

# Hierarchical and Linear Constraints on Structure

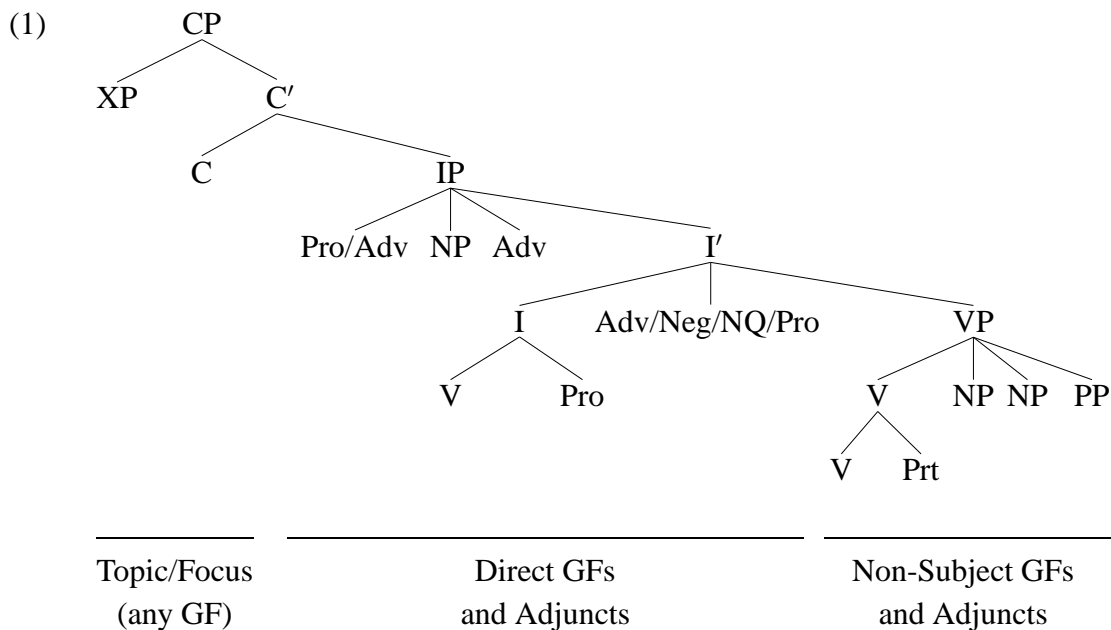
Peter Sells

*Sandbjerg Ph.D. course*

June 14–16, 2006

Part II

## 1 OT Evaluations



(2) TOP-L  $\gg$  Head-L<sub>l</sub>  $\gg$  X<sup>0</sup>-L<sub>l</sub>  $\gg$  SU-L  $\gg$  PRED-L  $\gg$  IO-L  $\gg$  DO-L  $\gg$  Adv-L

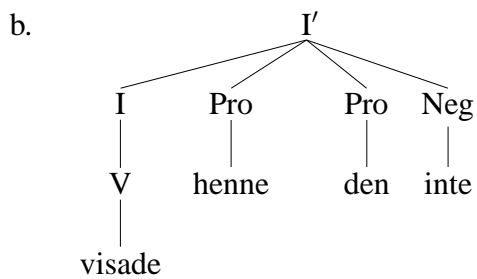
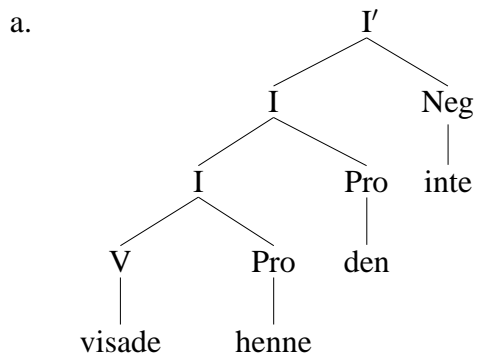
Head-L locally orders any X<sup>0</sup> (the head of any X' before its complement. I'll ignore X<sup>0</sup>-L. Adv-L is a family of constraints which order adverbs.

The non-local constraints apply to the clause; they apply equally to different phrase structure expressions of the same grammatical content within the clause. The PRED may include certain particles as well as the verb.

(3) Order of Swedish Sentence Adverbial Elements

- a. Short modal adverbs, e.g., *ju* 'as you know', *nog* 'probably'.
- b. Short pronominal adverbs, e.g., *alltså* 'therefore', *därför* 'for that reason'.
- c. Longer modal adverbs, e.g., *visserligen* 'to be sure', *verkligen* 'really'.
- d. Floated quantifiers, e.g., *alla* 'all'.
- e. Negations, e.g., *inte* 'not', *aldrig* 'never'.

(4) Jag visade henne den inte.  
I showed her it not



These structures are ordered similarly by the linear constraints. They differ in terms of their hierarchical structure properties, which other constraints will refer to.

OT is about the overt realization of abstract information – in this case, the grammatical information that a clause expresses. What is the preferred way, in a given language, to express this information?

- (5) V in VP, no shift.

Han har vist den till henne.  
 he has shown it to her


INPUT: subject dir. obj. [+pro] PP complex tense	TOP-L	Head-L	X <sup>0</sup> -L	Phr-Spine-R	SU-L	PRED-L	IO-L	DO-L	ADV <sub>1-5</sub> -L
[a] $\rightarrow$ [ <sub>IP</sub> SU [ <sub>I'</sub> Aux [ <sub>VP</sub> V DO PP]]]						$\begin{matrix} I1 \\ V2 \end{matrix}$		3	
[b] [ <sub>IP</sub> SU [ <sub>I'</sub> [ <sub>I</sub> Aux DO] [ <sub>VP</sub> V PP]]]						$\begin{matrix} I1 \\ V3! \end{matrix}$		2	

- (6) Prt in VP, no shift.

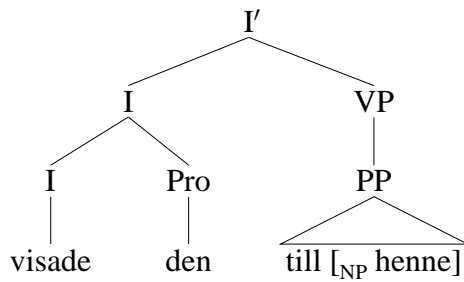
Dom kastade ut mej.  
 they threw out me

INPUT: subject dir. obj. [+pro] particle simple tense	TOP-L	Head-L	X <sup>0</sup> -L	Phr-Spine-R	SU-L	PRED-L	IO-L	DO-L	ADV <sub>1-5</sub> -L
[a] $\rightarrow$ [ <sub>IP</sub> SU [ <sub>I'</sub> V [ <sub>VP</sub> Prt DO]]]						$\begin{matrix} I1 \\ V2 \end{matrix}$		3	
[b] [ <sub>IP</sub> SU [ <sub>I'</sub> [ <sub>I</sub> V DO] [ <sub>VP</sub> Prt]]]						$\begin{matrix} I1 \\ V3! \end{matrix}$		2	

- (7) Shift over an adverb.  
 Han kysste henne inte.  
 he kissed her not

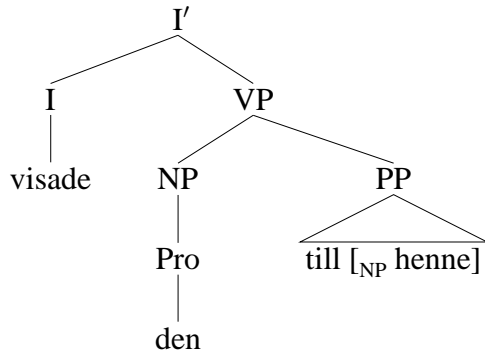
INPUT:	TOP-L	Head-L	X <sup>0</sup> -L	Phr-Spine-R	SU-L	PRED-L	IO-L	DO-L	ADV <sub>1-5</sub> -L
subject dir. obj. [+pro] medial adverb simple tense									
[a] [ <sub>IP</sub> SU [ <sub>I'</sub> V Adv [ <sub>VP</sub> DO]]]						I1		3!	2
[b]  [ <sub>IP</sub> SU [ <sub>I'</sub> [ <sub>I</sub> V DO] Adv]]						I1		2	3

(8) a.



Shifted object, 3 occurrences of XP.

b.




Unshifted object, 4 occurrences of XP.

(9) Economy constraint: \*XP.

The fewer XPs there are, the smaller the structure, but the less structural differentiation between functions there is. This constraint may be stronger than I suggest here.


(10) String-vacuous shift driven by the economy constraint.

Han visade den till henne.  
 he showed it to her

INPUT: subject dir. obj. [+pro] PP simple tense	TOP-L	Head-L	X <sup>0</sup> -L	Phr-Spine-R	SU-L	PRED-L	IO-L	DO-L	ADV <sub>1-5</sub> -L	*XP
[a] [IP [NP SU] [I' V [VP [NP DO] PP]]]						I1		2		6!
[b]  [IP [NP SU] [I' I V DO] [VP PP]]]						I1		2		5

(11) Shift over an adverb.

Han visade den inte till henne.  
 he showed it not to her

INPUT: subject dir. obj. [+pro] PP medial adverb simple tense	TOP-L	Head-L	X <sup>0</sup> -L	Phr-Spine-R	SU-L	PRED-L	IO-L	DO-L	ADV <sub>1-5</sub> -L	*XP
[a] [IP [NP SU] [I' V Adv [VP [NP DO] PP]]]						I1		3!	2	6
[b]  [IP [NP SU] [I' I V DO] Adv [VP PP]]]						I1		2	3	5

(12) Two objects, IO shifts.

Han visade henne boken.  
 he showed her the.book

INPUT: subject dir. obj. [-pro] ind. obj. [+pro] simple tense	TOP-L	Head-L	X <sup>0</sup> -L	Phr-Spine-R	SU-L	PRED-L	IO-L	DO-L	ADV <sub>1-5</sub> -L	*XP
[a] [IP [NP SU] [I' V [VP [NP IO] [NP DO]]]]						I1	2	3		5!
[b] $\rightarrow$ [IP [NP SU] [I' I <sub>i</sub> V IO] [VP [NP DO]]]						I1	2	3		4

(13) Two objects, no shift.

Han visade Maria den.  
 he showed Maria it

INPUT: subject dir. obj. [+pro] ind. obj. [-pro] simple tense	TOP-L	Head-L	X <sup>0</sup> -L	Phr-Spine-R	SU-L	PRED-L	IO-L	DO-L	ADV <sub>1-5</sub> -L	*XP
[a] $\rightarrow$ [IP [NP SU] [I' V [VP [NP IO] [NP DO]]]]						I1	2	3		5
[b] [IP [NP SU] [I' I <sub>i</sub> V DO] [VP [NP IO]]]						I1	3!	2		4

- (14) Two objects, topicalization of DO.

Den visar jag henne (helst).  
 it show I her (rather)

INPUT: subject dir. obj. [+pro] topic ind. obj. [-pro] simple tense	TOP-L	Head-L	X <sup>0</sup> -L	Phr-Spine-R	SU-L	PRED-L	IO-L	DO-L	ADV <sub>1-5</sub> -L	*XP
[a] [IP [NP SU] [I' V [VP [NP IO] [NP DO]]]]	4!					I1	2	3		5
[b] [IP [NP SU] [I' [I V DO] [VP [NP IO]]]]	3!					I1	3	2		4
[c] $\Rightarrow$ [CP [NP DO] [C' V [IP [NP SU] [VP [NP IO]]]]]						C1	3			6

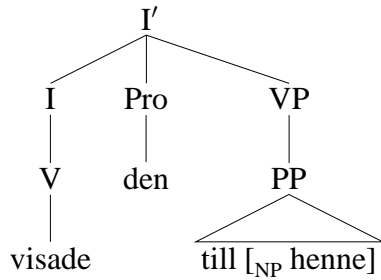
## 2 Motivating Object Shift

There is no positive property that characterizes pronouns which shift, because expletive pronouns shift (obligatorily):

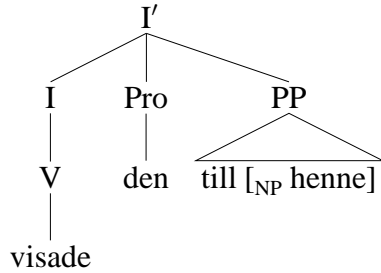
- (15) Han tar (det) egentligen (??det) aldrig (??det) lugnt.  
 he takes (it) actually (??it) never (??it) easy

There seems to be structural dispreference against a pronoun within VP (cf. the shift of adverbial Pros in (21)–(22)). Börjars et al. (2003) and Engdahl et al. (2004) suggest that there is no VP when there is no non-finite verb.

(16) a.



b.



In Danish and Norwegian, where Object Shift is obligatory if it is possible (by Holmberg's Generalization), the IO-L and DO-L constraints outrank all the ADV-L constraints.

(17) Constraints on verb positioning:

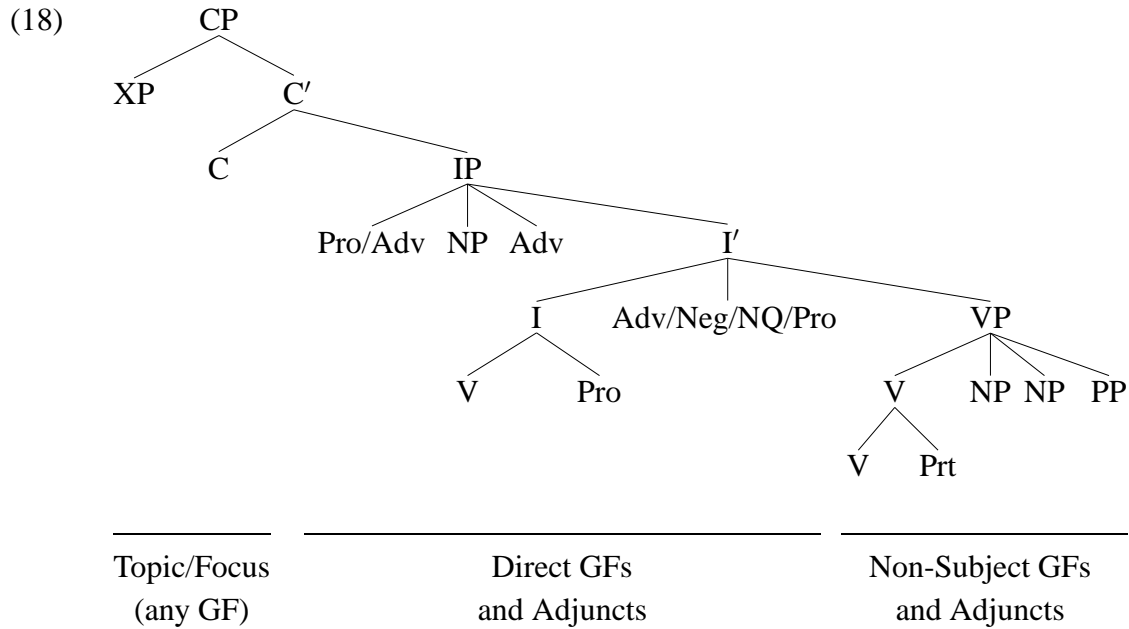
- a. OB-HD(CP), OB-HD(IP), OB-HD(VP) (Grimshaw (1997))
- b. \*C, \*I, \*V

For example, OB-HD(IP) is higher-ranked in Icelandic than in Mainland Scandinavian, accounting for the fact that the verb precedes sentence adverbials etc. even in embedded clauses in Icelandic (and some infinitival clauses). A high-ranking OB-HD(VP) constraint would force a V to be in VP if there were a pronominal object in VP, which would conflict with a requirement such as V2 which requires the V to be higher in the structure. Hence a structure with a better constraint profile would be one that lacked a VP; hence, Object Shift.

With the exception of the V2 effect, English clausal syntax is quite similar to that of Swedish, yet English does not allow Object Shift. What is the source of this difference? Perhaps surprisingly, it is not the ranking of the alignment constraints given above. Rather, it is the fact that Swedish



allows hierarchical options not allowed in English: specifically, Swedish allows object functions to be generated in the IP domain, while English does not.



Only direct functions are licensed in the medial domain, prepositional objects (which would be OBL OBJ in LFG) cannot appear there: consequently, prepositional objects cannot shift (see (19)) nor can they be expressed as medial negative quantifiers (20)c). The initial position is much less constrained:

- (19) a. Jag tror inte på det.  
I believe not in it
- b. \*Jag tror det inte på.  
I believe it not in
- c. Det tror jag inte på.  
it believe I not in

- (20) a. Jon har berättat inte om några romaner.  
John has told not about any novels

- b. \*Jon har berättat om inga romaner.  
John has told about no novels
- c. \*Jon har inga romaner berättat om.  
John has no novels told about
- d. Inga romaner har Jon berättat om.  
No novels has John told about

So, why does English not have Object Shift?—This is because it does not have the Pro positions in (20); in turn, this is a consequence of the larger generalization that only subjects (and possibly some adjuncts) can be licensed in the IP domain, in English.

Other non-object pronominals also shift:

- (21) a. Peter sov (der) alligevel ikke (\*der). Dan.  
Peter slept (there) after.all not (\*there)  
'After all Peter did not sleep there.'
- b. Peter har (\*der) alligevel ikke sovet (der). Dan.  
Peter has (\*there) after.all not slept (there)
- (22) a. Han är här kanske inte.  
he is here maybe not  
'Maybe he is not here.'
- b. De bor där inte längre.  
they live there not longer  
'They don't live there any longer.'
- (23) a. ?\*Han visslade där inte.  
he whistled there not
- b. De upptäcktes (\*där) inte (där).  
They were.discovered (\*there) not (there)

As noted by Haider et al. (1995, 21), the examples in (21)–(22) are problematic for case-related movement approaches to Object Shift, for such adverbs do not enter into a case relationship with any head in the clause (unlike objects).

(24) Holmberg's Generalization as Constraint Ranking:

... PRED-L  $\gg$  IO-L  $\gg$  DO-L  $\gg$  ADV-L



“Holmberg's Generalization”

## Appendix

Thráinsson (1984) introduced the idea of “VP-Disintegration”, where a VP node is pruned away if its head V has moved to INFL.

- (25) a. Íslendingar munu oft [VP sýna Annie forsetann].  
Icelanders will frequently show Annie the.president
- b. \*Íslendingar munu [VP sýna oft Annie forsetann].  
Icelanders will show frequently Annie the.president
- c. ?\*Íslendingar munu [VP sýna Annie oft forsetann].  
Icelanders will show Annie frequently the.president
- d. Íslendingar munu [VP sýna Annie forsetann] oft.  
Icelanders will show Annie the.president frequently

Here, we see that the adverb can only precede or follow the entire VP. However, if the main verb itself is in second position, all apparently VP-internal adverb positions become available, as in (26)b–d. (26)a is ungrammatical, as the adverb placement violates the V2 structural constraint, pushing the verb into third position.

- (26) a. \*Íslendingar oft sýna Annie forsetann.  
Icelanders frequently show Annie the.president
- b. Íslendingar sýna oft Annie forsetann.  
Icelanders show frequently Annie the.president
- c. Íslendingar sýna Annie oft forsetann.  
Icelanders show Annie frequently the.president
- d. Íslendingar sýna Annie forsetann oft.  
Icelanders show Annie the.president frequently

To account for such examples, a VP-pruning rule is proposed in Thráinsson (1984) and Thráinsson (1986), when the head of VP has moved to INFL. This effectively liberates the non-head constituents of the original VP up to the higher level, where they can mingle with adverbial elements.

The idea that Object Shift is correlated with the absence of VP is explicitly present in Platzack (1986), building on this “VP-Disintegration” analysis. His idea is that when the V head of VP moves up to INFL, the VP node is pruned and the structure becomes flat; Object Shift is then just the result of a reordering rule applying among sister elements.

## References

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