scope paradox of English adverbials makes a uniform solution along traditional lines (Adv's going up) or Larsonian lines (Adv's going down) very unlikely. What the facts strongly suggest is that English preserves the structural patterns of Dutch and German *except for the VP and its constituents*. At least in this domain of facts, English looks like Dutch, but with a VP that is displaced somehow.

3. A Proposal

The hypothesis I would like to suggest as an explanation of the facts observed is based on the idea that English has a rule of VP-movement. The theories I assume as background are a form of Minimalism (Chomsky 1995), antisymmetry theory (Kayne 1994) and the theory of the configurational matrix (Koster 1987, 1999a). In accordance with the latter two theories, I assume that all languages are underlyingly head-initial, which means a VO structure at the deepest level for both English and Dutch.

I also assume a theory of adverbial positions along the lines of Alexiadou (1997) and Cinque (1998). Altogether, the theories assumed come down to the position that the universal structure for all languages is [Spec [Head Complement]]. The head can be lexical or functional and in general, lexical projections are embedded in a shell of functional projections to their left.

As for these functional projections, I assume the conventional heads AgrS and T (Tense). For the checking of case features, I further assume an Acc head for the accusative and a Dat head for the Dative, which means that I reinterpret Vanden Wyngaerd's object shift as a rule which moves the direct object to the Spec of the AccP rather than the Spec of AgrOP. This preference is motivated by the fact that Dative DPs must be moved to the left of the verb as well, so that one position for object shift (the Spec of AgrOP) is not enough.

The three resulting case checking positions (the Specs of AgrSP, DatP and AccP) correspond with the three semantically unrestricted argument positions of Relational Grammar (see, for instance, Perlmutter 1983).

Apart from these argument positions, I also assume a Pred Phrase for oblique arguments and the secondary predicates as found in Small Clauses (see Zwart 1993 and Koster 1994 for arguments). Altogether, the relevant part of the universal base structure looks as follows (where the XPs indicate Spec-positions):

(32) Universal Base Structure

...[XP AgrS [XP Adv₁* [XP T [XP Dat [XP Acc [XP Adv₂* [XP [Pred* [VP]]]]]]]]]

For reasons of space, I have omitted the brackets between Specs and heads here. A star (*) means that there can be more than one projection with the type of head in question.

For adverbials I make the simplifying assumption that class Adv₁ contains adverbials like *probably* (of the kind that can precede the VP in English) and that class Adv₂ also contains adverbials like *yesterday* (of the kind that cannot precede the VP in English).

Crucially, I am assuming that all VP-internal material must be licensed in some functional projection to the left of the VP by *overt movement*. In practice, this means that VP-internal material can be functionally licensed either in one of the independent argument positions or in the Pred Phrase. The independent argument positions are the familiar case positions for subject, indirect object and direct object in, respectively, the Specs of AgrSP, DatP and AccP. All other VP-internal material, such as prepositional objects, oblique objects and the predicate part of Small Clauses is licensed in the Spec of some PredP (see Koster 1994 for details).

The simple parametric difference responsible for the word order difference between English and Dutch (as summarized in section 2.) has to do with *the size of the checking phrase* (Pied Piping). This is a known and uncontroversial dimension of language variation. Thus, in English, Wh-movement can either involve a minimal Wh-phrase (33a) or a PP containing it (33b):

- (33) a. *Who* did you talk [PP with *t*]?
 b. [PP *With whom*] did you talk *t* ?

In Dutch, Pied Piping of the whole PP is obligatory in such cases:

- (34) a. **Wie* heb je [PP met *t*] gepraat?
 who have you with talked
 b. [PP *Met wie*] heb je *t* gepraat?
 with whom have you talked

As for the possible size of the checking phrase, there is quite a bit of variation among the languages of the world, and in several cases even whole clauses can be pied piped (see, for instance, Van Riemsdijk 1994).

Given this uncontroversial (but hardly understood) dimension of language variation, the parametric difference between English and Dutch can be formulated in terms of a simple difference in the size of the checking phrase for VP-specific material (i.e., the V, its Tense and the elements V is subcategorized for, which excludes the subject):

- (35) **Pied Piping parameter distinguishing English from Dutch**
 Dutch checks its VP-internal constituents *individually* (by moving them separately), English *collectively* (by moving the whole VP).

Apart from this minimal difference, checking is done by overt movement to the same checking positions in the same universal structure (35). I assume that the checking process of VP-specific material (which excludes the non-VP-specific subject) stops somewhere at the Spec of TP (with some problems of detail requiring further research):

- (36) **Collective Checking (VP-movement) in English:**

...[XP AgrS [XP Adv₁* [VP T [VP Dat [VP Acc [XP Adv₂* [VP [Pred* [VP]]]]]]]]]]

The VP can be moved through all Spec positions as indicated. This makes it possible, via Pied Piping, to check not only the case features for dative and accusative DPs, but also the elements (such as the predicates of Small Clauses) that can be seen not as independent arguments but only as part of the predicate of the sentence.

In Dutch (and German), in contrast, all the Spec positions "visited" by VP in (36) are filled for checking by the individual VP constituents (such as DPs and APs, which can be assumed to be included in the VPs moved in (36)):

- (37) **Individual Checking in Dutch and German:**

...[XP AgrS [XP Adv₁* [DP T [DP Dat [DP Acc [XP Adv₂* [AP [Pred* [VP]]]]]]]]]]

This simple difference between English and Dutch (and German) explains all major word order differences as discussed in section 2.

4. The Facts Explained

I will now show that the facts are actually explained by the Pied Piping parameter (and the associated theoretical framework). Consider the VO/OV difference between English and Dutch. For a long time, this difference was accounted for by an entirely arbitrary parameter known as the VO/OV parameter. This parameter is no longer necessary. English moves the whole VP to the case checking positions for the objects, thereby leaving the original universal base order (VO) intact. Dutch and German, in contrast, modify the relative order of objects and verb by moving the object DPs individually to the checking positions, as indicated in (37).

The second word order fact, that neither English nor Dutch and German show any evidence for rightward movement of VP-internal material just follows from antisymmetry theory as formulated by Kayne (1994). This theory simply excludes rightward adjunction of VP-internal material.

The fact that Dutch and German have leftward scrambling while English does not, also follows immediately from the Pied Piping parameter. Leftward scrambling in Dutch and German is just the manifestation of the individual movements of the VP-internal DPs to the checking positions, which can be surrounded by all kinds of adverbial positions (not all mentioned in (32), (36) and (37)). In English, in contrast, the whole VP is moved up to the Spec of TP, which does not leave any functional checking positions to the left of the VP (apart from the Spec of AgrSP for the subject). This makes it impossible for English to derive the same scrambling phenomena as found in Dutch and German.

The fourth class of facts concerned the absence of certain adverbials to the left of the VP in English ((15-18) repeated here for convenience):

- (38) He probably [_{VP} saw Bill]
 (39) *He yesterday [_{VP} saw Bill]
 (40) *He everywhere [_{VP} saw Mary]
 (41) *He very hard [_{VP} worked]

These facts are explained by the assumption that only *probably* is both in the class of adverbials indicated as Adv₁ and Adv₂ in (32). The other adverbials are either exclusively in class Adv₂ (*yesterday*) or part of the VP (*hard*). As can be seen in (36), the VP ends up in the Spec of TP, which is between Adv₁ and Adv₂, which, together with our classification of adverbials, entails that only Adv₁-type adverbials such as *probably* can appear to the left of the VP in surface order.

In Dutch and German, in contrast, all adverbials can appear to the left of the VP. The DPs can appear in the standard argument positions (Specs of DatP and AccP), with only Adv₁ to their left. Alternatively, they can be licensed in the Specs of PredPs, which have both Adv₁ and Adv₂ to their left (see Koster 1994). These two possibilities are confirmed by the grammaticality of both (42a) and (42b):

- (42) a. dat hij *waarschijnlijk* het boek *gisteren* las
 that he probably the book yesterday read
 "that he probably read the book yesterday"
 b. dat hij *waarschijnlijk* *gisteren* het boek las
 that he probably yesterday the book read
 "that he probably read the book yesterday)

Last but not least, the observed scope facts follow straightforwardly from our assumptions. We can assume without problems that the order of adverbials in the universal underlying structure (32) linearly corresponds with scope. So, linear scope in Dutch and English is preserved to the extent that the underlying order is preserved.

In Dutch, all adverbials can be to the left of the verb, as partially illustrated in (42). VP-internal material (like *hard* in the Dutch equivalent of *he works hard*) ends up in a Spec of a Pred. This preserves the correspondence between linear order and scope. In English, the correspondence is also preserved in cases like (43) and (44):

(43) He probably [_{VP} saw Bill]_i yesterday *t_i*

This sentence instantiates (36) in that the VP moved for checking ends up between an Adv₁ (*probably*) and an Adv₂ (*yesterday*). Since there can be more than one Adv₂ following the derived position of the VP in (36), we expect the universal correspondence of linear order and scope to be preserved in English. This is exactly what we saw in (27), repeated here for convenience (" $>$ " means: "has wider scope than"):

(44) a. He saw Bill twice on his birthday [*twice > on his birthday*]
 b. He saw Bill on his birthday twice [*on his birthday > twice*]

However, if the hypothesis of VP-movement in English is correct, we expect that the correspondence of linear order and scope superficially seems to break down in English when an adverbial is VP-internal. This is exactly what we observe in cases like:

(45) He has [_{VP} worked hard]_i yesterday *t_i*

The VP-internal adverbial *hard* is moved along with the VP, superficially breaking the correspondence, but with the VP in its original position, indicated by the trace, scope corresponds with linear order after all, as predicted by our hypothesis. In other words, we can maintain the optimal hypothesis of Universal Grammar, namely that adverbial scope always corresponds with linear order in underlying structure (apart from parallel construal; see Koster 1999b).

5. Conclusion

We started out with the observation that in Dutch subordinate clauses, the verb figures as the center of mirror symmetry with respect to PPs. This symmetry is broken in main clauses by the verb movement rule of Verb Second. In English, the mirror symmetry is strikingly absent, suggesting a rule of verb movement as well. Standard Verb Second does not work for English. However, there are strong indications that the whole VP is moved in English for the purpose of feature checking. English VP movement for checking the case, tense or predicate function of its constituents is a form of Pied Piping. The same kind of checking done collectively by the VP in English is done by each of the constituents individually in Dutch and German.

This hypothesis explains not only why the verb is not a mirror center (as in Dutch) but also why there is a VO/OV difference between English and Dutch, why English does not have the scrambling possibilities of Dutch and German and why English adverbials have the anomalous order and scope properties they superficially have.

The Pied Piping parameter, in short, explains many word order facts of English and Dutch that were hitherto unexplained. What is at least as important is that the pattern of explanation in question confirms the assumptions underlying Kayne's anti-symmetry theory, which led to an entirely new analysis of the structure of Dutch and German based on a universal VO base and an OV order derived for feature checking.

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