# AG 9
# Linearisierung

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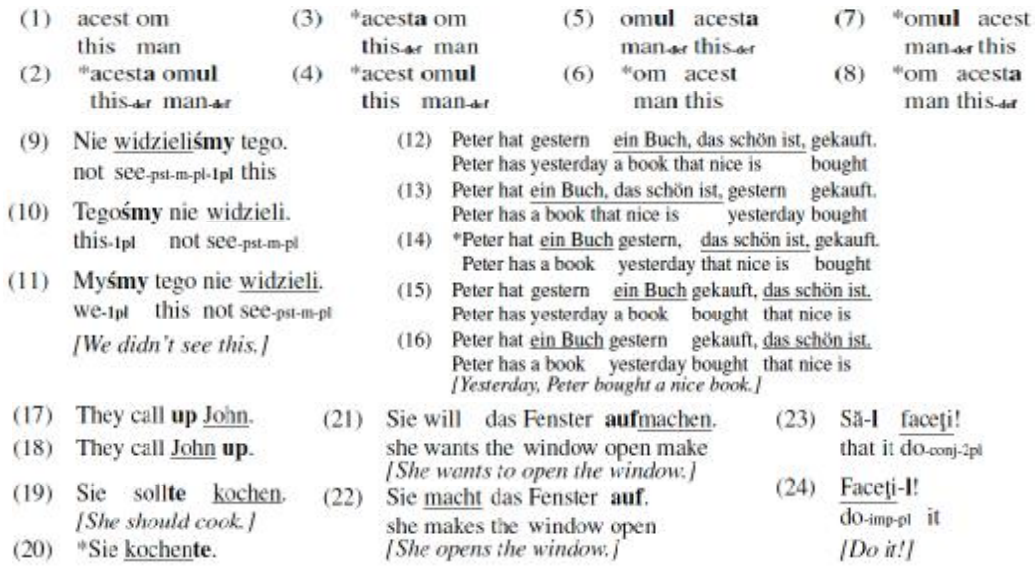
**Linearization in Natural Language Generation:**
**Linguistic and implementation issues**

24.02.2010, 14.30–15.00 Uhr, Raum 1.406

Both linguistic theories and Natural Language Generation (NLG) face similar linearization problems, in addition, NLG has to cope with practical issues of computability. The first question concerns the "quality" of linearization items: are these inflected words or lemmata? This amounts to a temporal ordering between syntax and inflectional morphology. While different models are conceptually possible - syntax comes **before** morphology [Cho95]; syntax comes **after** morphology [Bre01], [PS94]; syntax and morphology are **synchronous** [Cro01], **parallel** [Bor88] or **alternating** processes; or even that morphology is **distributed** among syntax, semantics and phonology [HM93]-, only those with a clear temporal ordering have been implemented (e.g., LFG or HPSG). The Romanian *this*-NP shows different marking patterns depending on the relative position of the demonstrative w.r.t. the noun. To obtain all grammatical variants (ex. 1 and 5), both morpho-syntactic specifications and relative positions are required. This fact speaks for linearization before inflectional morphology. HPSG- or LFG-based NLG systems might not be able to generate all grammatical variants of a Romanian *this*-NP without explicit coding of linearization-relevant information in modules that are not supposed to handle it. Couched in a cross-linguistically motivated, dependency-based linearization model [Ger07], it will be shown that a modular constraint-based processing of the Romanian *this*-NP is possible. The second question concerns the "size" of linearization items: are these as small as morphemes or as big as lexemes? For this purpose, a linearization test is proposed: assuming two items $\alpha$ and $\beta$ at morpho-syntactic level in a specific language, if the language allows for both $\alpha \prec \beta$ and $\beta \prec \alpha$ then these items are linearization primitives. Applied to Polish person-number markers in past tense (ex. 9-11), weak pronouns in Romanian (ex. 23-24), separable particle verbs in German (ex. 21-22), or phrasal verbs in English (ex. 17-18), the test classifies them as input items for linearization. This is not the case with a genuine suffix (ex. 19-20). The third question concerns the "complexity" of linearization units: are these as complex as a phrase, less or perhaps more complex? Considering the so-called *discontinuous constituents* as well as the *Topological Field Models* for Germanic languages, a permutation test for forming complex units is proposed. In terms of Immediate Dominance/Linear Precedence (ID/LP), the linearization task can be formulated as follows: given an ID structure - a dependency tree without explicit linearization information -, find all corresponding LP variants - all grammatical output sequences. Using only horizontal and vertical rules would not allow for a straightforward, flexible linearization of, say, extraposed relative clauses in German (ex. 15 and 16). To this end, a further rule type is proposed: diagonal rules, rules that control the linearization between nodes that relate neither as mother-daughter nor as siblings. Developing flexible NLG systems requires phenomena to be reconsidered

and theoretical models to be consulted. However, the plausibility of a model and its implementability in an NLG system have to be weighed up against each other.

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**Linearization in relational network linguistics**

24.02.2010, 15.00–15.30 Uhr, Raum 1.406

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The contradiction between hierarchical syntactic structure and linear phonological structure has been recognized as a problem in minimalist thinking since the 1990s. Neurocognitive stratificational theory offers a solution to the problem. The hierarchical cognitive store <=> linear phonetics correlation has been recognized in print since the 1970s (Dell & Reich 1977, Sullivan 1978, 1980) and pure relational network (RN) solutions to various problems are available in print. There is neurological evidence for the hierarchical cognitive store and instrumental evidence for linearity in the acoustic stream. Conversely, there is no evidence against either fact, though there is abundant evidence that generative theory in any of its incarnations has severe difficulties in attempting to "reconcile the hypothesis with ... strict ordering requirements" or can account for the fact "that coordination operates on linear strings." The present study deals with a problem of anataxis in Russian,

where two linear orders appear. Both are grammatical. The meanings overlap to a great extent, but there is a semantic difference. The description shows how a pure relational network takes a simultaneous semantic input of **ruble**, **5**, and **PROXIMATE** and produces a syntactic output of *rublej pjat'* and how a simultaneous input of **ruble** and **5** produces syntactic output of *pjat' rublej* from a stratified system that has both a generalized sememic structure and a generalized syntactic structure for Russian number phrases. This shows that a RN description not only provides linear order in the general case but can provide alternate linear orders. It can just as well account for more complex examples of linearization, e.g. active-passive combined with raising and more (cf. Sullivan 1978). The crux is in the interstratal relations between generalized structures. Though only a first step, the present study also indicates that linearization is a piecemeal process, occurring over 5 strata in Russian.

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**Reprojection and exhaustive constant partial ordering**

24.02.2010, 15.30–16.00 Uhr, Raum 1.406

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*1. Background* Gazdar et. al. (1985) pursue an approach to syntax in which the standard idea that rules of structure-building include linearization information is abandoned: Context-free phrase structure rules that encode both dominance and precedence are replaced with immediate dominance (ID) rules that encode only dominance, and the linearization part is taken care of by a (relatively small) set of linear precedence (LP) statements that can be assumed to restrict the outputs of ID rules. This move to an ID/LP format presupposes that natural languages exhibit the property of *exhaustive constant partial ordering* (ECPO). Basically, a language has the ECPO property if, for all categories X and Y, if there is an LP statement X < Y, then X will have to precede Y in *all* contexts in which both X and Y show up on the right-hand side of an ID rule. As noted by Gazdar et. al. (1985), it is by no means obvious that all languages must adhere to the ECPO property, and it would be "interesting and surprising if ECPO turned out to be a linguistic universal" (p. 49).

*2. Exhaustive Constant Partial Ordering and the Minimalist Program* The separation of structure-building and linearization is also a basic tenet of the minimalist program (Chomsky 2001, 2005, 2008). For concreteness, we can assume that Merge yields unordered structures that are then linearized – either solely via extremely general LP statements like *head* < *comp* or *comp* < *head*, or by more fine-grained LP statements that add category information (perhaps underspecified, as in [+V] covering adjectives and verbs, vs. [V], which captures only verbs). (This presupposes, contra Kayne 1994, that there is indeed a general option of having variation in the linearization of head and complement, and possibly also of specifier and head; see Richards 2004, Abels & Neeleman 2006, 2009 for recent arguments to this effect.) The question arises whether ECPO is also an issue with current

minimalist grammars. At first sight, the answer would seem to have to be no, for a very simple reason: If Merge invariably leads to binary branching structures, configurations that violate ECPO cannot arise in the first place.

*3. Reprojection* Closer inspection reveals that the issue of ECPO may nevertheless become relevant in the minimalist program if head movement can take place by *reprojection*: A head H moves out of a phrase ZP and remerges with ZP, projecting its category label in the derived position. The problem arises if movement is *formally exactly the same operation* as basic structure building (see Chomsky 2007, 2008: internal vs. external Merge): H may now follow a ZP sister in the base but precede (another) ZP sister after movement. I argue that a principled solution to the dilemma posed by reprojection is available if LP statements have access to more features than just (possibly underspecified) category labels. Assuming all (internal and external) Merge operations to be driven by designated structure-building features that are discharged by the operation (see Heck & Müller 2007, Müller 2010, and references cited there), the feature make-up of V is different in the base position and in the derived position, and this difference can be exploited by LP statements, thereby resolving the contradiction. (Also see Heck 2010 on a similar approach to some apparent violations of a general ban on direct recursion.) Interestingly, it turns out that permitting LP statements to have access to non-categorial features of categories would also suffice to circumvent possible counter-evidence to ECPO in the original approach in Gazdar et. al. (1985).

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**The linearization of multidominance graphs**

24.02.2010, 16.30–17.00 Uhr, Raum 1.406

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Syntactic structures are the result of a sequence of Merge operations. Standardly, it is assumed that heads and phrases can be moved, which means that they can be merged again. The most straightforward way of representing this is by means of multidominance, thereby doing away with stipulations concerning copies/traces (cf. Gärtner 2002, and several others). Of course, multidominance graphs raise issues concerning the linearization of syntactic structure at the PF interface. In itself, this is not essentially different from the earlier question which copy is to be spelled out, but the required technology is slightly different. Notably, however, for LCA-based approaches to linearization (starting with Kayne 1994), the current view of Move as remerge is problematic.

Matters get worse once we realize that not only regular movement is predicted by Merge, but, in the absence of limiting stipulations, also structure sharing configurations (which can be shown to be equivalent with the concept of sideward movement). A well-known concrete example that may involve sharing is Right Node Raising, but it can be used for various othter types of sentence amalgamation. Sharing itself is brought about by merging an existing term with an external element (cf. Van Riemsdijk 2006, and others). The immediate result is a doubly-rooted configuration, which is principally unlinearizable, but the two roots can be combined in a later stage of the derivation. Therefore, the potential problem can be resolved before the linearization procedure at PF is reached.

PF, then, may encounter two different types of multidominance configurations (and combinations thereof), which, I will argue, have different linearization demands: in regular movement structures, the (linearly) first occurrence of the remerged element needs to be spelled out, but in sharing configurations the (linearly) second occurrence is overtly realized. Though some 'extended LCA' approaches to sharing have been proposed in the literature (cf. Wilder 2008, and several others), the dilemma sketched here has never been properly addressed (with the possible exception of Chen-Main 2006).

I will turn against the LCA. I will show that such approaches fail hopelessly once confronted with the full complexity of syntactic structure made possible by Merge. Issues to be addressed are (i) the difference between movement and sharing, (ii) remant movement and roll-up movement, (iii) the notion of c-command, (iv) the necessity of producing a mathematical linear order.

As an alternative, I will try to formulate the exact conditions necessary for linearizing syntactic structure from the perspective of a graph traversal procedure. Thereby, I will have to abandon the idea that syntax is dominance-only, in line with independent ideas concerning the asymmetry of Merge (cf. Zwart 2006, among others).

Time permitting, I will elaborate on the concept of multidominance and the interaction with the idea of a strict cycle. Also, I intend to show how it is possible that sharing configurations are apparently insensitive to locality constraints, as opposed to regular movement.

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**A multidominance approach to coordinated questions in Romanian**

24.02.2010, 17.00–17.30 Uhr, Raum 1.406

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I discuss two types of questions in Romanian, namely multiple questions, where all interrogatives (WHs) appear in clause initial position (1a) and coordinated questions, where *argument*s WHs appear coordinated in clause initial position (2a). I focus on coordinated questions arguing that, contrary to multiple questions, which are monoclausal, coordinated questions in Romanian are biclausal - that is, they are derived from the conjunction of two CPs. Empirical arguments in favor of a biclausal analysis for coordinated questions in Romanian come from the distribution of the question word "oare". On the assumption that "oare" can only appear once per

clause, be it in yes/no questions (3), constituent questions (4) or multiple questions (5), the grammaticality of the coordinated question in (6b), where “oare” appears twice, signals that the coordinated questions in (6)/(2) syntactically involves two questions (two CPs).

I further show that (biclausal) coordinated questions (2) and (monoclausal) multiple questions (1) have different syntactic and semantic properties. The order of WHs in a coordinated question is free (2a-b) whereas fronted WHs in Romanian multiple questions are subject to strict ordering constraints (1a-b). Moreover coordinated questions (2) allow single pair readings whereas multiple questions (1a) only allow pair list readings.

Multiple questions (1): Following Hornstein (1995), Dayal (1996), Comorowski (1997) and extending proposals in Chierchia (1993) I adopt an analysis of multiple questions in terms of skolem functions. I show that the skolem functional analysis accounts for both ordering restrictions and the lack of pair-list readings in Romanian multiple questions.

Coordinated questions (2): adopting a non-bulk sharing approach (Martina Gracanin-Youksek, (2007)), I propose the multidominance analysis in (7). The fundamental issue is how these structures are linearised and interpreted. Based on Kayne’s LCA I adopt a relaxed notion of precedence, following in essence (Wilder, (1999)): in ordering a complex node α with respect to a complex node β, only those terminals completely dominated by α are ordered with respect to terminals completely dominated by β. As for the interpretation of the structure in (7), since we have two independent questions we correctly predict the availability of single pair readings. The multidominance analysis of coordinated questions thus accounts for both their syntactic properties (lack of ordering restrictions) and their semantic properties (availability of single pair readings).

Predictions for the cross-linguistic typology of multiple questions: The proposal in (7) hinges crucially on the availability of silent arguments on the one hand (i.e the external argument of the verb *discover* in the second conjunct is a *pro*), and of WH-movement on the other. If the availability of coordinated questions with *arguments* WHs across languages is a result of the conjunction of these two parameters - the pro-drop parameter and the multiple-WH-movement parameter - then the hypothesis in (7) predicts that only WH-movement languages which are *pro*-drop should allow for coordinated questions with *arguments* WHs. This prediction is born out for Russian, Hungarian, Polish, Czech, Spanish, Portugese, Greek which are both *pro*-drop and WH-movement languages and, as predicted, allow for coordinated questions with *arguments* WHs. In contrast, we correctly predict that languages like English or French, which are not *both* WH-movement and *pro*-drop languages, do not allow for coordinated questions of the type in (2a-b).

1. a. Cine ce a cumpărat?
who what AUX bought
‘Who bought what?’

b. *Ce cine a cumpărat?
what who aux bought
‘Who bought what?’

2. a. Cine şi ce a descoperit?
who and what aux discover

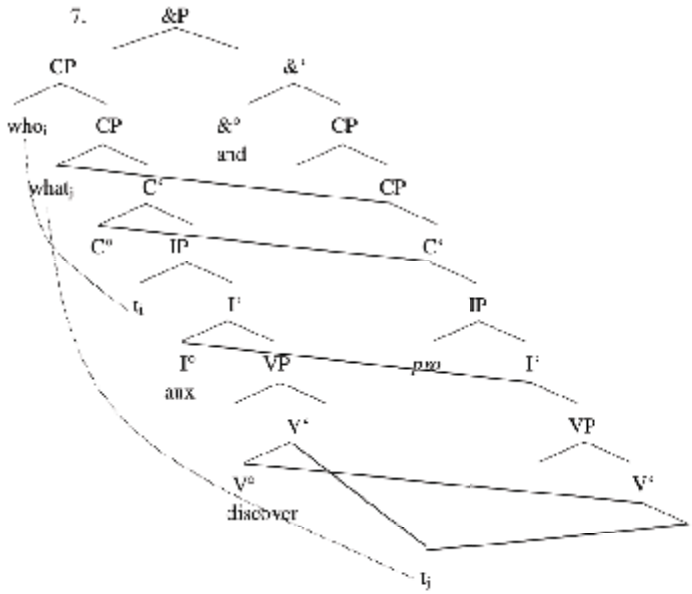
b. Ce şi cine a cumpărat?
what and who AUX discover

3. **Oare** va ploua azi?
   *oare* AUX.FUT rain today
   'Is it going to rain today?'

4. **Oare** cine bate la usa?
   *oare* who knock PREP door
   'Who's knocking at the door?

5. a. **Oare** cine ce a comandat?
      *oare* who what aux ordered
      Who ordered what?'
   b. ***Oare** cine **oare** ce a comandat?
      *oare* who *oare* what AUX ordered

6. a. **Oare** cine şi ce a comandat?
      *oare* who and what AUX ordered?
   b. **Oare** cine şi **oare** ce a comandat?
      *oare* who and *oare* what AUX ordered
      'Who ordered what?'

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**(Dynamic) antisymmetry does not need unary branching**

24.02.2010, 17.30–18.00 Uhr, Raum 1.406

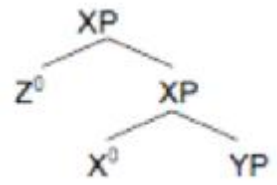
**Issues**: The general incompatibility of the LCA (Kayne, 1994) and BPS (Chomsky, 1995a) has been the subject of much discussion. Various solutions have been proffered, in particular the admission of unary branching in BPS (Guimarães, 2000, Kayne, 2009). We show that the LCA is in fact easily amenable to BPS without the use of unary branching, if we adopt the principles of Dynamic Antisymmetry (Moro, 2000). We further point out some problems that remain unsolved under the use of unary branching, but which receive an explanation under the current approach.

**Initial Merger Problem**: In the course of a derivation a head (say a $V^0$) selects a complement (say a DP), undergoes Merge, and forms a VP. $V^0$ asymmetrically c-commands all the material inside the DP, giving rise to the order <$V^0$, DP>. At the outset of a derivation, however, what undergoes Merge is two lexical items drawn from the Lexicon—two heads. Consider the merger of $X^0$ and $Y^0$ → {$X^0$, {$X^0$, $Y^0$}}. Here, $X^0$ and $Y^0$ c-command each other. In Moro's terms, they form a point of symmetry and cannot be linearized by the LCA.

**Unary Branching**: Guimarães (2000) proposes that a lexical item can undergo Self-Merge – Merge (β, β) → {γ, {β, β}} = {γ, {β}}. Guimarães argues that Self-Merge is constrained by virtue of the costliness of Merge itself (Chomsky, 1998). In particular, he argues it occurs only when it needs to – at the outset of a derivation. There is, however, at least one other situation in which merger of two lexical items gives rise to a point of symmetry, namely when a lexical item (say a clitic) is merged in the specifier of an XP. Note that this does not give rise to an immediate LCA violation, (1). $Z^0$ asymmetrically (and vacuously) c-commands $X^0$ and $X^0$ asymmetrically c-commands the material inside YP. The problem arises when another head merges with XP, (2a). Here, $W^0$ and $Z^0$ form a point of symmetric c-command. Under Guimarães' approach, $W^0$ would undergo Self-Merge, ultimately giving rise to the bizarre structure in (2b). The only possibility for unary branching to salvage this situation is to have $Z^0$ undergo Self-Merge before it merges in Spec,XP. However, it has no motivation to do this, as the structure in (2a) does not violate the LCA. In the interests of eliminating powerful look-ahead mechanisms in syntax (Collins, 1997), we cannot adopt unary branching.

**Solution**: Given the shortcomings of unary branching, let us assume instead, following Moro, that violations of the LCA act as triggers of movement. Thus, when two heads c-command each other it forces movement of on the heads to form the structure in (3). We conclude that unary branching is not only unnecessary, but also fails to solve the problems of bringing the LCA in line with BPS. Instead, we have shown that Dynamic Antisymmetry does a more satisfactory job.

(1)

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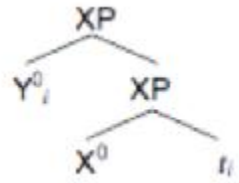
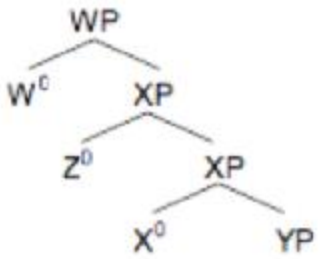



(2) a.

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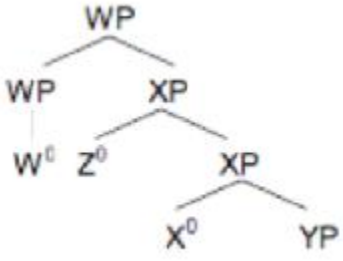

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**Graph-theoretical linearization of Bare Phrase Structure**

24.02.2010, 18.00–18.30 Uhr, Raum 1.406

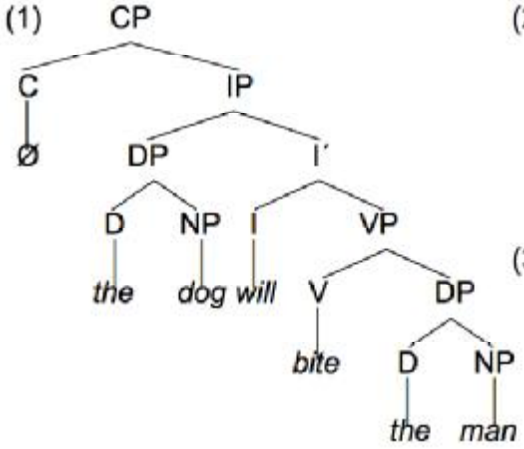
In the minimalist theory of Bare Phrase Structure (Chomsky 1995), syntactic structures are assumed to be solely hierarchical without any linear ordering among the sister nodes, and Kaynes' (1994) theory of antisymmetry is the most widely adopted for linearization of terminal words. Yet, their fundamental conflicts are not quite resolved; in Bare Phrase Structure (BPS), no non-branching projection is allowed so that a head and its complement mutually c-command each other, for which no linear relations can be determined if the complement is a simplex terminal. Furthermore, as pointed out in Guimarães (2008), Kayne's theory of antisymmetry is not as restrictive as has been believed, allowing (i) *n*-ary branching ($n > 2$); (ii) heads adjoined to non-heads; (iii) non-heads adjoined to heads; (iv) multiple specifiers; and (v) multiple adjunction to heads.

In this paper, I seek an alternative, developing Kural's (2005) graph-theoretical approach that can effectively be applied to unordered syntactic structures of BPS. I argue that graph-theoretical linearization is more promising, in that its formal aspects are well-studied, and importantly that typologically significant word-order variations can be derived from a single structure without seemingly self-motivated movements.

Applied to a syntactic tree such as in (1), Kural (2005) proposes a terminal-extraction algorithm embedded in the three traversal methods (2a–c) well-known in graph theory, the preorder, inorder, and postorder traversals, yielding the sequences (3a–c), respectively, which coincide with the three typologically dominant word orders, VSO, SVO, and SOV, respectively. Ingenious as it is, however, there are two major problems, one empirical and the other theoretical. The empirical problem is concerned with *wh*-movement. Its preorder traversal yields the sequence (4) in which the moved *wh*-phrase follows C, which does not seem to be attested in any VSO languages. The theoretical problem has to do with the directionality mentioned in the traversal algorithms (2a–c), and the assumption that the syntactic structure is an ordered tree as in (1), which cannot be adopted directly into BPS.

Given these, I propose to modify the traversal algorithm as in (10), and the head-adjunction structure in BPS as (11). The *BPS Traversal* (10) refers to child nodes/subtrees as **consanguineous** (blood-children) or **adopted** (step-children). Applying the *BPS Traversal* (10) to the structure (11) yields the categorial reductions (12a-c). By stipulating that the two phase heads, C and *v**, may bear a [postorder] feature, the embedded (C)SOV(I) order in German can also be accounted for with the inorder traversal.

(1)




(2) Tree Traversals

Starting from the root, at a given node N:

a. Preorder: Visit the node.
   i) Recursively traverse its left subtree.
b. Inorder: Visit the node.
   ii) Recursively traverse its right subtree.
c. Postorder: Visit the node.

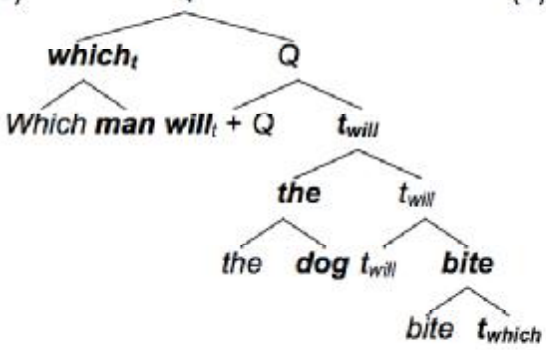
(3) a. Preorder: (C)(I)SVO
{Ø, *will*, *the*, *dog*, *bite*, *the*, *man*}

b. Inorder: (C)S(I)VO
{Ø, *the*, *dog*, *will*, *bite*, *the*, *man*}

c. Postorder: SOV(I)(C)
{*dog*, *the*, *man*, *the*, *bite*, *will*, Ø}

(4) {*will* + Q *which man the dog* ($t_{will}$) *bite* ($t_{wh}$)}

(5)




(6) ***BPS Traversal***

Starting from the root, at a given node N:

a. Preorder: *Spell-Out its label if maximal.*
   i) If a child is ***consanguineous*** but childless, traverse that child. Otherwise, traverse its ***adopted*** subtree recursively.
b. Inorder: *Spell-Out its label if maximal.*
   ii) Recursively traverse its ***consanguineous*** subtree.
c. Postorder: *Spell-Out its label if maximal.*

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**Locating linearization:**
**A view from the Final-over-Final Constraint**

25.02.2010, 9.00–9.30 Uhr, Raum 1.406

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**A. Introduction:** This paper highlights a striking empirical asymmetry which suggests, *contra* dominant views in current minimalist thinking, that linearization information must be present NS-internally, and, moreover, that the way it is encoded does in fact conform to the Strong Minimalist Thesis (SMT, Chomsky 2001 *et seq.*).

**B. The asymmetry:** Biberauer, Holmberg & Roberts (2007, 2008, 2009/BHR) propose that the **Final-over-Final Constraint** in (1) holds universally. (1) rules out ordered structures of the type in (2), which include i.a. *VO-Aux, *VO-C, *NObject-Postposition, and *PolTP-C. Additionally, Biberauer, Newton & Sheehan (2009) show that FOFC-violating structures resist borrowing despite a feasible contact situation, and Cecchetto (2009) observes that FOFC also holds in cross-modal contact situations. Finally, word-order changes seem to follow FOFC-defined pathways, with changes in the clausal domain, for example, proceeding top-down for "OV>VO"

(final-to-initial) changes and bottom-up for "VO>OV" (initial-to-final) changes. Crucially, however, FOFC does not rule out *all* disharmonic word orders: readily attested right-branching disharmony [$_{\alpha P}$ α [$_{\beta P}$ γP β ] is permitted, as is "cross-spine" disharmony (e.g. initial DP dominated by final V/vP and *vice versa*), and also disharmony involving plausibly non-projecting particles (e.g. VO-aspect/final force particles as in Sinitic).

**C. Implications:** Taken together, these facts do not seem amenable to a processing explanation (John Hawkins, p.c.; cf. also Sheehan 2008). Since the notion 'projection line' facilitates differentiation between FOFC-compliant and FOFC-violating structures, the formal constraint in (1), by contrast, does appear to have the potential to account for the empirical skewings in **B**. The question that now arises, however, is how this formal constraint can be understood. Postulating a Head Parameter/HP, even one operative at PF (cf. Richards 2004) and relativised to categories to allow for mixed orders, evidently cannot provide a principled explanation: without further stipulation, cross-categorial harmony is not predicted in preference to anything else, and, crucially in the present context, all (combinations of) disharmonic orders are likewise permitted. The same is naturally true for the simplest Kaynian reformulations of the HP in terms of (possibly differentiated) leftward movements of complements (cf. Baker 2008). An alternative formal account is thus required.

**D. The proposed account:** Within Probe-Goal theory (Chomsky 2001 *et seq.*), movement is standardly thought to be triggered by a generalised EPP-feature, a movement diacritic which we designate ^. Subject to parametric variation, ^ may be associated with a probing feature, thus delivering Agree-driven movement. It may also be associated with a lexical item's "generalised Merge" feature (EF in Chomsky 2006, 2008), giving rise to non-Agree-driven movement. Crucially, the empirical record indicates that both movements are leftwards (cf. ia. Kayne 1994, Abels & Neeleman 2006, Abels 2008). Building on Rizzi's (2008) interpretation of Agree as Internal Search (i.e. Probe searches its c-command domain) vs Select as External Search (i.e. Probe searches the active Lexical Array; cf. also Pesetsky & Torrego 2006, Cecchetto & Donati 2009,), we propose a third species of movement, whose non-existence would, we argue, have to be stipulated: Select-driven movement. Like the other types, this type results in leftward movement, here specifically of the selected complement to the selector's specifier, i.e. comp-to-spec movement (cf. Holmberg 2000, Julien 2002 for earlier proposals along these lines). This mode of movement may in fact be thought of as L(inearization)-movement since it results in complements being spelled out to the left of their selectors. Assuming the correctness of Kayne's proposal that ^-lacking heads will be initial – i.e. in effect, that head-finality, but not head-initiality must be 'marked' (see **E**) – it emerges that FOFC can be understood as yet another consequence of Relativised Minimality (RM; Rizzi 1990, 2001).

Consider the FOFC-capturing formal statement in (3). In terms of (3), v cannot bear c-selection-related ^ (henceforth: ^) if V does not and, more generally, heads higher in a given extended projection cannot bear ^ unless lower heads do. C-selection-mediated head-finality, then, must start at the bottoms of trees, and L-movement can be seen to exhibit the same "no skipping" constraint observed in the more familiar domains of A, A' and head-movement. Since nominals have independent extended projections, their ^-profiles are expected to be distinct from those of the clausal spine. Particles, in turn, plausibly lack Agree-oriented probes (cf. their oft-noted systematic lack of inflection), though they may c-select; as such, they will not project (cf.

Neeleman & van de Koot 2002, *pace* Cecchetto & Donati 2009) and therefore cannot count as part of the projection line to which they are merged. Thus particles are also unable to violate (3). By viewing head-finality as the consequence of NS-internal L-movement, the empirical asymmetry in B can therefore be accounted for.

**E. Further issues:** At least three questions arise, *viz.* (a) why ^ could not instead be interpreted as a PF diacritic, (b) why ^ should signal head-finality and (c) why (3) should reference the *bottom* of the extended projection (cf. BHR 2007, 2008 for a "top-down" approach to FOFC, rejected here). (a) would entail the introduction of a special PF diacritic and leave unexplained the fact that the distribution of this diacritic respects what seems to be an NS-specific instantiation of third-factor(F3)-imposed economy (RM). In respect of (b), we argue that ^ could in principle signal either initiality or finality, UG having no inherent preference. Were ^ to signal initiality (i.e. the need for head-movement to the selector), however, the constraint barring FOFC-violating structures would have to be stated such that ^ is *obliged* to spread upwards, a state of affairs which cannot be reduced to RM or any obvious F3 effect; it would also not reference lexical/exclusively c-selecting categories in any special way. Further, an ^=initial take on ^ would still require functional categories to be initial so that the observed word orders can be generated; precisely how consistently final orders would be generated in the context of a system of this type, employing just a single linearization diacritic, is unclear. On the movement-based approach to linearization advocated here, by contrast, we are led to expect linearization properties to be signalled via just a single diacritic, which may be present or absent, rather than by distinct "final" vs "initial" diacritics, arguably the most economical state of affairs. (c) follows, we argue, from the fact that derivations proceed bottom-up, with one of the elements at the bottom of each tree necessarily bearing c-selection features, thus representing the first element relevant to c-selection-related RM. Given that children acquire lexical structure prior to functional structure, this fact clearly also has important acquisitional consequences.

**F. Conclusion:** Typological evidence suggests that linearization information must be present in NS. This does not, however, constitute an SMT violation since it would appear that the encoding of this information harnesses independently required elements (e.g. ^, which triggers leftward movement and, in specific association with c-selection features, results in head-finality) in a way that reflects F3 economy considerations (e.g. RM).

(1) *For all heads {α, β, ..} on a single projection line, if α is a head-initial phrase and β is a phrase immediately dominating α, then β must be head-initial. If α is a head-final phrase, and β is a phrase immediately dominating α, then β can be head-initial or head-final.*

(2) *[$_{\beta P}$ [$_{\alpha P}$ α γP ] β ] (still supposing α and β are on the same projection line)

(3) *If a non-lexical head $X^n$ in the extended projection E of a lexical head L has ^ associated with its c- selection feature for a lower head $X^{n-1}$, then so does $X^{n-1}$.*

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**Merge is linearly *in*sensitive, Agree is not**

25.02.2010, 9.30–10.00 Uhr, Raum 1.406

**A** The Right Roof Constraint (cf. Ross 1967) introduces a difference between leftward movement (virtually unbound, if familiar locality constraints are obeyed) and rightward movement (locally bound). In particular, following Baltin (1981) and Rochemont and Culicover (1990), I will assume that rightward movement is *phrase* bound (in a framework in which the clausal structure is composed by CP, TP and *v*P/VP). I will show that apparent cases of unbound rightward movement in OV languages are not genuine cases of rightward movement.

**B** The Final-Over-Final-Constraint (FOFC) (cf. Biberauer *et al*. 2008/2009 for extensive evidence supporting this condition) imposes a limit on how disharmonic languages can be. In particular, FOFC rules out the configuration in which an head-final phrase α immediately dominates an head-initial phrase β.

**C** I will propose that FOFC and the Right Roof Constraint are two faces of the same coin, because they both exclude the same abstract configuration which involves backward localization, either of a trace (in the case of the Right Roof Constraint) or of the selected head by a selecting head (in the case of FOFC). What is wrong with configurations violating FOFC and the Right Roof Constraint is that there is an asymmetric configuration in which the dependent link (trace in case of Right Roof Constraint and selected head in case of FOFC) linearly precedes the link it depends on (antecedent or selecting head). The parallelism between FOFC and the Right Roof Constraint can be formally captured by assuming that selection and movement both involve an occurrence of Agree and that Agree is constrained as in (1).

> (1) In a forward dependency, Agree can be cross-phrasal. In a backward dependency, Agree is phrase-bound.

I assume that the ultimate motivation of (1) is facilitating the work of the parser, since backward dependencies are harder to process than forward dependencies (cf. Fodor 1978 and much following work for this observation). In the spirit of Hawkins's (2004) Performance-Grammar-Correspondence Hypothesis, I assume that grammars can conventionalize syntactic structures in proportion to their degree of preference in performance.

**D** The directionality constraint on Agree in (1) predicts that in OV languages the selecting head should not be able to (directly) access the selected one, since this would be a case of cross-phrasal backward dependency. So, (1) predicts that rightward head-movement should be impossible (see Abels & Neeleman 2007 and Cinque 2005 for evidence that this is correct, at least in the nominal domain). (1) can also explain a well known typological observation, namely that head-final languages have an agglutinative-like morphology (cf. Julien 2002, Lehmann 1973, van Riemsdijk 1998 a.o.). In these languages, two pieces of morphological information that are expressed by two heads typically do not conflate but are independently expressed. Assuming (1), heads do not conflate in head-final languages because the higher head X selects the entire category YP that it immediately dominates, instead of entering into a backward cross-phrasal dependency with the head Y of YP.

**E** Another device languages may adopt to deal with the problem raised by backward selection is *phrasal* (as opposed to word-level) morphology. I assume that phrasal morphology surfaces when the selecting head X probes the entire category YP, rather than probing Y within YP. Clear cases of phrasal morphology in configurations that seem to violate (1) is nominalization of embedded clause as in Korean, Turkish and many other head-final languages. Also English may adopt the same strategy, though. The possessive *'s* construction in (2) seems to violate (1), since the clitic head '*s* is head-final and it backward selects the head-initial DP.

(2) [$_{PossP}$ [$_{DP}$ That [$_{NP}$ old man]]'s] car

Note that (2) is a clear case of phrasal morphology (the possessive '*s* modifies the entire phrase 'that old man', not just the noun 'man'). I will suggest that phrasal morphology is a general repair mechanism that fixes configurations potentially violating the ban on cross-phrasal backward dependencies reported in (1).

**F** In minimalist approaches, the fundamental structure building operation Merge is linearly *in*sensitive. This minimalist insight can be reconciled with the approach that I am advocating, if linearization takes place cyclically after the relevant portion of the hierarchical structure has been built, but before other syntactic operations take place. If a phrase (or a phase, or any other relevant syntactic unit) is linearized as soon as it has been completed, syntax is not necessarily blind to word order and some syntactic operations may take place after the relevant portion of the structure has been linearized. I will propose that this is what happens with the operation Agree, which links two discontinuous positions (and can trigger Internal Merge= Move). In a nutshell, Agree is linearly sensitive, Merge is not.

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**An Alemannic challenge to the Final-over-Final Constraint (FOFC)**

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**1. Intro.** Alemannic. varieties conform to the FOFC (1) in that its verb clusters (with modals) show O-V-Aux order, O-Aux-V order, Aux-O-V order, but crucially not V-O-Aux order (cf. (2). In some varieties optionality between V-Aux and Aux-V, (2)a/b is found, cf. Seiler 2004).

**2. The challenge.** There is, however, a special motion verb construction in the language that appears to violate the FOFC. Complements of motion verbs are obligatorily introduced by the element *go* in Swiss German. We take this element to be the head because a) it is obligatory, b) can appear at the beginning of the phrase including arguments of the embedded verb and c) is moved along under (VP-)topicalization (3)c. While the order in (3)a/b is in accordance with the FOFC, the construction also allows the verb final order (4)a. The motion verb construction thus shows almost the same optionality as the modals in (2), but crucially, the complement of the motion verb is head-initial (because of *go*) while that of modals is not. (4)a thus appears to violate the FOFC (go-Inf-V ≈ *V-O-Aux).

**3. The exception is only apparent.** We think that there are good reasons to believe that (4)a is only an apparent exception. Biberauer et al. (2008: 102) argue that the FOFC only holds if the phase-head (in our case, the aux/modal) and the heads in its

complement domain are non-distinct in categorial features. There is some reason to believe, however, that *go* is not (always) fully verbal: It has been shown (Lötscher 1993) that *go* originally goes back to the directional preposition *gen* 'towards'. *Go* has undergone certain changes in the meantime in that it has been partially integrated into the verbal system (in that it shows reordering options familiar from Verb Projection Raising), but at the same time it can be argued to retain traces of its prepositional origin: The fact that (4)a is grammatical can be related to the prepositional properties of *go*; this case is basically parallel to PP-complements of verbs (4)b. Crucially, while postverbal *go*-complements can include arguments of the embedded verb, cf. (3)b (and thus show complementizer-/verb-like behavior), this is impossible if the *go*-phrase appears preverbally (5). We interpret this to mean that *go* is oscillating categorially between more prepositional (3)b and more verbal (5) properties. This implies thus, that rather being an exception to the FOFC, the *go*-construction rather provides strong evidence for the role of categorial properties in restricting disharmonic word orders.

**4. Against an account in terms of "phase harmony"**. Biberauer et al. (2008), basing themselves on the LCA and thus a VO-structure, derive the effects of the FOFC from the notion "phase harmony", meaning that if a phase head H has an EPP feature, all heads in its complement domain have to have an EPP-feature, too. The various orders in the verbal complex in (2) are then the result of different combinations of EPP-features. While e.g. in (2)c only the embedded V has an EPP-feature, both verbs in (2)a have such a feature. The (simplified) structures are given in (6). These structures are, however, incompatible with well-known scope facts (den Dikken 1995): While the order in (2)a allows for both wide and narrow scope of the indefinite with respect to the modal, only narrow scope of the indefinite is possible in (2)c. QR not being an option in the language (den Dikken 1995), the ambiguity of (2)a does not follow since the object, being embedded within the lower VP, does not c-command the modal at any point in the derivation. Assuming additional movement (e.g. scrambling) of the object to a higher projection cannot be the solution since there are no freezing effects, extraction from the object is fine (even under a wide-scope reading), cf. (7)

**5. The alternative.** We will present an alternative analysis of the structures in (2) and (3) based on a mixed branching system akin to Barbiers (2000). The scope facts will be shown to follow from covert verb movement and base-generation of arguments, which also explains the absence of Freezing Effects. Additionally, we will present evidence for the role of directionality for case valuation in syntax. Finally, the Final-over-final-constraint will be re-interpreted as a constraint applying to syntactic representations at PF.

(1) * [βP [αP α γP ] β ] where αP is the complement of β and γP is the complement of α.

(2) a) dass er [[[ es Buech] läse] wett]
that he a book read wants

b) dass er [ [es Buech] [wett läse] ]
that he a book read wants

c) dass er [wett [[es Buech] läse]]
that he wants a book read

d) *dass er [[läse [es Buech]] wett]

(3) a) dass i gang [***(go)** poschte]
that I go PRT do.shopping.INF

b) dass i gang [go es Buech chauffe]
that I go PRT a book buy.INF

c) [Go poschte] gang i nöd.
PRT do.shopping.INF go I not

(4) a) dass i [go poschte] gang — b) dass i [PP uf Berlin] gang
that I PRT do.shopping.INF go — that I to Berlin go

(5) ?? dass i [go es Buech chauffe] gang
that I PRT a book buy go

(6) a) [vP1 [VP2 **DP**$_i$ [V' **V** $\_\__i$]]$_j$ v' [v $\_\__j$] ] = 'a book read wants', cf. (2)a
b) [vP1 v [VP2 **DP**$_i$ [V' **V** $\_\__i$] = 'wants a book read', cf. (2)c

(7) [Über wëër]$_i$ häsch gsäit, dass er [es Buech $\_\__i$] läse wett?
about who have said that he a book read wants

Barbiers 2000 The Right Periphery in SOV Language. *The Derivation of VO and OV*, 181–218.
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**Portmanteau constructions in code-switching**

25.02.2010, 10.30–11.00 Uhr, Raum 1.406

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In bilingual code-switching which involve various language-pairs with contrasting word orders (i.e. head-initial vs head-final), such as Korean-English (Park 1990), Japanese-English (Azuma 1993, Nishimura 1985, 1986), Tamil-English (Sankoff, Poplack and Vanniarajan 1989) and Dutch-Turkish (Backus 1996), a verb may be lexicalized from both languages with the DP argument stacked in the middle, leading to a sequence of SVOV. These so-called "portmanteau" constructions (Sankoff, Poplack and Vanniarajan 1989) have been observed for a long time, but they have never received a systematic, formal analysis in terms of current syntactic theory despite their huge relevance, especially in the aspect of linearization and phrase structure. One obvious point is that these structures violate antisymmetry (Kayne 1994, 2004, 2005). One may well discard these constructions as peripheral, but this position is refuted here and I argue that these code-switching data should be considered seriously for at least the following three reasons: Firstly, these data emerge cross-linguistically in disparate speech communities. More importantly, these portmanteau constructions are not random but constrained, for instance, the verb from VO language (e.g. English) must precede the object whereas the verb from the OV language (e.g. Japanese, Korean, Tamil) must follow it. This follows straightforwardly from the idea that head-complement is indeed associated with the language of the verb, but it seems difficult to see how VO/OV order may be set by some functional categories (albeit some complications). Last but not least, there has never been an instance of *SOVO structure, and this seems to follow the classic theta-criterion elegantly as a particular theta role cannot be "distributed" to two separate objects; in contrast, in an SVOV sequence, there is only one object which is solely associated with one theta-role. If these portmanteau constructions are not treated as some deviant or defunct structures and they are also permitted by UG, the consequence is that the antisymmetry thesis needs to be rethought. One possibility I shall explore is that UG is able to produce symmetric structures and yet

antisymmetric ones are always preferred because of some other considerations such as economy.

(1) One day my friend **bought** [two watch] ***kaciyo*** ***wasseyo***
have come (=bring)
V V

'One day my friend bought two watches.' (English-*Korean,* Park 1990: 103, (86))

(2) We **bought** [about two pounds *gurai*] ***kattekita*** *no*
about bought
V P P V

'We brought about two pounds.' (English-*Japanese*, Nihimura 1986: 139, (54))

(3) They **gave** me [a research grant] *koDutaa*
give (3-Sg-Past)
V V

'They gave me a research grant.'
(English-*Tamil*, Sankoff, Poplack and Vanniarajan 1990: 93, (58))

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**The ordering of adverbials of the same class**

25.02.2010, 11.30–12.00 Uhr, Raum 1.406

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It is known that adverbials of the same class show ordering preferences, see e.g. Steinitz (1971) for German, Ernst (2002) for English and Cinque (2004) for Italian.

This also holds for Czech, as shown for temporal adverbials by the examples below. (1) with stacked (forming a constituent) adverbials and (2) with non-stacked adverbials show that the superset adverbial, i.e. the adverbial of the larger domain, must precede the subset adverbial, i.e. the adverbial of the smaller domain. (2) shows that it does not play a role how many elements intervene between the non-stacked adverbials. That the stacked adverbials *Zítra večer* form a constituent is evidenced by the clitic *se* in (1a) because Czech clitics are second-position clitics. The same can also be shown by topicalization data because long topicalization can affect only one constituent in Czech. As for the non-stacked adverbials, I argue that they are merged independently in the structure. It is known that the CSC can be obviated if the relevant movement happens out of all conjuncts (ATB-movement). According to Lechner (2001), all traces of the ATB-moved element must occur in strictly parallel positions if the second conjunct has been affected by ellipsis. Consider (3). If the adverbials *zítra* and *večer* started as a constituent, as indicated by the trace in (3), then *zítra* would have to be ATB-moved. Given that *tlaková výše* is elided in the second conjunct, traces of the ATB-moved *zítra* should occur in strictly parallel positions in the conjuncts. The problem is that *zítra* would have to be extracted out of the constituent of the stacked adverbials in the first conjunct but there is no such constituent in the second conjunct. I will also present other arguments, based on PP islands. Besides the syntactic structure and the lexicosemantic properties of appropriate adverbials, the event structure is an important factor in the adverbial ordering. When adverbials relate to the same event, they must preserve the known relative order but when they relate to different events in the sentence, both relative orders are grammatical. This also holds for adverbials of the same class occurring in different clauses in a complex sentence.

To sum up, we are looking for something that determines the relative order of adverbials of the same class - independently of whether or not they are merged as a constituent - and has access not only to the structural relations between adverbials but also to their lexicosemantic properties. Since word order is a reflection of the syntactic structure, syntactic, i.e. c-command, relations between the adverbials should parallel their semantic, i.e. set, relations. And it must also have access to the event structure of the sentence and should be restricted to cases where the adverbials relate to the same event. Therefore, I propose the Superset Subset Principle, which works at the semantic interface:

> *Superset Subset Principle*
> *The highest segment of the adverbial of the larger domain must c-command at least one segment of the adverbial of the smaller domain if the adverbials relate to the same event.*

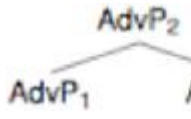
I analyze stacked adverbials as in (4), where the adverbial of the larger domain modifies the adverbial of the smaller domain (in (1a), *zítra večer* is the evening that will be tomorrow and not tomorrow that will be in the evening) and is left adjoined to it because non-clausal adverbials are adjoined to the left in Czech. Applying the Superset Subset Principle to the adverbial structure (4), $AdvP_2$ cannot be the adverbial of the larger domain; only the adverbial $AdvP_1$ can. Therefore, the adverbial of the larger domain ($AdvP_1$) precedes the adverbial of the smaller domain ($AdvP_2$) and structure (4) represents the stacked adverbials *zítra večer* in the grammatical (1a) and the opposite ordering is ruled out (1b).

(1) a. Zítra večer se tlaková výše posune k jihu.
tomorrow evening self pressure-hight$_{NOM}$ moves southwards
'The high pressure front will move southwards tomorrow evening.'
b.* Večer zítra se tlaková výše posune k jihu.
evening tomorrow self pressure-hight$_{NOM}$ moves southwards

(2) a. Zítra se (večer) tlaková výše (večer) posune (večer) k jihu.
tomorrow self evening pressure-hight$_{NOM}$ evening moves evening southwards
'Tomorrow, the high pressure front will move southwards in the evening.'
b.* Večer se (zítra) tlaková výše (zítra) posune (zítra) k jihu.
evening self tomorrow pressure-hight$_{NOM}$ tomorrow moves tomorrow southwards

(3) Zítra$_1$ se tlaková výše bude [pravděpodobně posouvat [$_{AdvP}$ t$_1$
tomorrow self pressure-hight$_{NOM}$ will probably move
večer] k jihu] a [ohrožovat místní úrodu].
evening southwards and endanger local harvest
'Tomorrow, the high pressure front will probably move southwards in the evening and endanger the local harvest.'

(4)




(larger domain) (smaller domain)

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**What bars wh and focus after V in SOV? A variable c-command solution**

25.02.2010, 12.00–12.30 Uhr, Raum 1.406

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In SOV languages (Bengali, Hindi-Urdu, Japanese, Korean, Persian), wh/focus argument (simplex or complex (CED effect), including exclamatory wh, epithet wh, indeterminate pronominal wh, contrastive topic, and exhaustive-listing nominative) cannot scramble to the right of V (anti-wh movement, anti-reconstruction). LCA explains this if the argument right-adjoins to CP; the argument, the highest asymmetrical c-commander, be pronounced first, which is not realized. However, the same order is acceptable when the argument is [-wh/-focus] (including pronominal wh). Binding, scope, and WCO facts tell us that the argument is the highest asymmetrical c-commander. LCA wrongly predicts the order should be bad as well.

I propose that variable c-command solves the problem:

(1) X c-commands Y iff:
a. X and Y are connected to some extent, and
b. X and Y are disconnected to some extent (cf. Chomsky 1995: 339).

Where (1a) is fixed: Every Z that dominates X dominates Y (X and Y share the blood line), and (1b) variable as in the following.

(2) a. X excludes Y. (X c-commands its container Y, everything that Y dominates, Y's sister, and everything that Y's sister dominates. X c-commands out of its container Y. The least disconnected version of c-command.)
b. No segment of one contains the other. (X does not c-command its container Y, but c-commands everything that Y dominates.)
c. Neither is a segment of a category. (X c-commands nothing. The most disconnected version of c-command; cf. ibid. 340)

The rightward scrambling of [+wh/+focus] argument agrees with C, which cues PF to select (2a): the least disconnected version of c-command. The CP-adjoined argument is the highest asymmetrical c-commander, and LCA demands that it be pronounced first. The rightward scrambling of [-wh/-focus] argument is agreement-free, which cues PF to select (2c): most disconnected version of c-command. The CP-adjoined argument c-commands nothing. As the last resort, LCA computes the lower original term, allowing the post-verbal term. PF is very strict about the levels of disconnection. In contrast, LF can settle the matter with (2a) or (2b). Any adjoined term can be an asymmetrical c-commander at LF, permitting the post-verbal term to be a c-commander for binding, scope, and WCO computation.

(3) When a multi-segment category is involved, c-command works in three distinct levels of disconnection (= variable c-command).
(4) PF is more sensitive to c-command than LF. Given that PF is severely influenced by physical (temporal and formal) property, it is conceptually and biologically plausible that PF is more sensitive to c-command than LF. Therefore, variable c-command is not just a technical solution to the LCA problem.
(5) The symmetrical approach is correct, which assumes both left-upward and right-upward scrambling (adjunction). The remnant phrasal movement is wrong.
(6) Asymmetrical c-command is mapped onto linearization. LCA is essentially correct.
(7) There are two types of scrambling; agreement (FF)-driven and agreement-free.
(8) In PF and LF, rightward scrambling is stricter about c-command than leftward one.
(9) Japanese is not strictly head-final.

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**It's not the end of the CED as we know it:**
**Revisiting German and Japanese subject island effects**

25.02.2010, 12.30–13.00 Uhr, Raum 1.406

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***Aim***: It has been widely assumed that both subjects and adjuncts block sub-extraction (Condition on Extraction Domains, CED: [1]). In the recent minimalist framework, unified accounts of the CED have been proposed. For example, [2,3] derive from an LCA-based linearization algorithm [4] that subjects and adjuncts are islands because they need to be 'flattened out' early for linearization, and this consequently renders their sub-constituents inaccessible for further computation. Stepanov [5], however, empirically argues against the CED, reporting that subjects are not islands in languages such as German and Japanese. If some languages lack subject island effects, any unified analysis of subject and adjunct islands must be

abandoned for those languages and thus cannot be a universal account. Using German and Japanese data from three controlled 7-point scale acceptability judgment studies, we present counter-evidence to his claim and argue that the unified accounts of the CED are still tenable.

***Experiments*:** Stepanov claims that **(A)** extraction out of subjects is possible in German/Japanese, where he claims that subjects remain in-situ, and **(B)** the apparent subject island effects in other languages are a result of 'freezing effects' of subjects raising to [Spec, TP]. We will disprove both claims.

Experiments 1 and 2 examined Stepanov's claim in (A) that subject island effects are absent in German or Japanese. Experiment 1 (n=31) employed four conditions with non-finite clauses in German, in which the presence of extraction (+/- extraction) and the position of extraction (subject vs. object) are manipulatedThe results showed a significant interaction of the two factors ($F(1,92)=146.428$, $p<0.001$), indicating that extraction out of subjects is significantly degraded in comparison to extraction out of objects. Experiment 2 (n=25) investigated Japanese, which has been reported to allow extraction out of subjects. We manipulated the same two factors as Experiment 1, and found a significant interaction of the position of extraction (subject vs. object) and the presence/absence of extraction (Sub/Obj x Scrambling interaction effect: $F(1,68)=14.141$,$p<.001$).

Experiment 3 tests whether the subject island effects in Experiment 1 could be reduced to 'freezing effects' as in Stepanov's claim **(B)**. Unlike Japanese, German allows for indefinite subjects to either raise or remain in-situ, and [6] reports that German 'was für' split is only possible out of in-situ subjects but not out of moved subjects. We compared (n=25) 'was für' split out of in-situ/moved subjects against that out of in-situ/moved objects. The results show main effects for both factors (Insitu/Moved: $F(1,74)=211.675$,$p<0.001$; Sub/Obj: $F(1,74)=199.677$,$p<0.001$) as well as a significant interaction ($F(1,74)=115.512$, $p<0.001$), indicating that **i)** extraction out of unmoved subjects/objects is generally better than extraction out of moved subjects/objects, possibly due to freezing effects, but that **ii)** in both the moved and unmoved conditions, extraction out of objects is significantly better than extraction out of subjects. These data suggest that extraction out of moved constituents leads to degradation, but that CED effects still exist independently of the freezing effects.

***Consequences***: The results of the three experiments indicate that **(A')** CED effects still hold in Japanese and German (and possibly universally), and **(B')** a ban on extraction out of subjects cannot be reduced to freezing effects. As a consequence, this suggests that no parameterization is required in terms of island constraints, and that the minimalist 'unified' accounts that attribute CED effects to linearization requirements and interface conditions [2,3] are empirically viable.

[1] Huang (1982) *Logical relations in Chinese and the theory of grammar*, Ph.D diss., MIT.
[2] Nunes and Uriagereka (2000) Cyclicity and extraction domains, *Syntax* 3: 20–43.
[3] Uriagereka (1999) Multiple spell-out. *Working minimalism*, ed. by Epstein and Hornstein, 251–282, MIT Press.
[4] Kayne (1994) *The antisymmetry of syntax*, MIT Press.
[5] Stepanov (2007) The end of CED? Minimalism and extraction domains, *Syntax* 10: 80-126.
[6] Diesing (1992) *Indefinites*, MIT Press.

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**Linearizing edges at the PF interface**

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The purpose of this talk is to shed light on the ordering of operations at PF, including linearization, copy deletion, and vocabulary insertion given a model which assumes multiple transfer, the copy theory of movement, and direct correspondence between phonological and syntactic domains.

Towards this goal, we provide a new analysis of some facts which are traditionally attributed to the ECP (e.g., Stowell 1981; cf. Bošković & Lasnik). An (2007a) suggests these data are captured by the Intonational Phrase Edge Generalization (IPEG), which states that "the edge of an Intonational phrase cannot be empty (where the edge encompasses the specifier and the head of the relevant syntactic constituent)." This explains why sentences which are unacceptable with an empty CP edge can be ameliorated by overt content, be it in SpecCP or in C, as in (1). In order to allow for the omission of C in (2b), An (2007a) needs to assume that the formation of a separate I-phrase for clausal complements of verbs (and restrictive relative clauses) is optional. The IPEG also extends to other categories: *v*P (3a,b), DP (3c,d), and AP (3e,f).

However, the justification for the IPEG is unclear and it does not appear to follow from any independent facts about the architecture of grammar. We suggest a new analysis which accounts for the above facts, and importantly, does so by referring to independently needed constructs, which we argue should be the null hypothesis given Minimalist concerns about modular architecture (cf. Idsardi and Raimy in press).

We argue that (1a) and (3b,d,f) are unacceptable because they cannot be linearized. Specifically, two consecutive syntactic objects (in these cases, Spec + $X^0$) cannot be null at the stage when linearization applies, or else the algorithm will be unable to return a linearization statement, cf. (4).

We follow Epstein et al. (1998) and Richards (2004) in assuming that mutual c-command 'overdetermines' linearization; the Precedence Resolution Principle demands that in such a configuration, one object's c-command relations over the other must be ignored (which object being subject to parametric variation). The key component to our analysis of (1)-(3) is that the algorithm (4) only succeeds in returning an ordered pair when the elements to be linearized are featurally distinct. This results in a crash when a merged pair of elements have only Edge Features (EF; Chomsky 2008), as a result of non-insertion of phonological content (which is crucially distinct from copy deletion, contra An 2007b.) Two elements with only EF are non-distinct, which will result in a crash at linearization. Assuming C does not project a specifier in declarative sentences such as (5a) [or in (2b)], such an account straightforwardly predicts the sentences in (5) to be grammatical, while such cases constitute *prima facie* exceptions to the IPEG.

We further show that the above analysis extends to account for the unacceptable sentences in (6), involving a sentential subject (6b) and a topicalized CP (6d). A similar approach accounts for the unacceptability of nominal complementation

without an overt C in (7b); following Kayne (2008), the embedded CP is within a covert PP.

(1) a. *I saw the child yesterday [$Ø_{spec}$ $Ø_C$ Mary was waiting for]
b. I saw the child yesterday [who $Ø_C$ Mary was waiting for]
c. I saw the child yesterday [$Ø_{spec}$ that Mary was waiting for]

(2) a. I believe [$_{CP}$ that [$_{IP}$ John liked linguistics]].
b. I believe [$_{CP}$ $Ø_C$ [$_{IP}$ John liked linguistics.]]

(3) a. Eat the cake John did and eat the cookie Mary did
b. *[$_{vP}$ Eat the cake] John did and [$Ø_{spec}$ $Ø_v$ the cookie] Mary did
c. John likes this book of linguistics and Mary, that book of physics.
d. *John likes this book of linguistics and Mary ~~likes~~ [$Ø_{spec}$ $Ø_D$ book of physics.
e. Eager to win the Pulitzer Prize, John is, and eager to win the Nobel Prize, Mary is.
f. *[$_{AP}$ Eager to win the Pulitzer Prize], John is, and [$Ø_{spec}$ $Ø_A$ to win the Nobel Prize, Mary is].

(4) *Linearization algorithm*
When encountering the merged {α, β}, α and β c-commanding each other, upon Spell-Out, return an ordered set <α, β> or <β, α>.

(5) a. [$_{CP}$ $Ø_C$ [$_{TP}$ Mary was waiting for the child]]
b. [$_{CP}$ Who did Mary [$_{vP}$ see [$_{VP}$ $t_v$ $t_{obj}$ ]]]

(6) a. [$_{CP}$ $Ø_C$ [$_{CP}$ That John is a genius] was believed by many people.
b. *[$_{CP}$ $Ø_C$ [$_{CP}$ $Ø_C$ John is a genius] was believed by many people.
c. [$_{CP}$ $Ø_C$ [$_{CP}$ That John is a genius], Mary believed.
d. *[$_{CP}$ $Ø_C$ [$_{CP}$ $Ø_C$ John is a genius], Mary believed.

(7) a. I distrust the claim [$_{PP}$ $Ø_P$ [$_{CP}$ that Bill left the party].
b. *I distrust the claim [$_{PP}$ $Ø_P$ [$_{CP}$ $Ø_C$ Bill left the party].

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**Post-linearization ellipsis**
**Null subjects and head copy realization**

26.02.2010, 12.00–12.30 Uhr, Raum 1.406

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In this work, I propose that the so called ellipsis transformation is an operation which takes place all the way down from the syntax to the PF component of the grammar. Strictly speaking, what we call ellipsis is, in fact, a feature-adding transformation which applies under strict formal identity and under different locality conditions depending on the component of the grammar in which it applies. I call this transformation *I*-Assignment (*I* for *Identity*). The PF result of an *I*-assigned syntactic object is blocking the Lexical Insertion Rules to apply in the domain of a morphosyntactic word (MWd) (in Embick & Noyer (2001)' terms). The definition of this process is given in (1). Note that -by the definition I propose- it follows what I will call the *Subword Deletion Corollary*, which must be understood as the impossibility of deleting part of words (cf. 2).

The focus of this paper is morphological *I*-Assignment, which affects only MWds under immediate locality or adjacency (cf. Embick & Noyer 2001). The informal definition, which is called Head Ellipsis, is given in (3). The decision about what the relevant condition is is not stipulated but it follows from the linearization process that,

by assumption, takes place at PF trough the introduction of a set of LIN operators (cf. Embick 2007). When LIN-* is introduced in the computational system, the relevant condition is adjacency. I discuss here two predictions that follow from the system of *I*-Assignment.

On one hand, it is predicted that if a MWd is converted into a SWd in the morphology then, by the *Subword Deletion Corollar*y, *I*-Assignment is left with no effect and the Lexical Insertion Rules have to apply to this new SWd independently whether it is *I*-assigned or not. I propose that this prediction is confirmed in the domain of null-subject languages and, in particular, by the clitic subjects of Northern Italian Dialects, a set of languages which, besides to have all the properties of Null Subject Languages (e.g., free inversion), have some obligatory weak clitics as subjects.
The theory makes a prediction also with respect to the interaction between *I*-Assignment and LIN*. If given two identical MWds X and Y, such X*Z*Y, where Z is also a MWd or a Phrase, then *I*-Assignment has no effect and the Lexical Insertion Rules must apply to X and Y. I argue that this case is observed in verbal reduplication in River Plate Spanish (e.g., *Vino Juan, vino* Lit: 'came John, came') a kind of verbal reduplication that requires anti-adjacency between two verbal copies (cf. **Vino, vino*). These data, which have received no attention previously, confirm then that Linearization is one of the relevant factors that accounts for when a given syntactic object can be elided or not.

(1) No Lexical Insertion Rule, *IR*, applies in the domain of $X^0$, $X^0$ a MWd, if $X^0$, or some projection of $X^0$, is specified with a [+I] feature[2]
(2) *No Subword can be subject to Non-insertion if the MWd that contains it is not I-assigned.*
(3) Given a Morphosyntactic Word (MWd) $Y^0$, assign a [+I] feature to $Y^0$ if and only if there is a node $X^0$ identical to $Y^0$ contained in a MWd adjacent or immediately local to $Y^0$.

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Embick, David (2007) Linearization and Local Dislocation: Derivational Mechanics and Interactions. *Linguistic Analysis* 33(3-4): 2-35.

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**Hierarchy, is that all there is?**
**Linearization and the puzzle of orphans**
26.02.2010, 12.30–13.00 Uhr, Raum 1.406

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A good deal of minimalist research takes the linear ordering of sentence elements to be describable in terms of (some version of) Kayne's (1994) Linear Correspondence Axiom (LCA), whereby this order is 'read off' c-command relations. On this view, a direct correspondence exists between linear ordering of sentence elements and hierarchical sentence structure. Such a view, however, faces a number of conceptual and empirical challenges, which all point to the conclusion that linear ordering does not derive from principles of the narrow syntax and is instead associated with the PF interface (e.g. Kremers 2009a; López 2009).

[2] *Morphosyntactic word:* At the input to Morphology, a node $X^0$ is (by definition) a *morphosyntactic word* (MWd) iff $X^0$ is the highest segment of an $X^0$ not contained in another $X^0$.
*Subword:* A node $X^0$ is a *subword* (SWd) if $X^0$ is a terminal node and not an MWd. (Embick & Noyer 2001: 574)

In this paper, I shall present another challenge to the idea that linear ordering derives directly from hierarchical structure. This challenge is represented by extrasentential elements (ESEs). If such elements are plausibly analysed as 'orphans' (e.g. Haegeman 2008) — that is, as expressions drawn from a lexical array distinct from that of the host sentence and independent of this sentence at every stage of a syntactic derivation, combining with it only post-syntactically — then the challenge that they represent is twofold. First, because by hypothesis no hierarchical relation exists between an ESE and any constituent of its host sentence, the ESE's linear position in a sentence cannot be accounted for in terms of the LCA. (The puzzle for the LCA here is thus akin to that posed by the phonetic realization of elements associated with distinct representational tiers; see e.g. Kremers 2009b.) Second, because ESEs are in fact linearized along with their host sentences, some process of linearization must exist to effect this result, operating in a manner and at a stage in the derivation of a string to do so — and crucially not involving the 'reading off' of linear order from hierarchical structure.

Granting an orphan status for ESEs thus leads to two conclusions: (i) that their linearization must be associated with the PF interface and not the narrow syntax; and (ii) that this process must be able to take as input elements drawn from distinct lexical arrays. However, because an orphan status for ESEs indicates a treatment of them on a par with distinct sentences, the puzzle of their linearization has a natural solution in terms of principles that govern the ordering of distinct discourse segments. As such, any prima facie interactions between ESEs and sentence constituents as regards linearization are most plausibly treated as late performance operations on already linearized sentences.

In order to develop this claim about the linearization of ESEs, I first present evidence for an orphan analysis of ESEs, focussing on hanging topics. This evidence includes that related to the syntactic behaviour of hanging topics with respect to negative polarity items (ex. 1); their failure to trigger island effects (ex. 2); their failure to trigger Principle C violations (ex. 3); and their ability to assume syntactic shapes not found among any sentence constituents, whether base-generated or moved (ex. 4). I then show that even hanging topics, though commonly assumed to occur only at the left edge of the sentence, can 'intrude' into sentences, just as various other ESEs can (ex. 5); and that ESEs can even intrude into other ESEs (ex. 6). These considerations indicate that the linear ordering of ESEs reflects a late process that operates on, and may intrude into, already linearized sentences; that applies recursively to such sentences; and that is plausibly constrained by principles of prosody and textual organization. Moreover, unless we wish to countenance two entirely distinct linearization processes, one associated with narrow syntax and one with PF, all linearization processes must be associated with PF, although crucially ordered within this system.

(1) a. * Only a 'B', John could ever get that.
    b. A 'B', John could get just that.
(2) Peter, Hans always goes to the pub before he meets him.
(3) Sirica, there was some indication that Sirica might be putting together a panel.
(4) a. Poor guy, the boss just fired him.
    b. * Poor guy, the boss just fired.
    c. The boss just fired *(the) poor guy.
    d. That sure is *(a) poor guy! He just got fired.

(5) When I was a kid, our basement was piled high with all sorts of junk. Now, this junk, my father, he was always collecting. And this same junk, my mother, she was always throwing away.
(6) Frankly — as you know, I always speak frankly — I don't give a damn.

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Kremers, J. 2009a. Recursive linearization. *The Linguistic Review* 26: 135–166.
——. 2009b. Rethinking linearisation. Paper presented to the GGS Tagung, Leipzig.
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**Head-finality in a head-initial language:**
**Linearization as a sign of derivation layering**

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This paper approaches the question of structure-to-order conversion (in a minimalist syntactic derivation) from theoretical and typological angles.

Theoretically, it is argued that derivations must be invariably layered, such that any numeration may contain elements that are the output of a previous derivation. These elements, then, have passed through the interfaces and have acquired idiosyncratic sound/meaning properties. The main hypothesis to be advanced here is that head-final order arises at this juncture between derivation layers. This allows for a simplification of the Linear Correspondence Axiom (LCA) of Kayne (1994), where linear order is a function of merge, in a way to be made precise, and head-finality finds a particular locus in the derivation.

Typologically, it is argued that head-initial order in a head-final language (such as Japanese) is typically of a syntactic nature, whereas head-finality in a head-initial language (such as English) is typically of a lexical/morphological nature. Examples are noun phrase coordination in Japanese and compounding in English. These observations suggest that structure-to-order conversion by default yields head-initial order, and that head-finality is a marked type of linearization, typically found in idiosyncratic construction types (at least in head-initial languages).

This approach to head-finality is then applied to Dutch, a head-initial language with some head-final order in the VP domain, where we predict that head-final constructions have idiosyncratic properties that we can identify as the effect of linearization at the interface between derivation layers. If substantiated, we may conclude that head-finality in Dutch (and perhaps more generally) functions as a linguistic sign of the derivational history of the element (construction) characterized by it.