HeadLex16

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Fully syntactic, fully lexical, or in-between? Remarks on the architectures of generative grammars

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1.1. Introduction

aims of the presentation

- comparison of GASG (Generative Argument Structure Grammar), HPSG, LFG, and MP – **fundamentally *on the basis of the (possibly sole) analyses briefly discussed here***
- central issue: division of labour between syntax and the lexicon
- case study
  - the treatment of designated preverbal constituents in Hungarian: foci and verbal modifiers, which are in complementary distribution

1.2. Introduction

structure of the presentation

1. Introduction
2. Introduction to GASG
   [I assume (basic) familiarity with HPSG, LFG & MP]
3. The data
4. The four approaches
   4.1. GASG
   4.2. MP
   4.3. HPSG
   4.4. LFG
5. A comparison of these approaches
6. General remarks
7. Conclusion

2.1. Introduction to GASG

- GASG: Generative Argument Structure Grammar
- partially motivated by Karttunen (1986)
- goal: the treatment of syntactic and morphological phenomena in a “totally lexical” fashion
- designed to be implementable
- its lexicon contains lexical items with complex descriptions comprising *properties* and *requirements*
- no phrase structure (!)
- the only admitted operation is unification
- word order constraints handled just like case or agreement constraints

2.2. Introduction to GASG

Totally Lexicalist Morphology (TLM) [emphasis mine, TL]

"… does **not** follow the usual way by having a **morphological component**, **which first creates words**, and then syntax and semantics can operate on them. In TLM **every kind of morpheme can have their own requirements and semantic content** (but not all of them actually have). This way a main difference between Hungarian and English can disappear […], namely that in **Hungarian suffixes express e.g. causativity or modality**, while in **English separate words** are responsible for the same roles. The "cost" of TLM is that the "usual" information is not cumulated in a word (e.g. the case of a noun), but it can be solved by **rank parameters**. Using rank parameters is a crucial point of the theory, and so the implementation. Every expectation can be overridden by a stronger requirement (**like in optimality theory**); in other words, **every requirement can be satisfied directly or indirectly (by fulfilling a stronger requirement)**. This way several phenomena can be handled easily, such as word order […], or case and agreement (without gathering the information of all the morphemes of the word)" (**Alberti & Kleiber 2010**: 108).

2.3. Introduction to GASG

- **Szilágyi (2008)**: the analysis of a Hungarian noun phrase

(1) az én okos magyar tanár-om
the I clever Hungarian teacher-POSS.1SG
'my clever Hungarian teacher'

- Different degrees of adjacency requirements are imposed on various categories combining with nouns, which is encoded by rank parameters. In this particular example a **nationality adjective** has the **highest rank** (expressed by the **lowest rank number**), next in the hierarchy is an **ordinary adjective**, it is followed by the **nominative possessor**, which in turn is followed by the **definite article**.

3. The data

- the famous ***verbal modifier (VM)*** vs. ***FOCUS*** preverbal complementarity in Hungarian

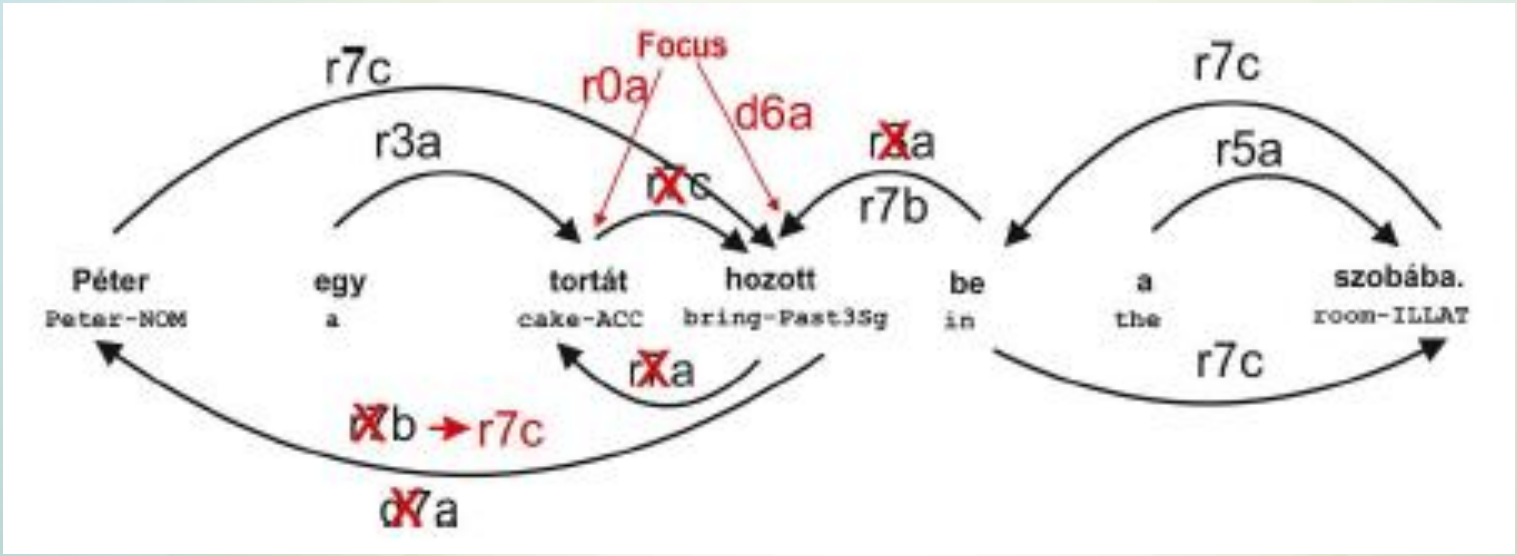
(2) Péter *be* **hozott** egy tortá-t a szobá-ba.
Peter.NOM in **brought.3SG** a cake-ACC the room-into
'Peter brought a cake into the room.'

(3) Péter EGY TORTÁ-T **hozott** be a szobá-ba.
Peter.NOM a cake-ACC **brought.3SG** in the room-into
'It was a cake that Peter brought into the room.'

- in (2), the particle *be* 'in', a VM, obligatorily immediately precedes the verb in a neutral sentence
- in (3), a non-neutral sentence, a focused constituent, *egy tortát* 'a cake.ACC' precedes the verb, and forces the VM to occur postverbally

4.1. A GASG treatment

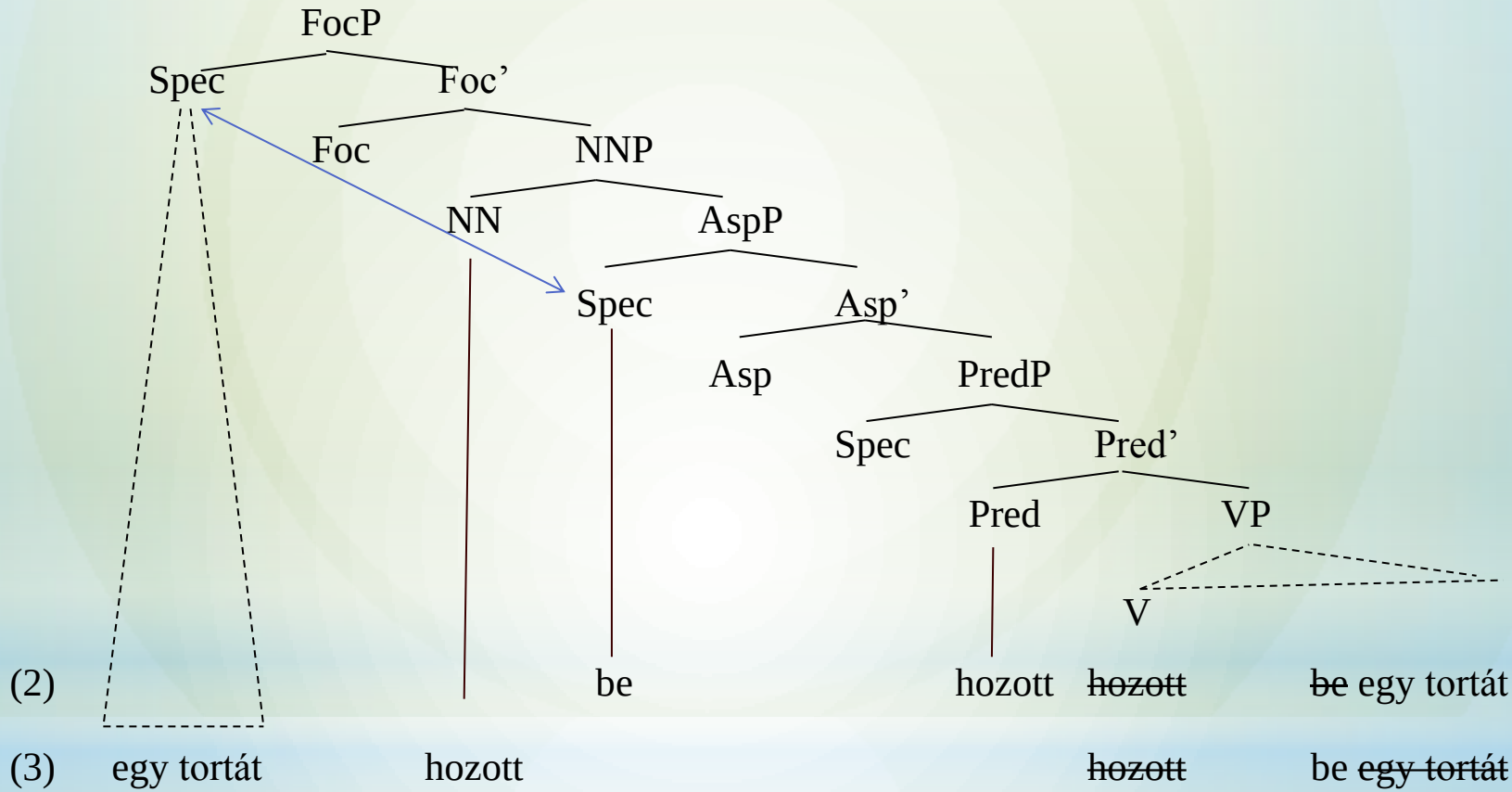
- **Szilágyi (2008)**



- In GASG **free word order** is captured by assuming that the rank parameters **of predicate–complement**, **predicate–adjunct** and even predicate–complement's-complement relations coincide, i.e. they are equally **weak**, see the **number 7**s.
- **VMs** are treated as **complements** (see ***r7b***).
- In **neutral sentences** they immediately precede the verb, which is captured by assuming that they have an **alternative rank**, which puts them in the preverbal position: ***r3a***. This rank places *be* 'in' in front of the verb in (2).
- ***Focus***, which is treated as **a phonetically null lexical item** in Hungarian, **overrides** this ***r3a*** (word order) relation, and puts the focused constituent in front of the verb: ***r0a***. Thus, the **VM's *r3a*** is cancelled, and it is relegated to an ordinary complement status: ***r7b***.

4.2.1. A cartographic MP treatment

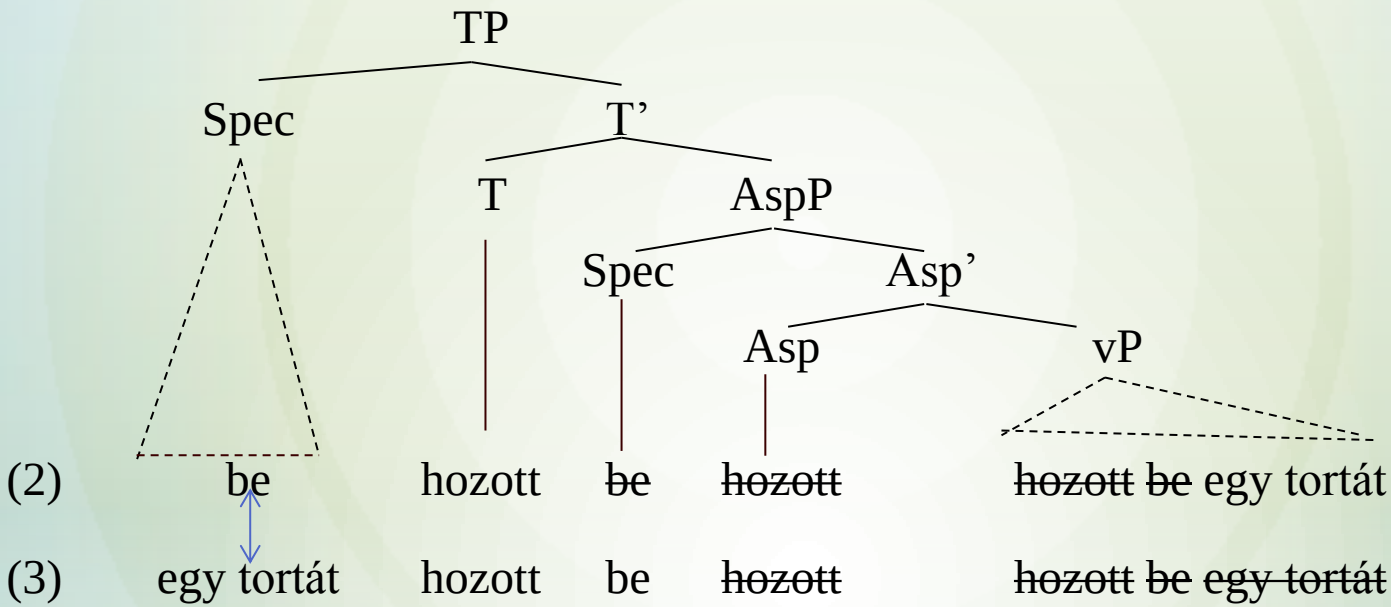
- **É. Kiss (2008)**



- FocP and NNP (Nonneutral Phrase) are not projected in neutral sentences
- complementarity of focus and VM: the head of a phase must be overt →it is always the highest overt head in the phase

4.2.2. An interface MP treatment

- **Surányi (2011)**



- the movement of VM in (2) and that of focus in (3) is not for feature-checking purposes: it is triggered by the EPP → real positional complementary distribution
- in (3), it is in Spec,TP (syntax) that the focused constituent can have the id-focus interpretation (semantics) with the appropriate prosody (phonology)

4.3.1. An HPSG treatment

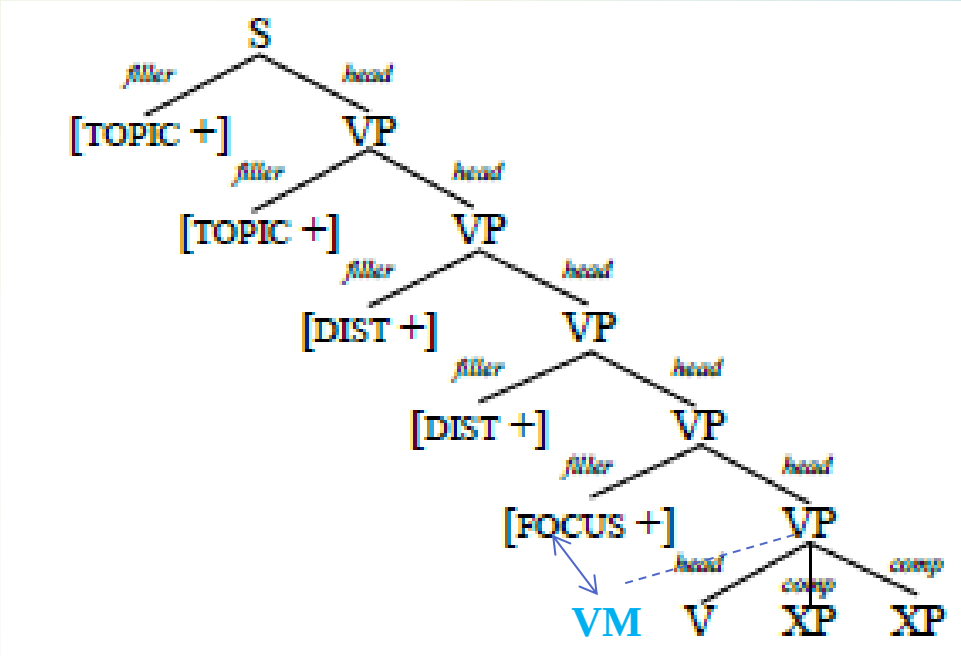
Szécsényi (2011, 2013) – 1

- the VM, which is a complement of the verb, makes up a complex predicate with that verb (motivated by MP analyses in this vein)
- the VM occupies a special, immediately preverbal position
- the VM (whether a particle or any other VM type) has a special feature: CAR (verb-carrier), based on Kálmán (2001)
- *hozott* 'brought' in (2) has four complements (cf. GB/MP mainstream): the subject, the object, the oblique argument, and the verbal particle *be* 'in', with the CAR feature
- focusing is a lexical process: the verb gives the focus feature (F-GIVE) to one of its complements or adjuncts, ***and*** the CAR feature must be (or must become) empty
- the focus and the VM occupy two distinct syntactic positions: the former is VP-adjoined and the latter is VP-initial (roughly: Spec,VP), and their complementarity is captured by the Focus Selecting Lexical Rule

4.3.2. An HPSG treatment

Szécsényi (2011, 2013) – 2

- HPSG structure for Hungarian finite sentences
  cf. É. Kiss' (1992) unorthodox GB analysis

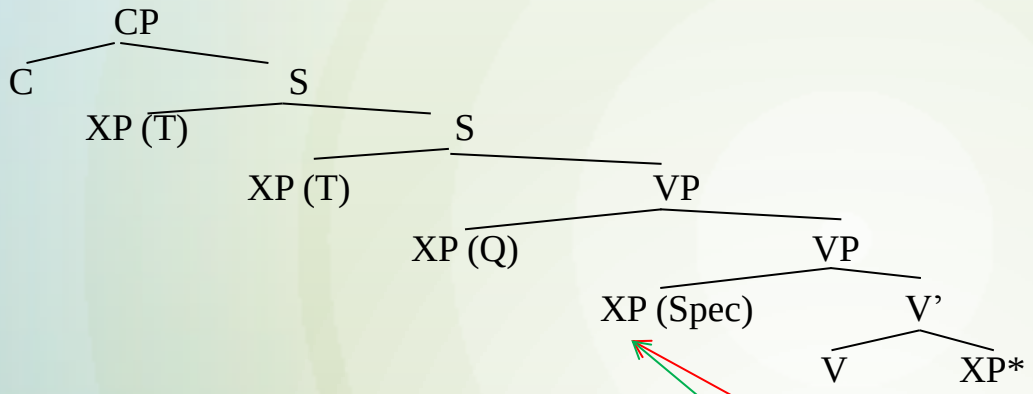


- Focus Selecting Lexical Rule

$$\begin{bmatrix} \text{COMPS} & \langle \ldots, \boxed{1}[\text{FOCUS} -], \ldots \rangle \\ \text{F-GIVE} & \boxed{2} \\ \text{CONTENT} & \alpha \end{bmatrix} \Downarrow \begin{bmatrix} \text{COMPS} & \langle \ldots, \boxed{1}[\text{FOCUS} +], \ldots \rangle \\ \text{CAR} & \textit{none} \\ \text{F-GIVE} & \boxed{2} \oplus \langle \boxed{1} \rangle \\ \text{CONTENT} & \beta \end{bmatrix}$$

4.4.1. An LFG treatment

Laczkó (2014) – 1



- structure for Hungarian finite sentences (cf. É. Kiss 1992!)

- disjunctive functional annotations for this sentence structure

T: { (c-)topic | sent.adv. }	Q: { quantifier | WH }	Spec: { focus | VM | WH }
{ (↑GF)= ↓ {↓ ∈ (↑ TOPIC) | ↓ ∈ (↑ CONTR-TOPIC)} | ↓ ∈ (↑ ADJUNCT) (↓ADV-TYPE)=c SENT }	(↑GF)= ↓ { (↓CHECK _QP)=c + | (↑CHECK _VM-INTER)=c + (↓CHECK _QP-INTER)=c + (↓SPECIFIC)=c + }	{ (↑GF)= ↓ (↑FOCUS)= ↓ | ~(↑FOCUS) { (↑GF)= ↓ | ↑=↓ } (↓CHECK _VM)=c + | (↑GF)= ↓ (↓CHECK _VM-INTER)=c + ((↑CHECK _VM-INTER)= +)}

4.4.2. An LFG treatment

Laczkó (2014) – 2

(1) *be* PRT
(↑ PRT-FORM) = be
(↑ CHECK _PRT-VERB) =c +
{ (↑ FOCUS)
| ~(↑ FOCUS)
(↑ CHECK _VM) = + }
((↑ DIR) = in).

(2) *hoz* V
(↑ PRED) = 'bring-in < (↑SUBJ) (↑OBJ) (↑OBL) >'
(↑ PRT-FORM) =c be
(↑ CHECK _PRT-VERB) = +
(↑ DIR) =c in.

- the preverbal complementarity of foci and VMs is captured in terms of syntactic positional complementarity (encoded by functional annotational disjunctions) -- both in the syntax and the lexicon

5.1. A comparison of the four (five) approaches
[represented by the analyses highlighted here]

(i) *the treatment of the particle(VM)–verb relationship*

1. they make up a complex predicate (of some sort): **MP, LFG, HPSG, GASG**
2. special representation for the complex predicate in the lexicon: **LFG, HPSG, GASG**
3. the preverbal position of the particles is lexically specified → no syntactic movement: **LFG, HPSG, GASG**
4. syntactic complex predicate formation (in overt syntax or in LF) → movement: **MP**
5. in the complex predicate, the particle is a complement of the verb: **MP, HPSG, GASG**
6. the particle is not a complement of the verb syntactically: **LFG**
   - (5)-(6): a special issue in its own right (for a discussion, see Laczkó & Rákosi 2011)

5.2. A comparison of the four (five) approaches

(ii) *the treatment of (preverbal) focus*

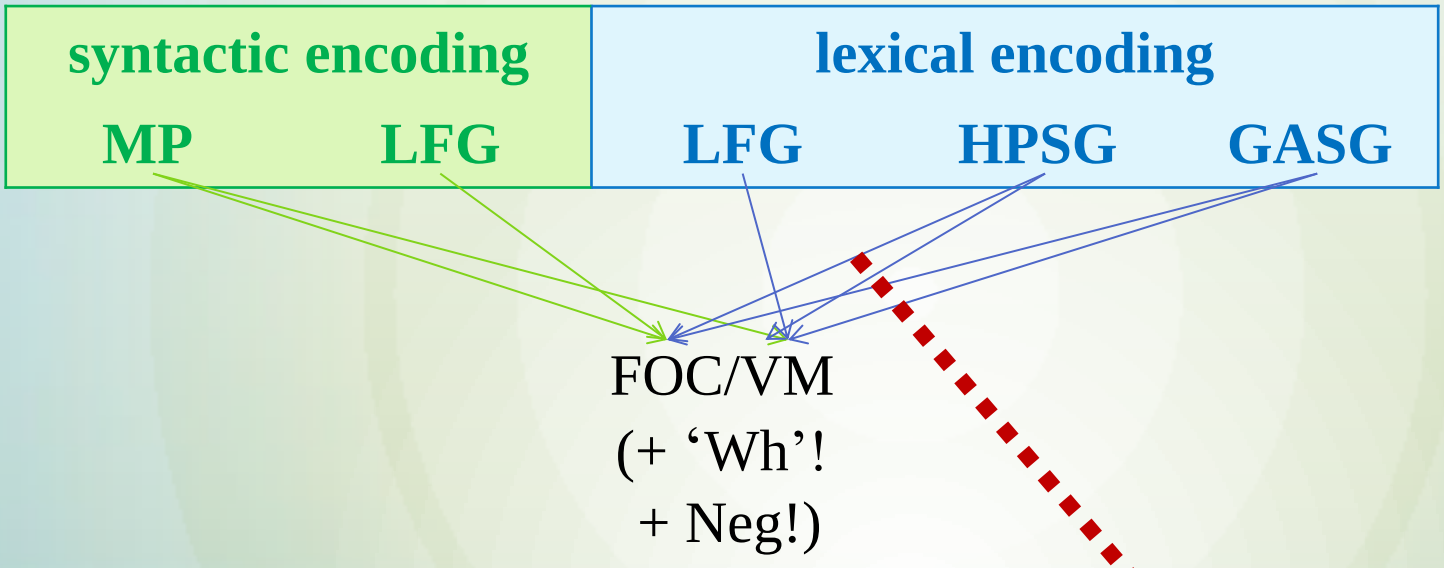
1. syntactic movement triggered by a particular feature [+F] or a syntax-semantics-phonology interface relationship: **MP**
2. syntactic treatment: preverbal base-generation (and annotational encoding) of focus: **LFG**
3. lexical treatment: a lexical rule assigns the focus feature to a constituent (complement or adjunct): **HPSG**
4. lexical treatment: the highest ranked word order parameter determines the preverbal position of the focused constituent (whether a complement or an adjunct): **GASG**

(iii) *the treatment of focus–VM compementarity*

1. distinct preverbal syntactic positions: **(cartographic) MP, HPSG**
2. the same syntactic position: **(interface) MP, LFG, GASG**

5.3. A comparison of the four (five) approaches

- **the treatment of preverbal focus and VM in Hungarian**



- **handling the complementarity of focus and VM, cf. WYSIWYG**

GASG		C-MP
IF-MP		HPSG
LFG	vs.	
{ FOC		FOC – VM
| VM }		

6.1. General remarks on the four (five) approaches

1. **All the four theories are complex and coherent systems in which these (and many other) phenomena can be formally handled in a principled fashion.**
2. MP is fully syntactic and, consequently, absolutely transformational and, hence, derivational. The other three theories are non-transformational and representational.
3. GASG is fully lexical, and it does not even employ phrase structure.
4. LFG is crucially lexical (no syntactic transformations); however, (richly annotated) syntactic (phrase-structural) representations are indispensably important.
5. HPSG is between GASG and LFG; however, it seems to be closer in spirit and architecture to GASG.
6. The behaviour of complex predicates naturally calls for a lexical treatment. The three lexically biased theories can efficiently handle these phenomena. For a detailed HPSG analysis of complex predicates (including verbal particles) in German, see Müller (2002). For a comparative LFG-XLE analysis of particle verb constructions in English, German and Hungarian, see Forst et al. (2010).

6.2. General remarks on the four (five) approaches

7. The complementarity of foci and VMs needs to be *partially* captured in the lexical forms of particles.
8. On the syntactic side, the complementarity is intuitively most feasibly captured by postulating a single syntactic position that the two elements fight for: along the GASG, LFG and interface MP lines.
9. Both GASG and HPSG use lexical focusing (redundancy) rules (⇔ LFG).

6.3. General remarks on the four (five) approaches

DF papers in HPSG-proceedings

- Szécsényi (2013)
  - analysis of Hungarian
- Haji-Abdolhosseini (2003)
  - modularity and parallel structures & interfaces

6.4. General remarks on the four (five) approaches

Haji-Abdolhosseini (2003) – 1

[…] the **syntactic/semantic, prosodic and information structures** are all **constructed from a unique list of lexical items, *W***. The **arrows pointing from *W*** to various structures represent **well-formedness constraints on those structures**. The **arrows that point back to *W*** represent **constraints on the features of the members of *W* imposed by those structures**. Structural constraints are basically those found in standard HPSG literature such as rule schemata and the like. Informational constraints define well-formed information structures (145).

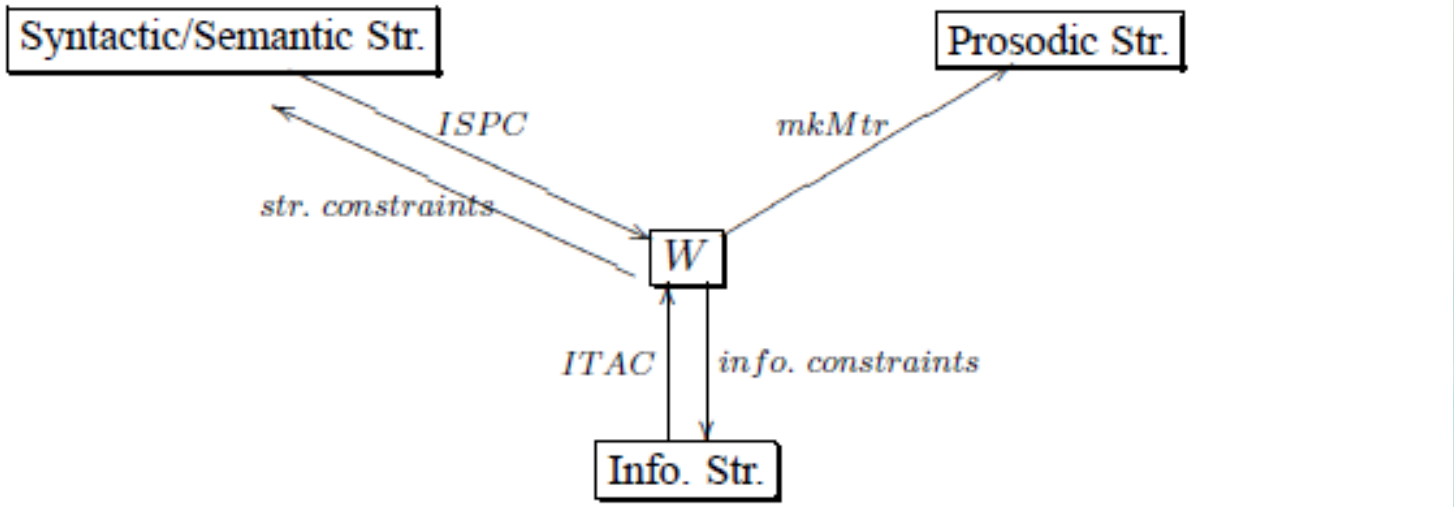


Figure 1: Architecture of the information-based model of prosodic constituency

6.5. General remarks on the four (five) approaches

Haji-Abdolhosseini (2003) – 2

What is assumed here is that **phonology, syntax and information structure** all **operate** as **independently** as possible while **working on one common list of domain objects** that we assume to be **lexical items** here for convenience. Thus, *sign* will have (at least) the following feature appropriateness constraint defined over it (149).

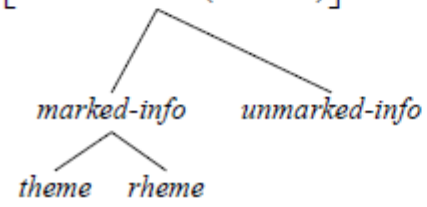
(10) **Appropriateness Constraint on *sign***

$$\begin{bmatrix} sign & \\ \text{PHON} & pros \\ \text{SYNSEM} & synsem \\ \text{DOM} & list(dom\text{-}obj) \\ \text{INFO} & list(info) \end{bmatrix}$$

Type *info* has two subtypes: *marked-info* and *unmarked-info*. The type *marked-info* itself subsumes *theme* and *rheme*.

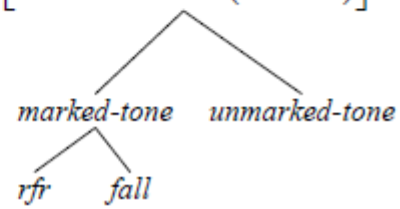
(11) **Informational Types:**

$$\begin{bmatrix} info & \\ \text{INF-DOM} & list(dom\text{-}obj) \end{bmatrix}$$



(12) **Tonal Types:**

$$\begin{bmatrix} tone & \\ \text{TONE-DOM} & list(dom\text{-}obj) \end{bmatrix}$$



6.6. General remarks on the four (five) approaches

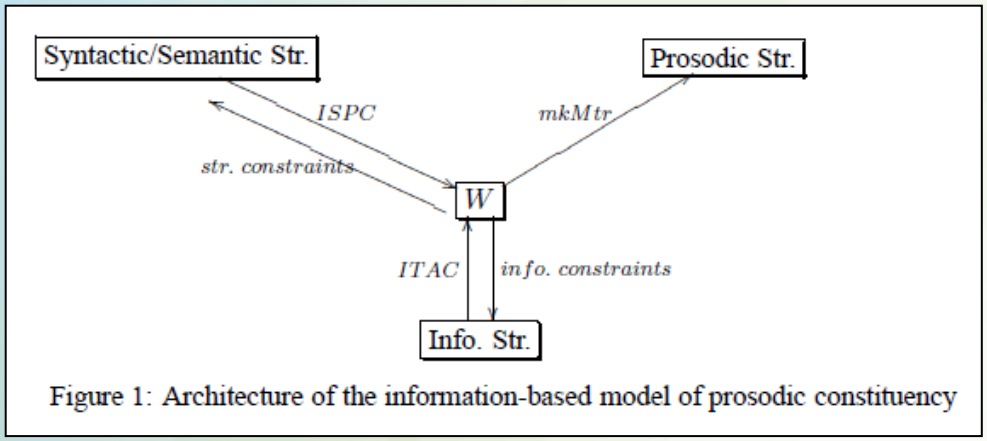
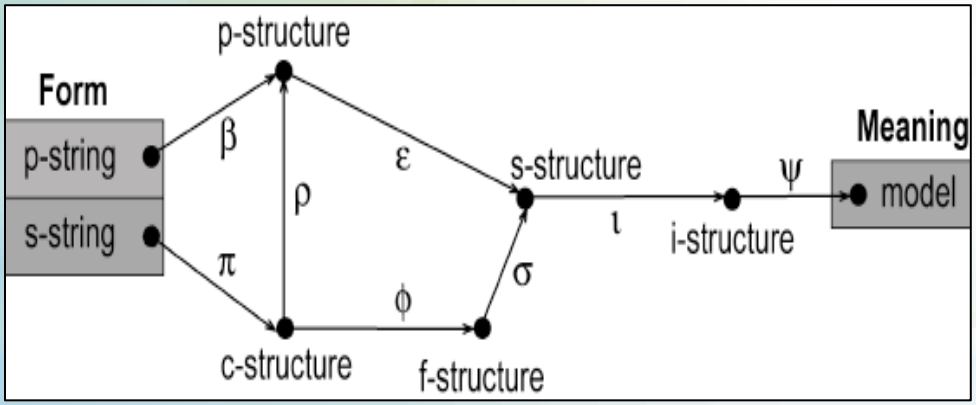


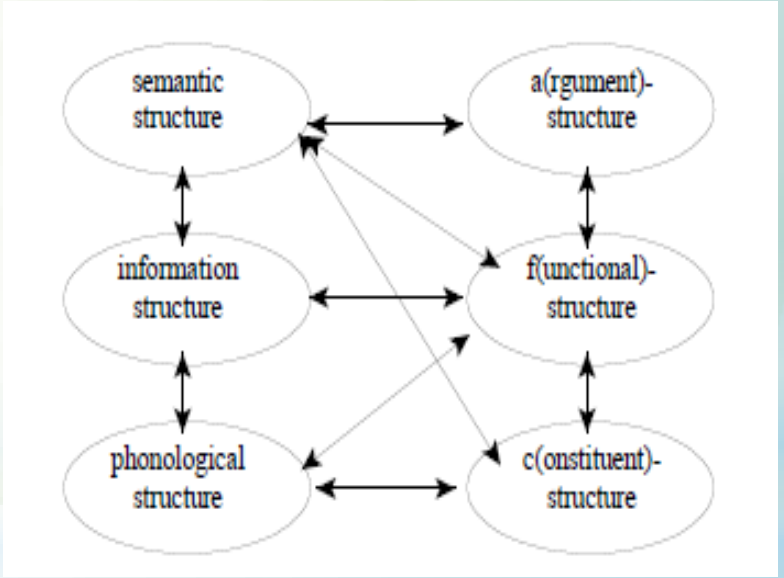
Figure 1: Architecture of the information-based model of prosodic constituency

Haji-Abdolhosseini (2003)

parallel levels of representation



Dalrymple & Nikolaeva (2011),
also cf. Dalrymple & Mycock (2011),
Mycock & Lowe (2013), a. o.



Falk (2001)

7. Conclusion

- two main issues on the basis of Szécsényi's (2013) approach
  - the locus of treating DF phenomena:

    LFG – HPSG – GASG
  - Hungarian-phenomenon-specific: syntactic/positional complementarity of FOC & VM, cf. WYSIWYG

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- the Institute of English and American Studies, University of Debrecen, Hungary.

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1. Appendix

De Kuthy & Meurers (2003) – 1

(18) Peter [liest ein BUCH.]$_F$
Peter reads a book

$$\begin{bmatrix} \text{S|LOC|CONT|LF } \exists x[book'(x) \wedge read'(p,x)] \\ \text{INFO-STRUC} \begin{bmatrix} \text{FOCUS } \langle \lambda y \exists x[book'(x) \wedge read'(y,x)] \rangle \\ \text{TOPIC } \langle\rangle \end{bmatrix} \end{bmatrix}$$

Figure 1: A sign representation including information structure

$$\begin{bmatrix} sign \\ \text{PHON} \begin{bmatrix} \text{PHON-STRING } list \\ \text{ACCENT } accent \end{bmatrix} \end{bmatrix}$$

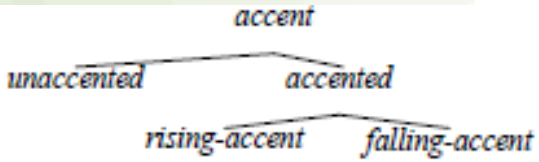

Figure 2: Representing pitch accents

The phonology of signs is altered as shown in figure 2 to include an ACCENT attribute to encode **whether a word receives an accent or not**, and whether it is a rising or a falling accent in case it receives one (103).

The information structure of words is defined through the principle shown in figure 3 which **assigns the semantic contribution of the word to the focus or topic specification in the information structure representation of that word**, depending on the type of accent the word receives. (103-104).

$$word \rightarrow \begin{bmatrix} \text{PHON|ACCENT } falling\text{-}accent \\ \text{SS|LOC|CONT|LF } \boxed{1} \\ \text{INFO-STRUC} \begin{bmatrix} \text{FOCUS } \langle \boxed{1} \rangle \\ \text{TOPIC } \langle\rangle \end{bmatrix} \end{bmatrix}$$

$$\vee \begin{bmatrix} \text{PHON|ACCENT } unaccented \\ \text{INFO-STRUC} \begin{bmatrix} \text{FOCUS } \langle\rangle \\ \text{TOPIC } \langle\rangle \end{bmatrix} \end{bmatrix}$$

$$\vee \ldots$$

Figure 3: Relating intonation and information structure

2. Appendix

De Kuthy & Meurers (2003) – 2

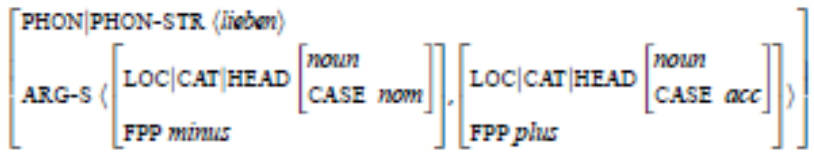

Figure 5: The focus projection potential of *lieben*

Since verbs need to be able to lexically mark which of their arguments can project focus when they are accented, we introduce the boolean-valued feature FOCUS-PROJECTION-POTENTIAL (FPP) for object of type *synsem* (105).

The third disjunct specifies under which circumstances focus can project in the verbal domain: a phrase headed by a verb can only be in the focus (i.e., its entire logical form is token identical to an element of its focus value) if the daughter that has the focus projection potential (FPP *plus*) is entirely focused itself (106).

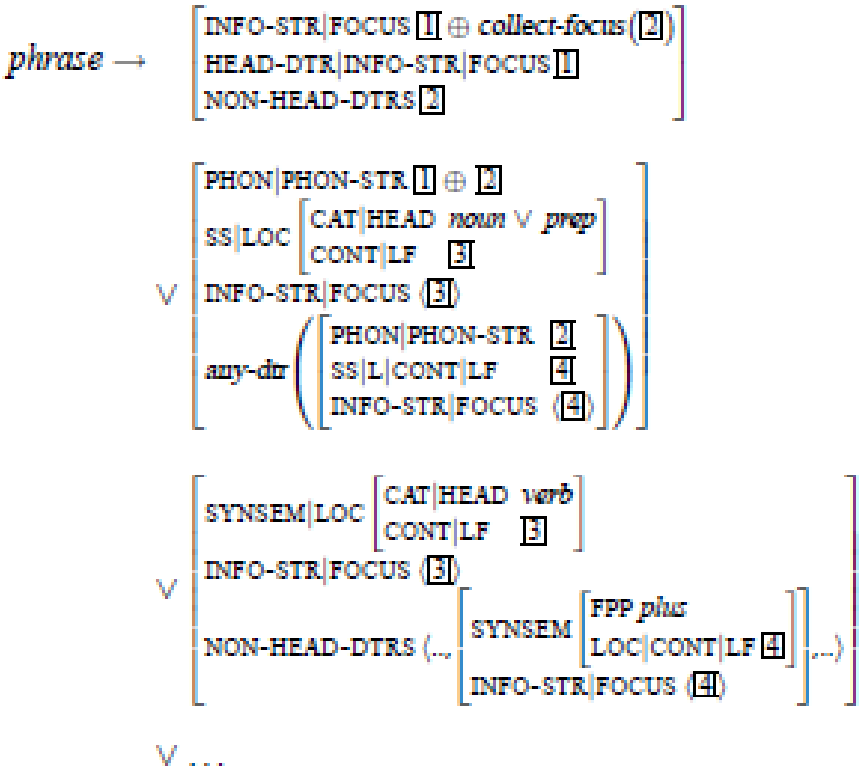

Figure 6: Extended focus projection principle