

Hierarchical and Linear Constraints on Structure

Peter Sells

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(1) a. Embedded Clause

att han inte har köpt boken
 that he not has bought the.book
 ‘that he has not bought the book’

Swe.

b. Main Clause, V2, Subject-Initial

Han har inte köpt boken.
 he has not bought the.book

c. Main Clause, V2, Non-Subject-Initial

Boken har han inte köpt.
 the.book has he not bought

How much of the syntax of these clauses is about linear order (linearly-stated order)?

How much of the syntax of these clauses is about hierarchical structure?

The initial field in main clauses (in (2)a) is called the ‘Fundamental’ or ‘Front’ field; the initial field or position in embedded clauses (in (2)b) is here as ‘Complementizer’, after Platzack (1985).

(2) Diderichsen’s ‘Field’ View

Fund. F	Nexus v n a	Content V N A	
han	har inte	köpt boken	= (1)b
boken	har han inte	köpt	= (1)c

Comp. F	Nexus n a v	Content V N A	
att	han inte har	köpt boken	= (1)a

Each clause is divided into three major fields, with positions within some of them, roughly corresponding to verbal, nominal and adverbial elements. In embedded clauses, the subject precedes sentence-medial adverbs, such as negation, which precede the verb(s). Hence the order within the Nexus field is n-a-v; if there is only one (finite) verb in the clause, it is taken to be in the v position. Following this is the Content field, where main verbs appear in the presence of an auxiliary, as in the example given, followed by complements and other adjuncts. So the order here is V-N-A, a canonical 'VO'-type pattern.

Analyses which take the Field organization to be fundamental to the explanation of syntax (especially word order) include relatively recent HPSG analyses (e.g., Kathol (2000)), which assign categories in syntax to zones and which then order zones.

'Linearization' in HPSG.

- (3) Part of linearization HPSG analysis:
- a. Assume that in main clauses the First Field is called Zone 1;
the finite verb is in Zone 2;
the subject and sentence adverbs in Zone 3;
the non-finite verb in Zone 4.
 - b. Finite verbs have the property Zone:2 or Zone:4
 - c. In main clauses, Zone 2 must be instantiated (and only once).
 - d. —→ One finite verb in a special position in main clauses.

Kathol-style analysis for interrogatives:

- (4) a. Har Sara varit här? Swe.
has Sara been here
'Has Sara been here?'
- b. Måne Sara har varit här?
Q Sara has been here
'Has Sara been here?'

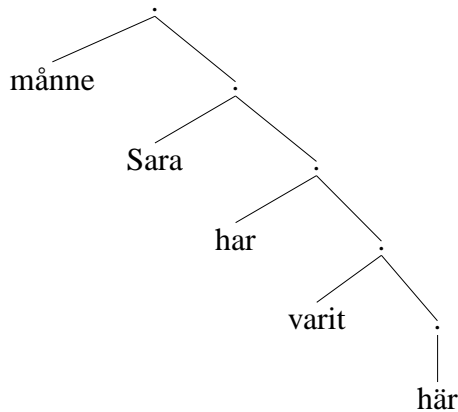
Cf. Danish *mon*.

- (5) a. Polar Interrogative \Rightarrow Zone 1 is empty.
- b. Zone 2 is instantiated exactly once.
- c. All finite verbs are Zone:2 or Zone:4
- d. *månne* is Zone:2 (but not Zone:4)

(6) *månne* | *Sara* | *har* | *varit* | *här*

A different approach: following Kayne (1995), the assumption that linear precedence is a consequence of asymmetric c-command.

(7)

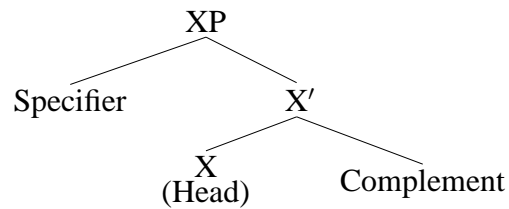


A middle-ground view: some hierarchical structure, with designated positions arising via X'-theory (Specifier, Head), but with flatter zones upon linear order is directly stated.

I proposed in Sells (2001) that there are two domains over which ordering statements are defined:

- (8) Domains for ordering constraints:
 - a. A *local* phrase structure sub-tree (i.e., among sisters).
 - b. A clause (e.g., subject precedes object).

(9) X' theory



The structures I use will be built from the projections of CP, IP and VP only.

(10) Overview of lectures:

- a. illustrate the ideas of the base-generated approach (in LFG in Sells (2001))
- b. the motivation for this kind of approach
- c. more details of the analysis
- d. introducing competing constraints → OT

Non-transformational theories of syntax necessarily assume a characterization of clausal structure which is abstract with respect to surface phrase structure.

In fact, any theory which appeals to the thematic hierarchy:

(11) Agent > Experiencer > Recipient > Goal > Theme/Patient > Location

already has this property.

LFG describes clauses in terms of phrase structures paired with clause-level representations of grammatical functions.

A verb selects for its arguments as grammatical functions, e.g., < SUBJ, OBJ >. The verb itself does not care where these functions are expressed in the phrase structure.

Herslund (1986):

- (12) a. Han sendte en besked til hovedkvarteret. (Theme-Goal)
- b. Han sendte hovedkvarteret en besked. (Recipient-Theme)

- (13) a. Han sendte blomster til begravelsen. (Theme-Goal)
 b. *Han sendte begravelsen blomster. (Recipient-Theme)

A sub-part of the theory relates thematic or semantic properties to grammatical functions, e.g.:

- (14) Examples of linking
- a. Agent Recipient Theme
 | | |
 SUBJ IOBJ DOBJ
- b. Agent Goal Theme
 | | |
 SUBJ OBL DOBJ

- (15) a. SUBJ, IOBJ and DOBJ are expressed by NPs.
 b. OBLs are expressed by PPs.

- (16) In VP, NP precedes PP (or, I/D-OBJ precedes OBL).

E.g., ‘Object’ is defined in Chomsky (1965) as the NP immediately dominated by VP; we might also think of it as the NP immediate sister of V.

But this characterization is not surface-true:

- (17) a. Hvem viste du _ bogen?
 b. Han købte den ikke.

Here the verbs have objects but the objects are not sister to V in VP.

Transformational view: they were once!

Non-Transformational view: these relationships are characterized independently of phrase-structure configurations, though languages may exhibit strong (sub-)regularities of the mapping, and may, e.g., have a clear ‘subject position’. Similarly, well-formedness conditions (e.g., a predicate must combine with all its arguments) are not stated on phrase-structure representations, not subcategorization frames in the sense of Chomsky (1965).

(18) Passive

a. Agent Recipient Theme
 | | |
 SUBJ IOBJ DOBJ

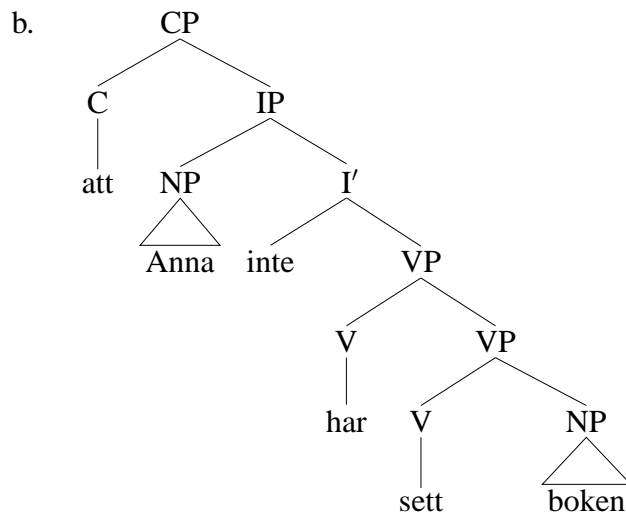
b. Agent Recipient Theme
 | | |
 ∅ SUBJ DOBJ

(19) a. De overrakte ham skødet.

b. Han blev overrakt skødet.

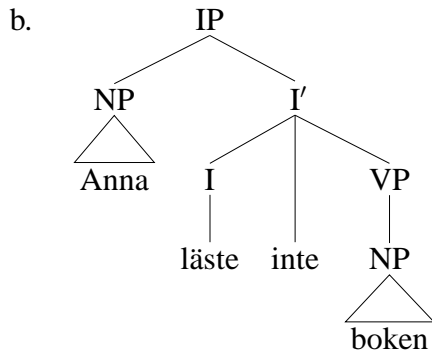
What is base-generated looks like a tree with only the final positions of moved elements filled.

(20) a. att Anna inte har sett boken
 that Anna not has seen the.book

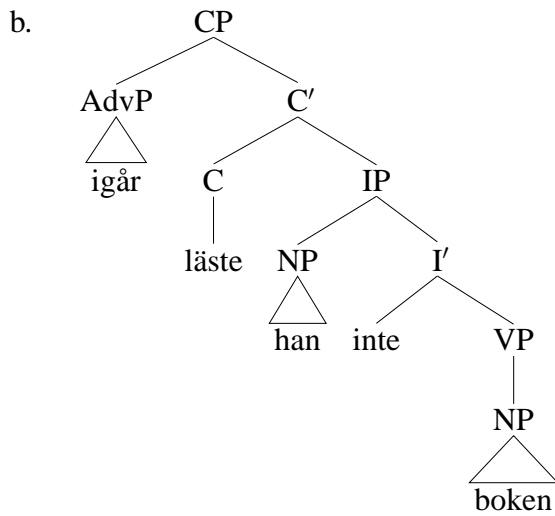


(Looking ahead, IP has no head as no verb occupies that position.)

(21) a. Anna läste inte boken.
 Anna read not the.book

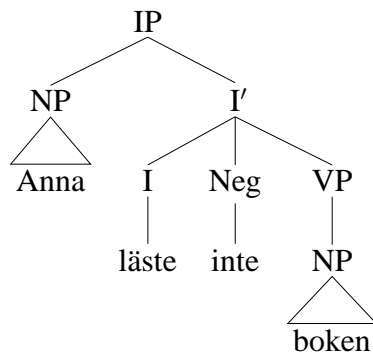


(22) a. Igår läste han inte boken.
 yesterday read he not the.book
 'He did not read the book yesterday.'

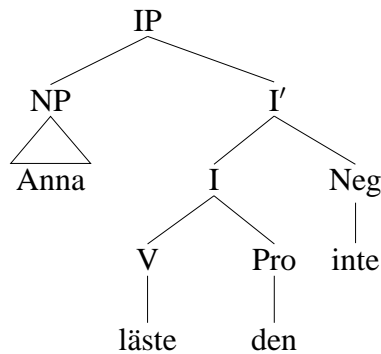


(Looking ahead, IP and VP have no heads as no verb occupies those positions.)

(23) a.



b.

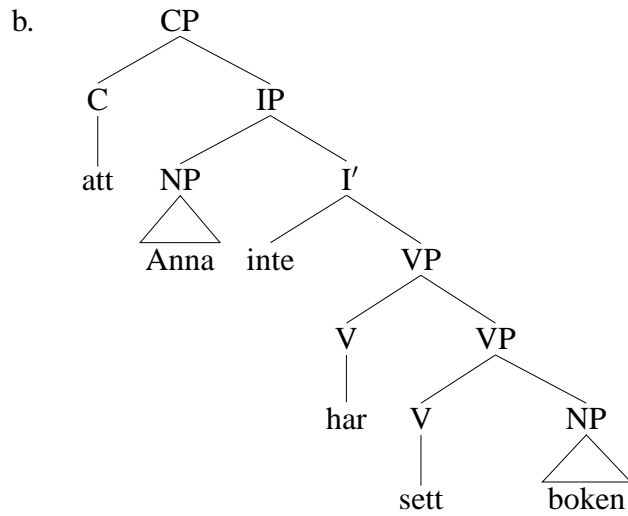


What does X'-theory bring?

- (24) a. Single designated positions are Specifiers if phrasal, Heads if syntactic words (X^0)
- b. Syntactic words may adjoin to other words, giving complex X^0 s (and phrases may adjoin to other phrases (YP adjunction to XP))
- c. Object shift in MSc. is restricted to pronouns as these can be instantiated as X^0 elements which target the I^0 head position.
- d. The object pronouns do not move: they have two options for position.
- e. (There are in fact other positions for pronouns, dominated by I' or by IP in Swedish.)

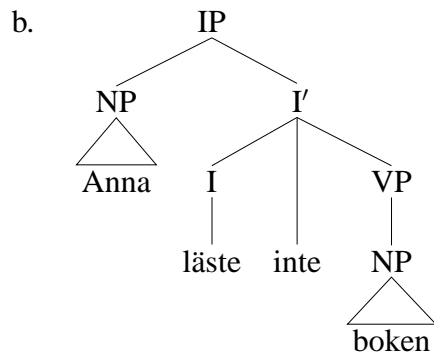
The clausal hierarchical structure puts some constraints on linear order. There are other linear constraints which also apply.

(25) a. att Anna inte har sett boken
 that Anna not has seen the.book



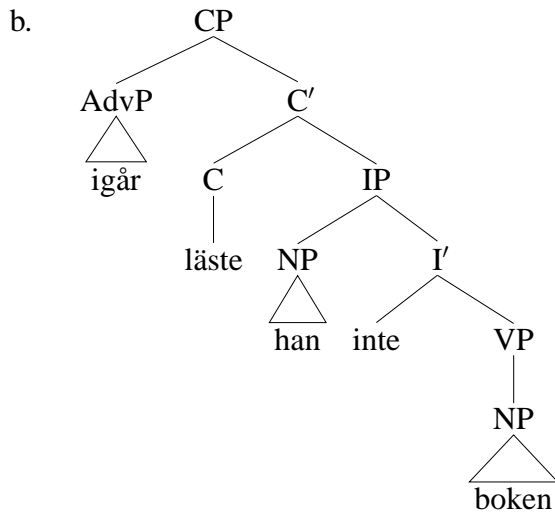
Finite verb is in V.

(26) a. Anna läste inte boken.
 Anna read not the.book



Finite verb is in I.

- (27) a. Igår läste han inte boken.
 yesterday read he not the.book
 'He (did not) read the book yesterday.'



Finite verb is in C.

Imagine that all the information flows up through the CP–IP–VP projection of the clause. Then this is a clause which is finite and which has a subject and object for its verb. So are the previous examples.

Holmberg's Generalization (Holmberg (1986),(1999)): the object never shifts past the (last) verb.

- (28) a. Han visade den inte till henne.
 b. Han har inte visat den till henne.
 c. *Han har den inte visat till henne.

- (29) a. *Peter viste jo hende den. (Vikner (1989))
b. *Peter viste hende jo den.
c. Peter viste hende den jo.
d. *Peter viste jo den hende.
e. *Peter viste den jo hende.
f. *Peter viste den hende jo.

- (30) Derivation of the c example:
a. Peter viste jo hende den.
b. Peter viste den₁ jo hende t₁.
c. Peter viste hende₂ den₁ jo t₂ t₁.

But movement 1 must be blocked, in order to prevent (29)e (Müller (2001)).

Holmberg's Generalization restated: The relative order of VP-internal elements is preserved when these elements appear outside of VP.

For the facts above, unless [*hende den*] moves as a unit (Vikner (1989)), HG requires a REPRESENTATIONAL analysis, as just stated. Most current approaches to OS are representational (see *Theoretical Linguistics* 31.1-2, 2005; especially the analysis of Fox and Pesetsky (2005)).

Why would movement move things around and put them back in the same order? Order preservation can be added to a movement theory (as many have done). But it follows as a consequence from a non-transformational theory: structures are built and they obey whatever constraints on order the language imposes. These are the clues to the LINEAR conditions on structure.

The interaction of hierarchical and linear conditions. Negative quantifier (NQ) must be external to VP:

- (31) a. Hon har inte sett någonting.
she has not seen anything
- b. *Hon har sett ingenting.
she has seen nothing
- c. Hon har ingenting sett.
she has nothing seen
- d. Ingenting har hon sett.
nothing has she seen

The medial position is restricted to object NQs.

- (32) a. Jag lånade dig inga pengar.
I lent you no money
(*dig* can shift to be outside VP, so *inga pengar* can be VP-external)
- b. *Jag lånade Sven inga pengar.
I lent Sven no money
(*Sven* must be in VP, so *inga pengar* must be VP-internal)
- c. *Jag lånade inga pengar Sven.
I lent no money Sven
(DO cannot precede IO.)

Why we need more than zones (we need ordering across zones):

- (33) a. NQ: Zone 1 or 3. (Cf. Borsley (2005))
- b. Non-pronominal Object: Zone 5.

But, DO cannot precede IO.

More on representations: an NQ which is the object of a preposition can be in initial but not medial position.

- (34) 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

Only true object NQs can be in the medial position; any phrase can be topicalized. The account of (34)d cannot involve movement from (34)b as (34)c is ungrammatical (cf. Kayne (1998)).

Linear interactions of constituents, may even require extra processing-based accounts on top. Data from Eide (2002):

- (35) a. Dermed kan medisinen ikke virke.
Ambiguous: $\neg \diamond$ or $\diamond \neg$ Nor.
- b. Dermed kan ikke medisinen virke.
Unambiguous: $\neg \diamond$

Eide argues against moving the subject over the adverb as both pre- and post-subject adverb positions can be filled:

- (36) a. Dermed kan ikke medisinen ikke virke.
Unambiguous: $\neg \diamond \neg$
- b. Dermed kan medisinen ikke ikke virke.
Unambiguous: $\neg \diamond \neg$

What happened to $\neg \neg \diamond$? ('It is not that it is not possible that the medicine to work.')

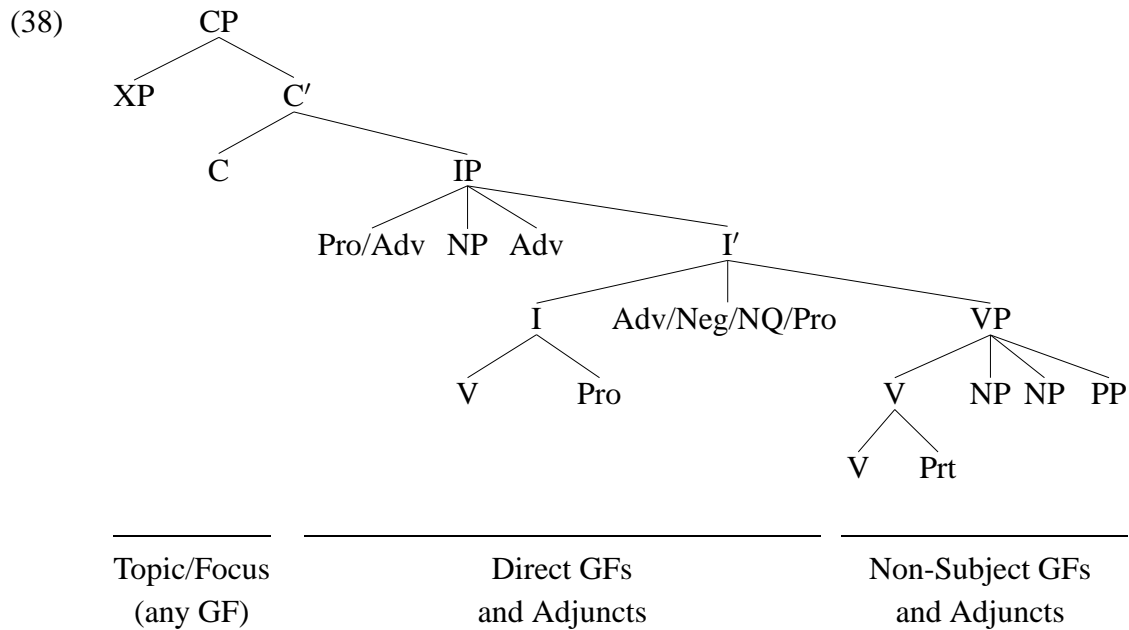
Order preservation follows as a consequence from a non-transformational theory: structures are built and they obey whatever constraints on order the language imposes. These are the clues to the LINEAR conditions on structure.

But order preservation is violated by any element in the initial position of a V2 clause.

- (37) Den visar jag henne helst.
I would rather show her IT.

So how can the representational theory be correct? We introduce ranked constraints in Optimality Theory (OT), constraints which adjudicate over representations.

What follows from a base-generated account is the order preservation property, not absolutely, but as The Emergence of the Unmarked (Prince and Smolensky (1993)).



Cf. Börjars et al. (2003), Andréasson (2004).

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