

Holmberg's Generalization and Cyclic Linearization
Remarks on Fox and Pesetsky

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Fox and Pesetsky (henceforth F&P) propose an architecture for the mapping between syntax and phonology which relates a number of different constraints on movement to the way in which phrase structure is linearized. They investigate *Object Shift* (henceforth OS) and *Quantifier Movement* (henceforth QM) in Scandinavian and argue that the restrictions on these processes, namely *Holmberg's Generalization* (HG) effects on OS and what they call "*the inverse Holmberg effect*" on QM, reflect a requirement for preservation of the order established in the VP due to the fact that the VP is a Spell-out domain. F&P's proposal relies on Holmberg's (1999) formulation of HG which has been challenged by Anagnostopoulou (2002) on the basis of data discussed in Anagnostopoulou (2003) that directly contradict Holmberg (1999). It is my goal here to investigate how these data can be accommodated in F&P's system. I will argue that even though F&P can, in principle, account for the data in question, the attempt to unify the restrictions on OS, QM with comparable restrictions on passivization under F&P's architecture fails to express certain crosslinguistic generalizations which are straightforwardly captured in traditional locality accounts.

Holmberg's Generalization: the debate

In the literature, there is a debate concerning the scope and correct characterization of HG. According to one view (Chomsky 1993; Bobaljik 1995, 2002; Bobaljik & Jonas 1996 and others), HG is exclusively tied to V-raising. On this view, the core data to be explained are exemplified in (1) (from Swedish):

- (1) a. Jag kysste henne inte [_{VP} t_v t_o]
I kissed her not
b. *Jag har henne inte [_{VP} kysst t_o]
I have her not kissed
c. *...att jag henne inte [_{VP} kysste t_o]
.....that I her not kissed

According to another view, defended in Holmberg (1999), the V-movement requirement is part of a more general condition preventing OS across any phonologically visible category within VP, except adjuncts. OS of a DO cannot apply across an IO in (2) and a particle in (3), just as it cannot apply across V in (1):

- (2) a. *Jag gav den inte Elsa t_o
I gave it not Elsa_{IO}
b. Jag gav inte Elsa den

- (3) a. *Dom kastade mej inte ut t_o
 They threw me not out
 b. Dom kastadeinte ut mej

Importantly, OS is licit if the intervening V, IO or particle undergo movement to C leaving a trace in the VP, as in (4)-(6):

- (4) Kysst har jag henne inte (bara hållit henne
 Kissed have I her not (only held her
 i handen)
 by the hand
 (5) Vem_{IO} gav du den_{DO} inte t_{IO} t_{DO}?
 Who gave you it not
 'Who didn't you give it to?'
 (6) UT_P kastadedom mej_O inte t_P t_O (bara ned
 Out threw they me not only down
 för trappan)
 the stairs)
 'They didn't throw me OUT (.....)'

To account for the facts in (1)-(6), Holmberg proposes that OS takes place at PF, and therefore it can apply across a trace of any type but not across overt material. He furthermore suggests that the facts in (4)-(6) provide evidence that OS applies countercyclically: OS moves the object to a sentence medial position after V, IO and the particle move to C.

There is a third approach towards HG, which crucially relies on Holmberg's (1999) view that HG subsumes all data in (1)-(6). According to this approach (Kathol 2000; Müller 2000; Sells 2001 and Williams 2003), HG reflects a requirement for order preservation as a result of which OS is not allowed to revise the order of constituents in the VP. In *Cyclic Linearization of Syntactic Structure* F&P take a similar position towards HG. Crucially, though, F&P argue that ordering generalizations are established on a phase-by-phase basis; this permits them to relate the constraints that fall under Holmberg's (1999) HG to two other constraints on movement, namely successive cyclicity and "the inverse Holmberg effect".

F&P's system: an overview

F&P propose that the mapping between syntax and phonology is subject to (7):

- (7) *Order Preservation*
 Information about linearization, once established at the end of a given Spell-out domain, is never deleted at the course of a derivation

Certain domains created in a derivation, e.g. VP, CP and DP (roughly corresponding to *phases*), are Spell-out domains whose construction is followed by linearization. Each time the derivation constructs a Spell-out domain D, Spell-out applies

linearizing D. When a new Spell-out domain D' is constructed, Spell-out linearizes the new material D' preserving the information produced by previous applications of Spell-out. Crucially, the only function of Spell-out is to *add* new information to the information already established at the previous Spell-out domain. This leads to a number of restrictions on how movement proceeds:

(a) Leftward movement of an element X from the left edge position of a Spell-out domain D to a position in a higher Spell-out domain D' is licit because X in D' continues to precede the elements that X precedes in D (and conversely for rightward movement).

(b) Movement from a non-edge position is illicit when the ordering statements established in D' are inconsistent with the ones established in D. Suppose the derivation has created the Spell-out domain D in (8):

(8) [D XYZ]

If Y moves leftward in the next Spell-out domain, as in (9), the information in (8) and the information in (9) impose conflicting requirements on linearization.

(9) *[D'.....Y [D X t_Y Z]

Y is pronounced after X in (8), but Y must be pronounced before X in (9) because Y precedes D (which contains X). Y must, therefore, move to the edge of D before undergoing further movement, as depicted in (10).

(10) [D'.....Y [D t_Y X t_Y Z]

This derives successive cyclicity.

(c) Movement from the non-edge is possible as long as the previously established linearization is not disrupted. Y can move from the non-left edge position in (8) if X moves as well and X and Y preserve their original order in the higher Spell-out domain:

(11) [D'...X..Y... [D t_X t_Y Z]

This is HG on F&P's view. OS is subject to HG because it is movement from a non-edge. In this analysis, there is no need to assume that OS applies counter-cyclically (contra Holmberg 1999). (4)-(6) above are licit because in the CP Spell-out domain the V, IO and particle in C continue to precede the shifted object, preserving the VP-order.

(d) In F&P's system, when Y from a non-edge position of D surfaces in a position that reverses the original order of constituents in D, this movement always proceeds through a movement step of Y to the edge of D. After moving to the edge Y precedes all material in D, and no element in D is allowed to move to a position that precedes Y in D', i.e. (12) is excluded:

(12) *[D'...X..Y [D t_Y X t_Y Z]

(13) a. Jón hefur ekkert [sagt Sveini _]
Jon has nothing [told Sveini-DAT _]
'John has told Svein nothing'

b. ekkert [t_{ekkert} sagt Sveini t_{ekkert}]

(14) a. *Jón sagði ekkert Sveini
Jon said nothing Svein

b. [_{CP} sagði [ekkert [VP t_{ekkert} t_{sagði} Sveini t_{ekkert}]]

←───────────────────✱──────────────────→

In conclusion, a crucial feature of F&P's theory is that linearization is relativized to particular domains, which permits unification of HG effects with successive cyclic movement. The goal of the next sections is twofold. On the one hand, I will present certain OS data which cannot be accommodated in an order preservation approach unless ordering statements are relativized to domains, arguing in favor of F&P over related theories. On the other hand, I will discuss the syntax of processes involving movement of a lower object across a higher one (OS, QM and passivization) in Scandinavian double object constructions pointing to a correlation which supports traditional locality approaches over F&P's theory.

An argument that potentially shows that the verb phrase Spell-out domain is not vP in Scandinavian involves subject quantifier stranding (Q-stranding) under OS, as opposed to subject Q-stranding under object scrambling in Korean and Japanese.

Korean and Japanese have Q-stranding under scrambling. Kuroda (1983) and Miyagawa (1989) argue that in Q-stranding, quantifiers and their associates are generated as sisters which are separated by scrambling of the nominal to a higher position. Interestingly, object scrambling over a subject may not be followed by subject scrambling over the object, where the subject strands a quantifier, as shown in (15) with an example from Korean (Kuroda 1983; Miyagawa 1989; Ko 2004):

- (15) **Haksayng-tul-i*₁ *maykcwu-lul*₂ *t*₁ *sey-myeng* *t*₂
 Student-PL-NOM beer-ACC three-CL_{person}
masi-ess-ta
 drink-Past-Dec
 ‘Three students drank beer’

Ko (2004), as cited in F&P, argues that this restriction is an instance of the “Inverse Holmberg effect”. Under the assumption that the vP is a Spell-out domain in Korean and Japanese, object scrambling over the subject involves a step by which the object moves to the edge of the vP so as to establish the “O>S” order. But then the subject is not allowed to scramble over the object stranding a quantifier as in (15) due to a conflict in linearization: O precedes S in the vP Spell-out domain but the scrambled S precedes O at a later stage in the derivation.

From the perspective of (15) it is significant that in all Scandinavian languages OS targets a position above floated quantifiers related to subjects, as discussed in Holmberg & Platzack (1995), Bobaljik (1995), Holmberg (1999) and others (data from Holmberg and Platzack 1995: 141):

- (16) *Lásu* *stúdentarnir* *greinina* *ekki* *allir?* *Icelandic*
 Read the-students the-article not all
 ‘Didn’t the students all read the article?’
- (17) *Läste* *studenterna* *den* *inte* *alla?* *Swedish*
 Read the-students it not all
 ‘Didn’t the students all read it?’

Assuming that subject Q-float involves stranding of the quantifier in the vP under NP-movement of the subject, as in Sportiche (1988),¹ the vP is not a Spell-out domain in Scandinavian, or else an “Inverse Holmberg effect” is incorrectly predicted to arise in (16) and (17), on a par with (15).

The proposal that the low Spell-out domain does not include the subject in Scandinavian leads to the prediction that OS across a subject should be possible in principle. As will be seen immediately, this prediction is borne out, supporting F&P’s view that the conditions on OS are limited to certain domains over competing theories where there is no domain-limitation.

¹ See Bobaljik (1995) and Holmberg (1999) for arguments against Sportiche’s analysis of Q-float in Scandinavian and in favor of the view that the subject quantifiers in (16) and (17) are adjuncts. I believe that there are reasons to doubt Bobaljik’s and Holmberg’s analysis, but it would lead me too far to address them here. The argument in the main text relies on Sportiche’s analysis.

As discussed in Holmberg (1999: 15), there are varieties of Swedish in which OS may apply across a subject in examples like (18):

- (18) Därför gav mej Marit inte någon present
 Therefore gave me Marit not any present
 ‘Therefore Mary did not give me any present’

The existence of (18) is predicted by F&P, while it constitutes a problem for theories that view order preservation as an absolute constraint. Moreover, (18) is a counterexample to Holmberg’s (1999) formulation of HG as it shows that OS is allowed to apply across non-adjunct categories, such as subjects. To account for OS across the subject in examples like (18), Holmberg proposes that they instantiate ‘long OS’² which is subject to different conditions than the type of OS illustrated in (1)–(6). Unlike (1)–(6), where the object moves to a low position close or adjoined to the vP, *mej* in (18) is high in the IP domain: it precedes the subject *Marit* which can be concluded to be vP-external (in Spec,IP) since it occurs before the negation, which, in turn, has been argued to be generated high in Scandinavian (the negation precedes floated quantifiers and, in non V-2 environments, auxiliaries; see Holmberg 1999, Bobaljik 2002 for discussion).

Even though it is evident that the object in (18) surfaces in a position higher than the landing site of OS in (1)–(6), it is not clear why long OS should be subject to different conditions than short OS. More importantly, there is evidence that short OS can also apply across the subject, similarly to long OS. As shown in (19) (see Jonas & Bobaljik 1993; Alexiadou & Anagnostopoulou 2001 for discussion of such examples), OS in Icelandic can take place across a vP-internal subject when this is indefinite/quantificational:

- (19) það luðu sennilega husið [vP vandlega
 there painted probably the house carefully
 [vP margir studentar t_{luðu} t_{husið}]
 many students
 ‘Many students probably painted the house carefully’

In (19) the DO precedes the low manner adverb marking the left-edge of vP, which, in turn, precedes the subject. Expl-V-O-S orders of the type illustrated in (19) are true instances of OS as the O can precede an *in situ* S only under V-raising. Examples like (19) are expected to be well-formed if the domain relevant for linearization excludes the subject.³

² Long OS is possible in Swedish but not in Norwegian and Danish.

³ As discussed in Alexiadou and Anagnostopoulou (2001), constructions like (19) are uncommon in Scandinavian due to the independent requirement that the subject must generally raise overtly, but they are very common cross-linguistically. In pro-drop languages of the Romance/Greek type VOS orders are attested in both synthetic and periphrastic constructions. In these languages, participles move out of the vP (Alexiadou 1997), i.e. the V-raising requirement on OS is always met.

Having seen that VP and not vP counts as a Spell-out domain in Scandinavian, I now turn to the syntax of the VP domain when two objects are present.

Recall that OS of a DO is generally not allowed to apply across a higher IO, as shown in (2), a fact that Holmberg (1999) takes to support his version of HG. In some varieties of Norwegian and Swedish, though, a DO pronoun is allowed to undergo OS across an *in situ* IO pronoun. Along with the grammatical IO-Neg-DO order in (20), the DO-Neg-IO order in (21) is more marked but possible (see Hellan & Platzack 1999; Anagnostopoulou, 2002, 2003, reporting judgments of Anders Holmberg, personal communication; data from Hellan and Platzack 1999: 131-132):

- (20) a. Han visade henne inte den $\sqrt{IO-Neg-DO}$
b. Han visade 'na inte 'n
He showed her not it
'He did not show it to her'
- (21) a. Han gav den inte henne $\sqrt{DO-Neg-IO}$
b. Han gav 'en inte 'na
He gave it not her
'He did not give it to her'

In non V-Raising, non OS environments the order of pronouns is strictly IO>DO:

- (22) a. Jag ville inte ge honom den
I wanted not give him it
'I didn't want to give it to him'
- b. *Jag ville inte ge den honom

Examples like (21) contradict the view that OS is not allowed to revise the order of constituents in the VP as well as the claim that OS cannot apply across higher non-adjunct categories. Just as in (18) and (19) OS applies across a subject, in (21) OS applies across an IO. OS of two objects in Norwegian and Swedish presents a further counterexample to theories that assume that the base order of arguments is always preserved under OS.⁴ When a pronominal DO and a pronominal IO shift together, DO>IO and IO>DO orders are equally possible (Hellan & Platzack 1999: 131; Anagnostopoulou, 2002, 2003):

⁴ Holmberg (1999: 15 fn 10) points out that examples like (23b) can be accounted for in his system which permits OS to apply across adjuncts. Assuming that OS involves adjunction to vP, the IO *honom* adjoins to vP under OS in (23b); OS of *den* is subsequently allowed to take place because the shifted IO is an adjunct. Such a literal interpretation of 'adjunct', though, is unsatisfactory. The fact that OS is insensitive to phonologically visible adjuncts in itself is a problem for Holmberg which could, perhaps, be solved by postulating countercyclic insertion of adjuncts in OS constructions. If countercyclic insertion is a viable solution to the problem, then it cannot be extended to constructions with a shifted IO.

- (23) a. Jag gav honom den inte. $\sqrt{IO-DO-adv}$
 I gave him it not
 ‘I didn’t give it to him’
 b. Jag gav den honom inte. $\sqrt{DO-IO-adv}$
 I gave it him not
 ‘I didn’t give it to him’

The DO>IO order in (23b), which reverses the order of constituents in the VP, is grammatical for all speakers, even for those that resist examples like (21).⁵

F&P can accommodate the above data due to the crucial assumption that movement to the edge of Spell-out domains may be employed to revise the base order of constituents. More specifically, (20)-(23) can be accounted for if the double object construction involves two Spell-out Domains, one containing the two objects and one containing the verb:

- (24) [Domain B V [Domain A IO DO]]

Structure (24) is consistent with decomposition approaches towards the double object construction and is most immediately compatible with a small clause analysis, as in Kayne (1984), Beck and Johnson (2004), and with a low applicative analysis as in Pylkkänen (2002). The fact that the order of IO and DO can be reversed if both are pronominal suggests that a pronominal DO may undergo OS in the presence of a pronominal IO through an intermediate step by which the DO moves to the edge of Domain A, establishing a ‘DO>IO’ order:⁶⁷

- (25) [Domain B V [Domain A DO IO t_{DO}]]

The fact that two pronominal objects never raise over the main verb furthermore suggests that movement through the edge of B is never an option under OS.

Recall at this point the Icelandic QM data in (13) and (14) where the quantificational DO precedes both the main verb and the IO and where further raising of V is blocked. Unlike OS, it is crucial to assume that QM proceeds through the edge of Domain B, the domain containing V. If Domain A is taken to be a Spell-out domain in Icelandic, as in Swedish, then *ekkert* presumably moves first to the edge of A and then to the edge of B. (13b) above must thus be re-written as (26):

- (26) [Domain B *ekkert* sagt [Domain A t_{ekkert} IO t_{ekkert}]]

⁵ As pointed out to me by Anders Holmberg, and Øystein Nilsen (personal communication) reversal of order of pronouns under OS in Norwegian is possible only in the presence of negation or other adverbs marking the edge of the vP. In contrast, reversal of order in Swedish is licit even when there is no element marking the left edge of the vP, provided that the V-raising condition is met.

⁶ The analysis in (25) predicts the emergence of an Inverse Holmberg effect in OS constructions with inversion of two pronominal objects. At this point, I do not know how this prediction can be tested.

⁷ Movement of the DO to the edge of A must be assumed to be impossible when the IO is a DP explaining why (2a) above and (i) with OS of two objects are ungrammatical:

- (i) *Jag gav den Elsa inte
 I gave it Elsa not

So far, it has been seen that Scandinavian double object constructions displaying inversion of the two objects under OS and QM can be accommodated in F&P's framework, unlike similar theories, due to the assumption that movement through the edge is a strategy that reverses base orders. I will now compare these constructions to a third movement process, namely passivization.

In Anagnostopoulou (2002, 2003) I establish a correlation between OS and passives across Scandinavian. In Swedish and Norwegian where the DO may undergo OS across the IO (see (21) above) and the order of DO and IO may invert when both objects undergo OS (see (23b) above), the DO is allowed to move across the IO in passives, as shown in (27) for Norwegian:

- (27) a. Jon ble gitt en bok *√Passivization of IO*
 John was given a book
 'John was given a book'
 b. En bok ble gitt Jon *√Passivization of DO*
 A book was given John

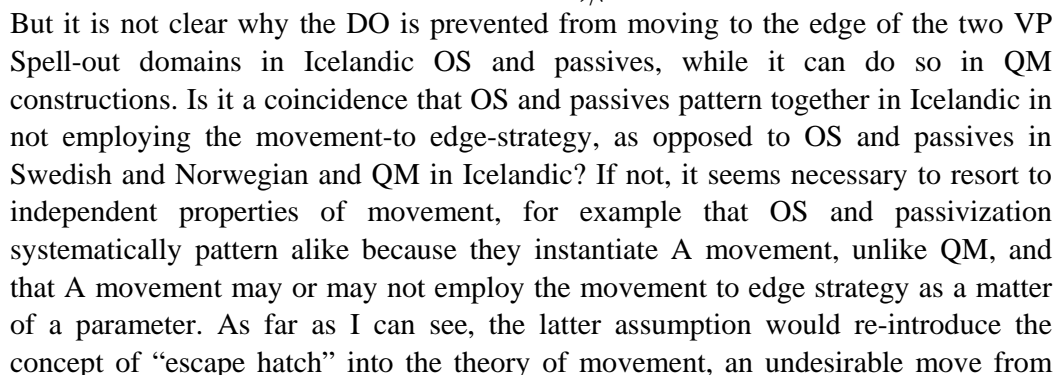
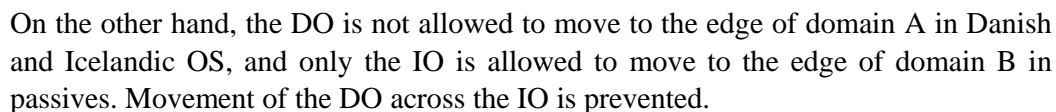
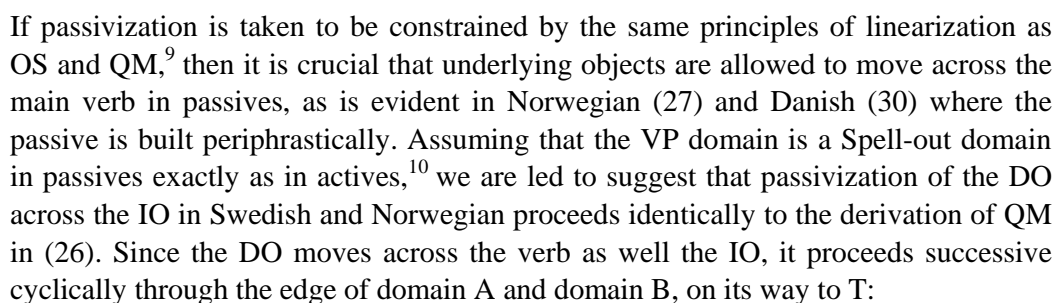
In Danish and Icelandic, where OS always preserves the base order of constituents, the DO is not allowed to undergo passivization across a higher IO. In (28)-(30), I exemplify this for Danish:⁸

- (28) a. Peter viste hende jo den *√IO-adv-DO*
 Peter showed her indeed it
 'Peter indeed showed it to her'
 b. *Peter viste den jo hende **DO-adv-IO*
 Peter showed it indeed her
 (29) a. Peter viste hende den jo *√IO-DO-adv*
 Peter showed her it indeed
 'Peter indeed showed it to her'
 b. *Peter viste den hende jo **DO-IO-adv*
 (30) a. Jens blev givet bogen *√Passivization of IO*
 Jens was given book-the
 'Jens was given the book'
 b. *Bogen blev givet Jens **Passivization of DO*

In Anagnostopoulou (2002, 2003), I argue that this correlation between OS and passivization in Scandinavian can be straightforwardly captured if movement of the DO across the IO is taken to be A-movement targeting T in passives and transitive v, v-Tr, in OS (see also Bobaljik 2002). Under the assumptions that (i) movement is constrained by the Minimal Link Condition (MLC) and (ii) apparent violations of the MLC result from the parametric availability of layered specifiers, which permit successive cyclic movement across potential interveners (cf. Ura 1996 and others), the key to the above

⁸ See Anagnostopoulou (2002, 2003) for detailed discussion of Icelandic, which has two classes of ditransitives. One in which the base order is always IO>DO and one which allows DO>IO pre-OS orders (Holmberg & Platzack 1995; Collins & Thráinsson 1996).

Consider now how the same facts can be dealt with in F&P's terms. We have seen that OS of the DO across the IO involves the derivation in (31), where first the DO moves to the edge of Domain A, and then the V, DO and IO move further in a way that preserves their linear order:



¹⁰ Alternatively, Domain B is never a linearization domain in passives. This might perhaps simplify things; but it would not be clear why passive VPs differ from active VPs in this way (for vPs one could perhaps appeal to the deficiency of passive v, as opposed to active v, as in Chomsky 2000; 2001). The presence or absence of an Inverse Holmberg effect might decide between the option considered in this footnote, as opposed to the analysis presented in the main text.

F&P's point of view. There are other questions, though, which seem to show that a general theory for when movement to the edge takes place is needed. For example, that movement across V is never possible in OS, while movement across a higher argument is licit in a number of well-defined cases. This difference is expected in approaches that treat the two as independent constraints.

The MLC analysis mentioned above groups together the conditions governing OS and passivization of an argument across a higher argument under the MLC,¹¹ and dissociates these cases from QM, which is not assumed to be A-movement, as well as from movement of an argument across a higher head (V and maybe particle, though see Bobaljik 2002), which is taken to fall under HG reflecting an independent constraint on OS. In contrast, F&P group together all instances of movement of an argument across a higher argument as well as movement of arguments across higher heads. This categorization of facts leads to an analysis which obscures the correlation between OS and passives across Scandinavian.

In conclusion, the more general question raised by F&P's account concerns the conditions under which different strategies are employed in order to resolve potential conflicts in linearization, and the division of labor between these strategies and independent properties specific to movement. This becomes evident once different constructions are studied and compared in detail.

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¹¹ In an MLC analysis, OS across the subject is correctly predicted to be possible as it targets a layered specifier to v-Tr, which introduces the external argument. See also Anagnostopoulou (2002, 2003) for extensive discussion that the movement of an intervener strategy in (5) above is not specific to OS but occurs in several NP-movement constructions, and for a locality analysis.

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