

# Some Thoughts on Copy Modification and the Architecture of the Grammar

Kleanthes K. Grohmann

*University of Cyprus*

kleanthi@ucy.ac.cy

## 1. Introduction

One integral part of any minimalist approach to the **displacement phenomenon** in language is a theory of movement that involves **copies — and their deletion**. Chomsky (1993, 1995) originally suggested to distinguish two major operations in the syntax, **Merge** (concatenating lexical items and syntactic objects) and **Move** (displacing a targeted constituent).

Chomsky phrased displacement within the **Copy Theory of Movement**, according to which copies are made of items to be displaced and moved — and subsequently deleted. Holding on to the concept of the **chain**, a moved element forms a chain with its copy(s), of which all but one have to be **deleted for phonological reasons** (interpretation at PF, ultimately for reasons of linearization).

The following addresses the question of copy deletion both from the perspective of a more **current version of displacement** under minimalist conceptions and from the perspective of the **role of the interpretive interfaces** in the computation. *The upshot will be some doubt cast on the assumption that the entire movement process is a narrow-syntactic operation.*

## 2. Displacement

Displacement is an indisputable property of natural language. Whatever one's theoretical take, some linguistic expressions **show up in one place** and are at least partially **interpreted in another**.

- (1) a. John kissed Mary / the girl.
- b. Who / Which girl did John kiss \_\_\_?
- c. Who did Bill say (that) John kissed \_\_\_?

- GB: movement in terms of **Move  $\alpha$** , leaving behind trace  $t$

- (2) XP ... (...  $t$ ) ...  $t$

**Overt movement** takes place after D-structure (before S-structure), **covert movement** at LF:

- (3) a. SS: Who (*t*) bought what when?  
 b. LF: [<sub>CP</sub> when [<sub>CP</sub> what [<sub>CP</sub> who [ (*t*) bought *t t* ]]]]

• MP: **copy theory** of movement for lexical items LIs, or rather a given phrase XP,

- (4) XP ... (... XP) ... XP

where **lower copies are deleted** (possibly because less features checked; Nunes 2004)

- (5) XP ... (... ~~XP~~) ... ~~XP~~

Definition: **Move = Copy + Merge** (plus some kind of deletion rule)

Question: *Is deletion a syntactic operation Delete? If so, why does it apply?*

Answer: *Deletion applies for legibility at the interpretive interfaces (PF/LF).*

Assumption: *LF and PF can each only interpret one copy/occurrence of a given LI.*

• though not necessarily the **same**

- (6) a. LF: when what who (~~who~~) bought ~~what when~~  
 b. PF: ~~when what~~ who (~~who~~) bought what when

• possibly not even a full **constituent**

- (7) a. LF: [which ~~picture of himself~~] did John like [which picture of himself]  
 b. PF: [which picture of himself] did John like [which ~~picture of himself~~]

- (8) a. LF: [was ~~für Bücher~~] hat Peter [was für Bücher] gelesen  
 b. PF<sub>1</sub>: [was für Bücher] hat Peter [was ~~für Bücher~~] gelesen  
 c. PF<sub>2</sub>: [was ~~für Bücher~~] hat Peter [was für Bücher] gelesen  
*lit. 'What for books has Peter read?'*  
*'Which books did Peter read?'*

One of the most successful approaches to the copy theory of movement is arguably Nunes' (1995, 2004) **four-step definition**:

- (9) *Copy Theory of Movement*  
 a. Copy  
 b. Merge  
 c. Form Chain  
 d. Chain Reduction

*This seems to suggest that the entire movement process is a sequence of rules (operations) that apply in the narrow-syntactic component (NS). Is this really so?*

### 3. Copy Modification

But applying the CTM on the assumption that lower copies get deleted does **not always yield clean results**. After demonstrating the standard case, I present 4 apparent exceptions.

#### CASE 1: DELETE LOWER COPIES

① **lower copy deletion**, which applies to all chains as the result of movement (Chomsky 1993 *et seq.*), arguably for linearization (as suggested by Kayne 1994 and much research since; see especially Nunes 2004 for a recent overview in terms of the CTM in (9) above)

- (10) a. Which book has John read?  
 b. \*Has John which book read?  
 c. \*Has John read which book?

(11) *Lower Copy Deletion in English Wh-Questions* (cf. Chomsky 2000/Grohmann 2003)

[<sub>CP</sub> [which book]<sub>i</sub> has John [~~which book~~]<sub>i</sub> read [~~which book~~]<sub>i</sub> ]

#### CASE 2: DELETE HIGHER COPIES

② **pronunciation of non-top copy** in multiple *wh*-questions, where fronted forms are homophonous (e.g., Franks 1998, Bošković 2002, Bobaljik 1995, 2002, Pesetsky 1998, 2000)

- (12) a. \*Šta šta uslovljava?  
           *what what conditions*  
 b. Šta uslovljava šta?  
           *what conditions what*  
           ‘What conditions what?’  
 c. Šta neprestano šta uslovljava?  
           *what constantly what conditions*  
 d. \*Šta neprestano uslovljava šta?  
           *what constantly conditions what*  
           ‘What constantly conditions what?’

(13) *Pronunciation of Non-Top Copy in SC Multiple Wh-Questions* (cf. Nunes 2004)

[<sub>CP</sub> šta<sub>i</sub> ~~šta<sub>k</sub>~~ ... [<sub>VP</sub> ~~šta<sub>i</sub>~~ uslovljava ~~šta<sub>k</sub>~~ ] ]

Other (or different?) cases of haplology in syntax are discussed by Richards (2001) in terms of (non-) distinctness.

#### CASE 3: PRONOUNCE SEVERAL COPIES

③ ***wh*-copying**, where a full *wh*-phrase is pronounced in apparently intermediate position (cf. McDaniel 1986 and other work on a variety of languages; see especially Nunes 2004)

- (14) a. Wen glaubt Hans, wen Jakob gesehen hat?  
           *whom thinks Hans whom Jakob seen has*  
 b. \*Wen glaubt Hans, wen Jakob wen gesehen hat?  
           *whom thinks Hans whom Jakob whom seen has*

- c. Wen glaubt Hans, hat Jakob gesehen?  
*whom thinks Hans has Jakob seen*
- d. Wen glaubt Hans, daß Jakob gesehen hat?  
*whom thinks Hans that Jakob seen has*  
 ‘Who(m) does Hans think (that) Jakob saw?’

(15) *Wh-Copying in German Wh-Questions* (cf. Bošković & Nunes 2007)

[<sub>CP</sub> wen<sub>i</sub> glaubt Hans [<sub>CP</sub> wen<sub>i</sub> Jakob ~~wen<sub>i</sub>~~ gesehen hat ] ]

CASE 4: SPELL OUT LOWER COPY

④ **copy raising**, where “some constituent appears in a non-thematic position with its thematic position occupied by a pronominal copy” (Potsdam & Runner 2001:453; originally in Postal 1974, Rogers 1974)

- (16) a. It seems like this book is popular among young kids.  
 b. This book seems like it is popular among young kids.  
 c. This book seems to be popular among young kids.

(17) *Copy Raising in English* (cf. Fujii 2007)

[ **this book** [ seems [ like [ ~~this book~~ ↻ it is [ popular among young kids ] ] ] ] ]

On a par with the “Hornstein–Grohmann approach” (Hornstein 2001, Grohmann 2003 — either?), analyze “intermediate” pronominal as **Copy Spell-Out**. If so, or if not, then still:

CASE 5: SPELL OUT ANTI-LOCAL COPY

⑤ **copy spell-out**, where illicit anti-local movement — that is, movement within the same Prolific Domain (assuming a clausal tripartition: roughly, CP, TP, *v*P; cf also Platzack 2001) — can be “repaired” (Grohmann 2003; also Cheng 2006, Grohmann & Haegeman 2003, Grohmann & Panagiotidis 2007, Grohmann & Putnam 2007, Lipták & Vicente in press, Mayr & Reitbauer 2004, Schneider-Zioga 2007, Ticio 2003, and many others)

- (18) a. [ **Seinen<sub>i</sub> Vater** ], **den** mag jeder<sub>i</sub> Junge.  
*his.ACC father RP.ACC likeevery boy*  
 ‘His father, every boy likes.’ [NB: same effect in English]  
 b. [<sub>CP</sub> **seinen Vater** C<sup>0</sup> [<sub>TopP</sub> **den** mag-Top<sup>0</sup> [<sub>TP</sub> jeder Junge T<sup>0</sup> ... ] ] ]

(19) *Copy Spell-Out in German Contrastive Left Dislocation* (cf. Grohmann 2003)

[<sub>CP</sub> **seinen Vater** C<sup>0</sup> [<sub>TopP</sub> ~~seinen Vater~~ ↻ **den** mag-Top<sup>0</sup> [<sub>TP</sub> jeder Junge T<sup>0</sup> ... ] ] ]

The relevant copy that undergoes Copy Spell Out is the lower of two copies within one Prolific Domain (a violation of the **Condition on Domain Exclusivity**). Copy Spell-Out is a strategy the grammar may make available — it inserts a **grammatical formative**.

#### 4. Movement as PF-Deletion

We're now at a point where **conflicting conditions** seem to apply to displaced copies. Nunes (2004) suggests this **procedure for movement** (eliminating the singular "operation" Move):

(9) *Copy Theory of Movement*

- a. Copy
- b. Merge
- c. Form Chain
- d. Chain Reduction

But the above cases ②–⑤ are **special instances of Chain Reduction**. Roughly put, we yield:

- (20) a. **Chain Reduction** or regular deletion of lower copies  
 b. **Copy Spell Out** for two copies within the same Prolific Domains  
 c. **special applications** where additional/non-top copies are pronounced

Can all these operations be unified? Within a larger **interface-driven approach** (Grohmann 2008; see also many contributions in Grohmann 2007a, 2007b, in press), I suggest that on top of Embick & Noyer's (2001) **ordered PF-operations** (through Distributed Morphology; Halle & Marantz 1993), an additional set must be accommodated that regulates **copy modification**:

(21) *Copy Modification (qua ordered post-syntactic rules)*

1. If two copies are in an anti-local relationship, spell out the lower copy if possible (or else: crash). [*if Copy Spell Out is available in the grammar; Grohmann 2003*]
2. If deletion of the lower copy would violate a constraint of the grammar, pronounce it (in variation). [*if such exceptional cases are permitted; Nunes 2004, Fujii 2007*]
3. If two copies span across different Prolific Domains, all things being equal: delete the lower copy. [*Copy Theory; Chomsky 1995 / Chain Reduction; Nunes 2004*]

The final outcome is a **single PF-interpretation** (which gets Spelled Out to the sensorimotor system SM; Chomsky 2000, 2001), just as various operations applying in covert syntax yield a **single LF-interpretation** of linguistic expressions (but see Chomsky 2004, 2008 on eliminating LF proper) — but the **specific architecture is slightly modified** over existing models in terms of a heavily interface-driven approach and, so is the hope, improved upon...

"It is fair to say that GB is cognitively exceptional in that its principles and operations are cognitively *sui generis* and very specific to language." [fn. 14: "As Embick and Poeppel (2005) observe, this is a serious problem for those aiming to find brain correlates for the primitives of FL. They dub this the granularity problem. They propose that one aim of linguistics and neuroscience should be to solve this problem by finding a level that can serve to relate the basic conceptions of each. Their concrete proposal is that an appropriate level of abstraction is the 'circuit'. Circuits are brain structures that compute simple operations. The aim is to find those primitive operations that are at once empirically grounded and that could be embodied in neural wet-ware. Given this, **the goal for the minimalist will be to find a class of very basic primitive operations that plausibly underlie linguistic computations for consideration as candidates for possible neural circuits.**"]  
 Hornstein (to appear: chap.1; boldface added — KKG)

## 5. Conclusion

In sum, I tried to argue for several aspects of a **theory of syntax**:

- **syntactic component**: the most simple system imaginable, the “dumb machine” we desire — ideally perhaps recursive Copy + Merge; interface-heavy...
- **syntactic theory**: increasingly interface-driven — cf. the GB-related part in the quote from Hornstein (to appear); new chance for syntax–phonology, as Scheer (forthcoming) suggests
- **consequence**: copies are not different entities, shouldn't be invisible (Nunes 2004, *pace* Chomsky 1995) — but their deletion is driven by interface conditions (ICs/BOCs)

### (22) *The Copy Theory of Movement in Comparison: An Interface-Approach*

*standard model*

1. Copy
2. Merge
3. Form Chain
4. Chain Reduction

relevant metric: global/static system  
(until a Nunes-style approach to phases)

*alternative approach*

1. Copy
2. Merge
3. Copy Modification (at PF)

relevant metric: Prolific Domains (dynamic)  
(Cheng 2006, Schneider-Zioga 2007, etc.)

Nevertheless, **many details** need to be filled in, such as:

- **how to get to PF**: Spell-Out & MSOH vs *Phase Theory* vs *Prolific Domains* vs something else
- **what PF does**: *linearization* (LCA) vs *freezing* (phases) vs *morphologizing* (MSOH), etc.
- **timing of Spell-Out**: spelling out of *lexical items* (MP) vs *vocabulary insertion* (DM)...

And **other alternatives** are also imaginable, some in conjunction with the present approach: pronunciation of copies may follow from different constraints (*OT*: Pesetsky 1998 and others, *Case/Phi-driven*: Hornstein 2001, Nunes 2004, Fujii 2007, etc.; *PF/LF-determination*: Landau 2006; *third factor* [Chomsky (2005)]: Lohndal 2008; and possibly other approaches as well).

And lastly, **from a “personal” perspective** (within my domain-driven framework of anti-locality, not discussed here at any length; cf. Grohmann 2003), I'd like to:

#### 1. *come to grips with the notion of “anti-locality”*

- Is it a *real* phenomenon or an epiphenomenon?
- How can we best *define* the notion?
- What range of *cases* can it be applied to?
- What are the implications for syntactic *theory*/ modeling?
- What are the implications of syntactic anti-locality to the *architecture* of the grammar?

#### 2. *apply anti-locality analyses to more linguistic phenomena*

- Are there *outstanding issues* to which anti-locality can be applied?
- Is there a *family of phenomena* that must be analyzed this way?

## Appendix A: Prolific Domains & CSO


### (A1) Quick History of Generative Clause Structure Assumptions

- $[_S \text{ Comp } [_S \text{ NP (Aux/Infl) VP ] ] ]$
- $[_{CP} \text{ XP } C^0 [_{IP} \text{ XP } I^0 [_{VP} (\text{XP}) V^0 \dots ] ] ]$
- $[_{CP} \text{ XP } C^0 [_{AgrSP} \text{ XP } AgrS^0 [_{TP} \text{ XP } T^0 [_{AgrOP} \text{ XP } AgrO^0 vP/VP ] ] ] ] ]$
- CP  $\approx$  ForceP  $\gg$  TopP\*  $\gg$  FocP  $\gg$  (TopP\*  $\gg$ ) FinP  
 IP  $\approx$  AgrSP  $\gg$  TP  $\gg$  NegP  $\gg$  AgrIOP  $\gg$  AgrDOP  $\gg$  AspP  
 VP  $\approx$  vP  $\gg$  VP (or any other implementation of VP-shells)
- $[_{CP} \text{ XP}^* C^0 [_{TP} \text{ XP}^* T^0 [_{vP} \text{ XP}^* v^0 [_{VP} \text{ XP}^* V^0 \dots ] ] ] ] ]$   
 PHASE PHASE

- (A2) a. \***John** likes. (A3)a. # $[_{vP} \text{ John } v^0 [_{VP} \text{ likes-V}^0 \text{ John} ] ]$   
 b. \***Him** kissed her. b. # $[_{TP} \text{ him } T^0 [_{AgrOP} \text{ him } AgrO^0 [_{vP} \text{ softly} ] ] ] ] ]$   
 $[_{vP} \text{ him } v^0 [_{VP} \text{ kissed-V}^0 \text{ her} ] ] ] ] ]$   
 c. \***Who**, Mary detests? c. # $[_{TopP} \text{ who } Top^0 [_{FocP} \text{ who } Foc^0 [_{TP} \text{ Mary } T^0 \text{ detests} \dots \text{ who} ] ] ] ] ]$

### (A4) Anti-Locality Hypothesis

Movement must not be too local.

- (A5) $[_{AP|\alpha} \text{ XP } A^0_{|\alpha} \dots [_{ZP|\alpha} \text{ XP} \dots ] ]$
- 

### (A6) Prolific Domain

A Prolific Domain is a contextually defined part of the computational system,

- which provides the interfaces with the information relevant to the context and
- which consists of internal structure, interacting with derivational operations.

### (A7) Clausal Tripartition [see Platzack 2001 for same insight, but different details]

- Θ-Domain: part of the derivation where thematic relations are created (vP)
- Φ-Domain: part of the derivation where agreement properties are licensed (TP)
- Ω-Domain: part of the derivation where discourse information is established (CP)

### (A8) Condition on Domain Exclusivity (CDE)

An object O in a phrase marker must have an exclusive Address Identification AI per Prolific Domain  $\Pi\Delta$ , unless duplicity yields a drastic effect on the output.

- An AI of O in a given  $\Pi\Delta$  is an occurrence of O in that  $\Pi\Delta$  at LF.
- A drastic effect on the output is a different realization of O at PF.

### (A9) The CDE @ PF

\* $[_{\Pi\Delta} \text{ XP} \dots \text{XP}]$ , unless Copy Spell Out applies to ~~XP~~.

### (A10) Contrastive Left Dislocation (German)

- [ **Seinen<sub>i</sub> Vater**, **den** mag jeder<sub>i</sub> Junge.  
*his.ACC father RP.ACC likes every boy*  
 ‘His father, every boy likes.’ [NB: same effect in English]
- $[_{CP} \text{ seinen Vater } C^0 [_{TopP} \text{ den mag-Top}^0 [_{TP} \text{ jeder Junge } T^0 \dots ] ] ]$

- (A11) $[_{CP} \text{ seinen Vater } C^0 [_{TopP} \text{ seinen Vater } \Rightarrow \text{den mag-Top}^0 [_{TP} \text{ jeder Junge } T^0 \dots ] ] ]$



## Appendix B: Interface & Architecture

key words: MP vs OT concerning **interface theories** — **filtering of output** — **generator**

- interaction of syntactic computation with interpretive interfaces  
( $C_{HL} / NS$ ) (LF & PF / C-I & SM)
- upshot: before we compare MP and OT, which MP-model do we subscribe to?

[For more, see introductions & contributions to Grohmann (2007a, 2007b, in press) and references cited.]

In a minimalist setting levels of representation that don't follow from **virtual conceptual necessity** (VCN) or bare output/**interface conditions** (BOC/ICs) are rejected (cf. Chomsky 1993 *et seq.*).

- ❶ How exactly are LF and PF, the interface components, accessed after / fed by Spell Out?
- ❷ Focusing on PF, is there evidence for a more complex component / articulated branch?
- ❸ If the answer is positive, what could we then say about the computation towards PF?

some questions: What exactly does the operation **Spell-Out** do?

**Where, when, and how** do morphology and phonology kick in?

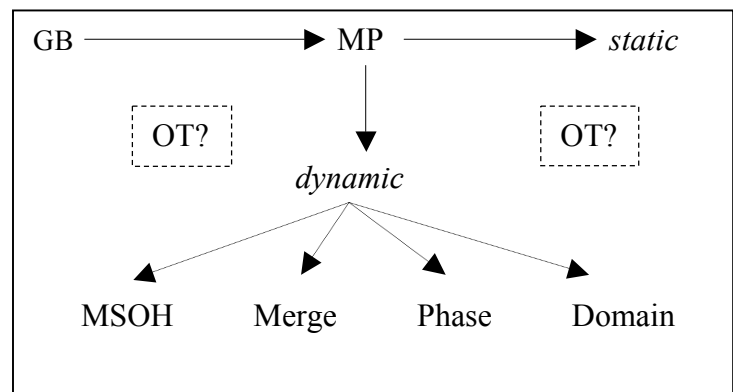
**How often** does Spell-Out apply, and to what kind(s) of structure(s)?

Are the two **levels of representation** sufficient, too many, or not enough?

How can the **interaction** between syntax and prosody be formally represented?

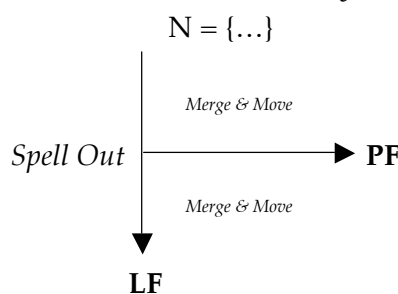
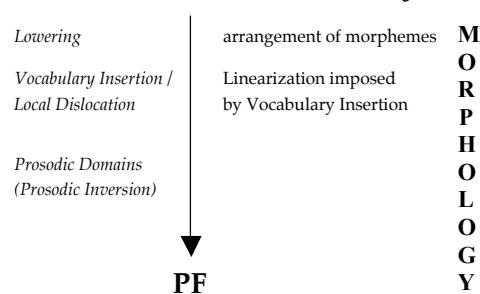
- *level of representation vs. components* (cf. Uriagereka, in press)
- two types of interfaces — *linguistic interfaces* and *modular interfaces*

[See Ramchand & Reiss (2007), Chomsky (in press); also “Granularity Problem” (Poeppel & Embick 2005).]



This is essentially going to be an exercise in coming to grips with the **architecture of the grammar**.

Disclaimer: This is an overview of (some) **interface issues in MP**; OT will be largely ignored.

(B1) *The T-/Y-Model (Chomsky 1993)*(B2) *The PF-Branch (Embick & Noyer 2001)*

NS-LF/PF: **static vs dynamic** interface approaches — within the minimalist program (MP)

- *Checking Theory* (Chomsky 1993, 1995: chap.4) vs *Phase Theory* (Chomsky 2000 *et seq.*)
- roughly: *Move* (Copy+Merge, Greed) vs *Agree* (Probe–Goal, valuation) — *Attract?*
- *alternatives*: Uriagereka (1999), Epstein *et al.* (1998), Grohmann (2003), and others

A **semi-historical perspective** may still be very relevant, even after 15 years of minimalism.

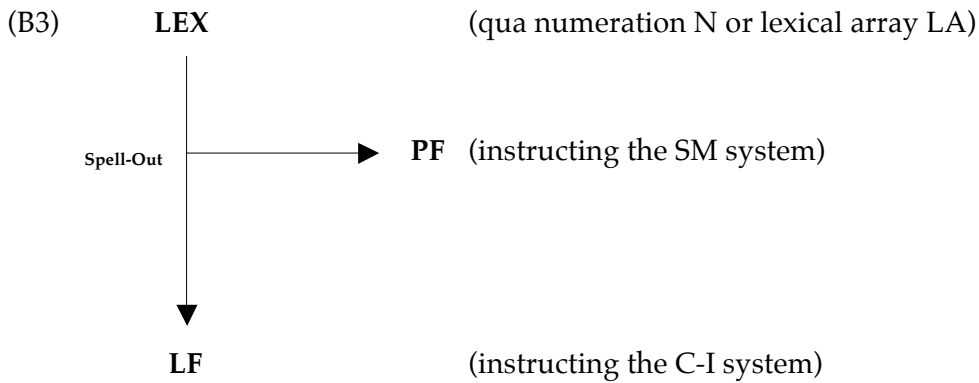
“It is fair to say that GB is cognitively exceptional in that its principles and operations are cognitively *sui generis* and very specific to language.” [fn. 14: “As Embick and Poeppel (2005) observe, this is a serious problem for those aiming to **find brain correlates for the primitives of FL** [language faculty — KKG]. They dub this the granularity problem. They propose that one aim of linguistics and neuroscience should be to solve this problem by finding a level that can serve to relate the basic conceptions of each. Their concrete proposal is that an appropriate level of abstraction is the ‘circuit’. Circuits are brain structures that compute simple operations. The aim is to find those primitive operations that are at once empirically grounded and that could be embodied in neural wet-ware. Given this, **the goal for the minimalist will be to find a class of very basic primitive operations that plausibly underlie linguistic computations for consideration as candidates for possible neural circuits.**”] Hornstein (to appear; my boldface)

“If we had an appropriately granular analysis of what, say, syntax or word recognition actually was, we could hypothesize that certain computational subroutines are in fact localized. This is what I have called in the past ‘computational organology’.” David Poeppel on the *Talking Brains* blog (<http://talkingbrains.blogspot.com/2007/06/jealous-of-fusifform-i-am.html>)

- cf. Chomsky’s (2005) “**three factors**” (genetic endowment, experience  $\Leftrightarrow$  variation, general principles)
- consider also **phases** (EST: subjacency/bounding nodes, GB: barriers; cf. Boeckx & Grohmann 2007)
- and **global evaluation** (in static approaches, perhaps also in Prolific Domains; cf. Grohmann 2003)

One relevant set of questions — focused on here — concerns the operation **Spell-Out**. Is it like any other **operation** or “special” in some sense? Does it apply over global **structures** or more local? Does it fit one-to-one with **phase** boundaries, and if so when/how does it apply? (See also Marušič 2006, Gallego 2007.)

The cornerstone of Phase Theory is the hypothesis that the syntactic **derivation proceeds phase by phase**.



- LEX follows from VCN, LF & PF from BOCs/ICs (qua *conceptual-intentional* & *sensorimotor systems*)
- $C_{HL}$  maps items from LEX to the LF representation of expression Exp via N/LA: *narrow syntax* (NS)

**Spell-Out** (“Transfer to PF”) applies to the derivation computed within NS, sending it (or the relevant sub-part **phase**) to PF for phonological manipulation to obtain a **legible, i.e. pronounceable, representation**. By assumption, the derivation continues, but without effect on the PF output, in order to yield a **unique LF representation** corresponding to the meaning of the linguistic expression computed. The final outcome is:

(B4) Exp = <Phon, Sem> (or < $\pi$ ,  $\lambda$ > in earlier notation)

- apply **Interpret** (“Transfer to LF”; Lasnik & Uriagereka with Boeckx 2005) also at the phase-level?
- **Strong Minimalist Thesis** (SMT): language “perfect” solution to the task of relating sound & meaning

The following models are widespread minimalist approaches to **dynamic interface conceptions**.

[See also e.g. Groat & O’Neil (1996), Nissenbaum (2000), Lasnik (in press) — and Bresnan (1971, 1972).]

(I) **Multiple Spell-Out Hypothesis**

Uriagereka (1999), originally circulated in 1996, proposes *Spell-Out to apply every time a ‘command path’ is formed*, which essentially breaks down to left branches (apart from Uriagereka 2002, 2008, in press, see also his follow-up work with Jairo Nunes and other work inspired by it);

(II) **Spell-Out-as-You-Merge**

Epstein et al. (1998), based in part on the co-authors’ previous work (certainly going back to Groat & O’Neil 1996), essentially argue that every application of *Merge spells out* (see also Samuel Epstein’s fruitful collaboration with Daniel Seely);

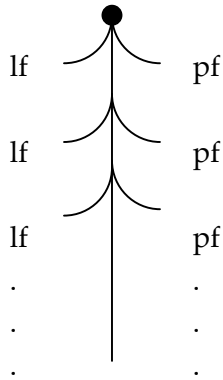
(III) **Phase Theory**

Chomsky (2000), originally circulated in 1998, who introduces *phases as Spell-Out domains* and who refined the notion of phase (Chomsky 2001, 2004, in press) plus other work (see especially recent research within the phase-based approach by a host of different scholars);

(IV) **Prolific Domains**

Grohmann (2003), based on his 2000 dissertation, suggests *Prolific Domains to spell out dynamically* (and here too there is much follow-up and related research by Grohmann and co-authors as well as other linguists; see Appendix for a rough overview).

(B5) *Architecture I: Transfer @ PH*



[cf. Boeckx 2007]

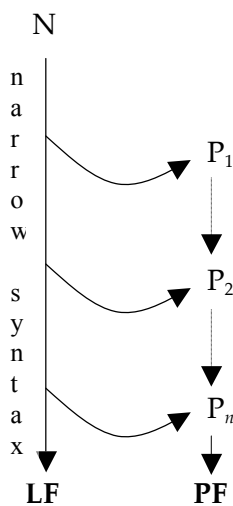
- (presumably) Chomsky’s *Phase Theory*
- visualizing it qua “*mini-interface levels*”

(A) **Phase Impenetrability Condition (PIC)**

At the phase ZP containing phase HP, the domain of H is not accessible to operations, but only the edge of HP.

The PIC is an inevitable consequence of any “meaningful” system of cyclic computation. In his words, “ $\Phi$  [phonological component] is greatly simplified if it can ‘forget about’ what has been transferred to it at earlier phases; otherwise, the advantages of cyclic computation are lost” (Chomsky 2004:107).

(B6) *Architecture II: MSO @ N-LF*



[after Zubizarreta 1998]

- straight *mapping from N to LF*, but:
- with *multiple Spell-Out* towards PF

However, with  $P_1$  to  $P_n$ , the approach:

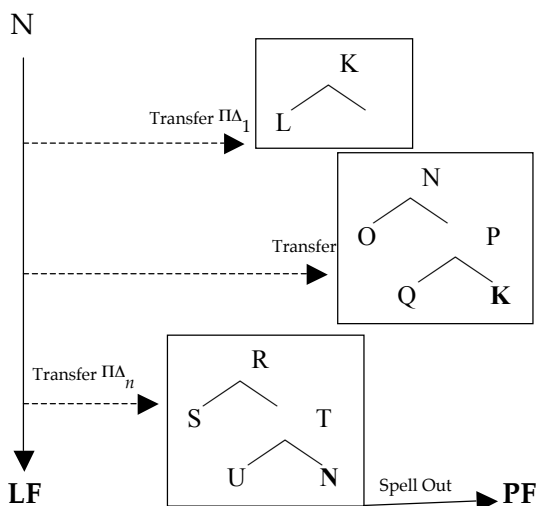
- introduces a new *level/component*:

(B) **P(rosodic)-structure**

Part of the derivation prior to LF (‘SS’!) that feeds p(rosodic)-movement.

The (re)introduced  $\Sigma$ -Structure feeds LF — which branches off to PF (!) and Assertion Structure (Zubizarreta 1998: 32)

(B7) *Architecture III: Transfer @ N-LF*



[from Grohmann & Putnam 2007]

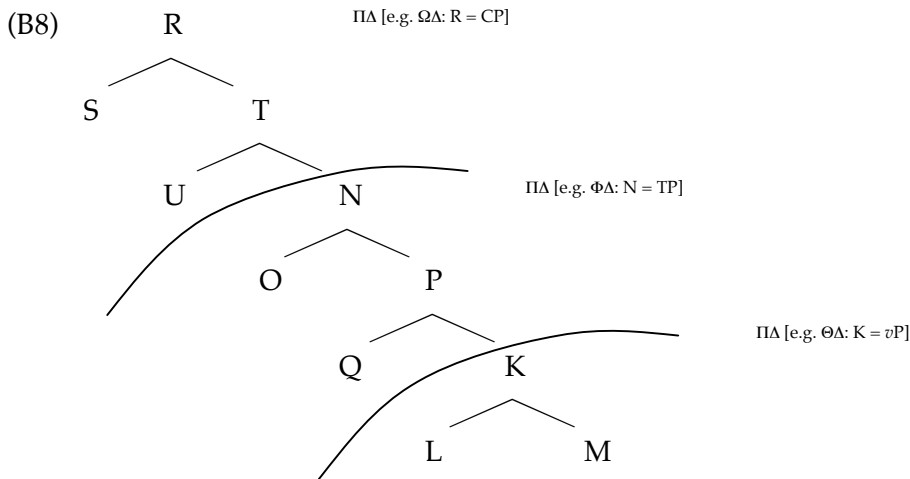
- also an *N-to-LF mapping*, but:
- *dissociate Transfer* from Spell Out:

(C) **Transfer** takes a sub-part of the derivation and ships it to PF cyclically.

(D) **Spell Out** feeds the sensorimotor system once the PF-branch is complete, uniquely.

No need to add a new interface component. (See (BB8) below.)

K, N, and R in Architecture III would correspond to Uriagereka's (2000) comment that **"you need two representations of the relevant object K: one which is sent intact to PF, and one which is sent to LF without uninterpretable stuff"** — K, N, and R are the syntactic objects assembled in narrow syntax (NS), each a Prolific Domain ( $\Pi\Delta$ ; Appendix A), and are Transferred (in the sense of (C)–(D) above); Transferred N is "stacked" on top of K, R on N, and so on, and the PF-object corresponds to the one created in NS.



There are at least two major issues concerning the **articulatory interface theme in minimalism** or, more specifically, some version of multiple Spell-Out and the organization of the grammar:

- (i) it needs to be seen empirically whether the notion of multiple Spell-Out has a *practical application*, and what *details* of such an application would look like (path, phase, domain, etc.);
- (ii) *terms & conditions* relating to multiple Spell-Out have to be made concrete (post, simultaneous).

One exciting aspect of **linguistic minimalism** (in the sense of Boeckx 2006) is, then, that the study of linguistic interfaces opens new doors in large hallway of the **architecture of grammar** (granularity?).

And **finally**:

Yes, when I say that syntacticians will have to be doing more interface- (especially PF-) related work, that's exactly what I mean — I don't intend to **dump syntax onto PF** without working it out; this kind of **PF-syntax** will need to be worked out properly, applying the same rigour as (assumed) **core syntax** has enjoyed for five decades of generative research. **The future of syntax lies at the interfaces...** 😊

**References [NB: Some references from the appendices may not be included]**

- Bobaljik, Jonathan David. 1995. *Morphosyntax: The Syntax of Verbal Inflection*. Doctoral dissertation, Massachusetts Institute of Technology, Cambridge.
- Bobaljik, Jonathan David. 2002. A-Chains at the PF-Interface: Copies and 'Covert' Movement. *Natural Language & Linguistic Theory* 20, 197-267.
- Bošković, Željko. 2002. On Multiple *Wh*-Fronting. *Linguistic Inquiry* 33, 351-383.
- Bošković, Željko & Jairo Nunes. 2007. The Copy Theory of Movement: A View from PF. In Norbert Corver & Jairo Nunes (eds.), *The Copy Theory of Movement*. Amsterdam: John Benjamins, 13-74.
- Cheng, L.-S. Lisa. 2006. Decomposing Bantu Relatives. *NELS* 36, 197-215.
- Chomsky, Noam. 1993. A Minimalist Program for Linguistic Theory. In Kenneth Hale & Samuel Jay Keyser (eds.), *The View from Building 20: Essays in Honor of Sylvain Bromberger*. Cambridge, Mass.: MIT Press, 1-52.
- Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, Mass.: MIT Press.
- Chomsky, Noam. 2000. Minimalist Inquiries: The Framework. In Roger Martin, David Michaels & Juan Uriagereka (eds.), *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*. Cambridge, Mass.: MIT Press, 89-155.
- Chomsky, Noam. 2001. Derivation by Phase. In Michael Kenstowicz (ed.), *Ken Hale. A Life in Language*. Cambridge, Mass.: MIT Press, 1-52.
- Chomsky, Noam. 2004. Beyond Explanatory Adequacy. In Adriana Belletti (ed.), *Structures and Beyond: The Cartography of Syntactic Structures*, vol. 3. Oxford: Oxford University Press, 104-131.
- Chomsky, Noam. 2005. Three Factors in Language Design. *Linguistic Inquiry* 36, 1-22.
- Chomsky, Noam. 2008. On Phases. In Robert Freidin, Carlos P. Otero & María-Luisa Zubizarreta (eds.), *Foundational Issues in Linguistic Theory*. Cambridge, Mass.: MIT Press.
- Embick, David & Rolf Noyer. 2001. Movement Operations after Syntax. *Linguistic Inquiry* 32, 555-595.
- Embick, David & David Poeppel. 2005. Mapping Syntax Using Imaging: Prospects and Problems for the Study of Neurolinguistic Computation. In Keith Brown (ed.), *Encyclopedia of Language and Linguistics*, 2nd ed. Oxford: Elsevier.
- Franks, Steven. 1998. Clitics in Slavic. Paper presented at the *Comparative Slavic Morphosyntax Workshop*, McCormick's Creek State Park, Spenser, Ind. (5-7 June 1998).
- Fujii, Tomohiro. 2007. Cyclic Chain Reduction. In Norbert Corver & Jairo Nunes (eds.), *The Copy Theory of Movement*. Amsterdam: John Benjamins, 291-326.
- Grohmann, Kleanthes K. 2003. *Prolific Domains: On the Anti-Locality of Movement Dependencies*. Amsterdam: John Benjamins.
- Grohmann, Kleanthes K. (guest ed.). 2007a. *Linguistic Analysis* 33.1-2 (2003) [Special Issue on *Dynamic Interfaces, Part I – Spell-Out & Linearization*].
- Grohmann, Kleanthes K. (guest ed.). 2007b. *Linguistic Analysis* 33.3-4 (2003) [Special Issue on *Dynamic Interfaces, Part II – Phases & Derivations*].
- Grohmann, Kleanthes K. 2008. Spell-Out Rules: Ranked Competition of Copy Modification. *Interface Theories: The Filtering of the Output of the Generator (DEAL II)*, Universiteit Leiden (22-23 February 2008)
- Grohmann, Kleanthes K. (ed.). In press. *InterPhases: Phase-Theoretic Investigations of Linguistic Interfaces*. Oxford: Oxford University Press.
- Grohmann, Kleanthes K. & Liliane Haegeman. 2003. Resuming Reflexives. *Nordlyd* 31.1, 46-62.

- Grohmann, Kleanthes K. & E. Phoevos Panagiotidis. 2007. Forthcoming. Demonstrative Doubling in Modern Greek. In Anthi Revithiadou, Vassilios Spyropoulos & Spyridoula Varlokosta (eds.), *Syntactic Aspects of the Eastern Mediterranean Languages*. Oxford: Oxford University Press.
- Grohmann, Kleanthes K. & Michael T. Putnam. 2007. Prosodic Stress Assignment in Dynamic Computations. In Grohmann (2007b), 326-363.
- Halle, Morris & Alec Marantz. 1993. Distributed Morphology and the Pieces of Inflection. In Kenneth Hale & Samuel Jay Keyser (eds.), *The View from Building 20: Essays in Honor of Sylvain Bromberger*. Cambridge, Mass.: MIT Press, 111-176.
- Hornstein, Norbert. 2001. *Move! A Minimalist Theory of Construal*. Oxford: Blackwell.
- Hornstein, Norbert. To appear. *A Theory of Syntax*. Cambridge: Cambridge University Press.
- Kayne, Richard S. 1994. *The Antisymmetry of Syntax*. Cambridge, Mass.: MIT Press.
- Landau, Idan. 2006. Chain Resolution in Hebrew V(P)-Fronting. *Syntax* 9, 32-66.
- Lipták, Anikó & Luis Vicente. In press. Pronominal Doubling under Predicate Topicalization. *Lingua* 118 (doi:10.1016/j.lingua.2007.11.007).
- Lohndal, Terje. 2008. Children's Syntax and Parameters: A Minimalist View. Paper presented at the *Workshop on Universal Grammar, Language Acquisition and Change*, University of Oslo (26-27 August 2008).
- Mayr, Clemens & Martin Reitbauer. 2004. Emphatic Topicalization Is Left Dislocation. Manuscript, University of Vienna.
- McDaniel, Dana. 1986. *Conditions on Wh-Chains*. Doctoral dissertation, City University of New York.
- Nunes, Jairo. 1995. *The Copy Theory of Movement and Linearization of Chains in the Minimalist Program*. Doctoral dissertation, University of Maryland, College Park.
- Nunes, Jairo. 2004. *Linearization of Chains and Sideward Movement*. Cambridge, Mass.: MIT Press.
- Pesetsky, David. 1998. Some Optimality Principles of Sentence Pronunciation. In Pilar Barbosa, Danny Fox, Paul Hagstrom, Martha McGinnis & David Pesetsky (eds.), *Is the Best Good Enough? Optimality and Competition in Syntax*. Cambridge, Mass.: MIT Press, 337-383.
- Pesetsky, David. 2000. *Phrasal Movement and Its Kin*. Cambridge, Mass.: MIT Press.
- Platzack, Christer. 2001. Multiple Interfaces. In Urpo Nikanne & Emile van der Zee (eds.), *Cognitive Interfaces: Constraints on Linking Cognitive Information*. Oxford: Oxford University Press, 21-53.
- Postal, Paul M. 1974. *On Raising: One Rule of English Grammar and Its Theoretical Implications*. Cambridge, Mass.: MIT Press.
- Potsdam, Eric & Jeffrey T. Runner. 2001. Richard Returns: Copy Raising and Its Implications. *CLS* 37, 453-468.
- Putnam, Michael T. 2006. *Scrambling in West Germanic as XP-Adjunction: A Critical Analysis of Prolific Domains*. Doctoral dissertation, University of Kansas, Lawrence.
- Richards, Norvin. 2001. A Distinctness Condition on Linearization. Manuscript, Massachusetts Institute of Technology, Cambridge. [Shorter version appeared in *WCCFL* 20, 470-483.]
- Rogers, Andy. 1974. A Transderivational Constraint on Richard?. *CLS* 10, 551-558.
- Scheer, Tobias. Forthcoming. Intermodular Argumentation and the Word-Spell-Out-Mystery. In Kleanthes K. Grohmann (ed.), *Explorations of Phase Theory: Interpretation at the Interfaces*. Berlin: Mouton de Gruyter.
- Schneider-Zioga, Patricia. 2007. Anti-Agreement, Anti-Locality, and Minimality: The Syntax of Dislocated Subjects. *Natural Language & Linguistic Theory* 25, 403-446.
- Ticio, Emma. 2003. *On the Structure of DPs*. Doctoral dissertation, University of Connecticut, Storrs.