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Fully Syntactic, Fully Lexical, or In-Between? Remarks on the Architectures of Generative Grammars

1. Introduction

In this talk, I will compare the architectures of four generative models: MP, LFG, HPSG, and GASG (Generative Argument Structure Grammar). The central issue to be addressed will be the division of labour between two major modules of grammar: the syntactic component and the lexicon, from the perspective of treating certain basic syntactic phenomena. For concreteness, I will discuss how some representative accounts in the four models handle designated preverbal constituents in Hungarian: foci and verbal modifiers, which are in complementary distribution. I will show that these four models occupy four distinct positions on the syntax–lexicon interface scale, fundamentally determined by the architectures and principles of their respective frameworks: the mainstream MP approach is (openly) fully syntactic, the GASG approach is (declaratively) fully lexical, i.e. they are at the two extreme points, while the LFG approach is in the middle, and the HPSG approach seems to be between the previous two. On the basis of the assessment of the accounts to be compared, I will argue that the architecture and the principles of LFG provide an optimal and intuitively plausible setting for a formal (and implementable) analysis of the phenomena under investigation. The structure of this abstract is as follows. Given that the general characteristic features of MP, LFG and HPSG can be assumed to be well-known in our HPSG-LFG circle, it is only GASG, most probably a lesser-known framework, that I will introduce in a relatively detailed fashion in section 2. In section 3, I will present the sample accounts of the Hungarian phenomena in the four theories. I will discuss two MP approaches. In section 4, I will compare the five approaches. In section 5, I will make some concluding remarks.

2. Traits of GASG

GASG was created by Gábor Alberti and further developed by Alberti and his colleagues, see Alberti (1999), Szilágyi (2008), and Alberti & Kleiber (2010), among others. It is a generative model designed for treating syntactic and morphological phenomena in a "totally lexical" fashion, partially motivated by Karttunen (1986). It has also been designed to be implementable. This approach has an extremely strong underlying and overarching semantic component that motivates and regulates parsing on the basis of a very detailed and articulated lexicon. This semantic theory is called ℜeALIS, for details, see Alberti & Kleiber (2010), for instance. Alberti & Kleiber point out that GASG is "totally lexicalist": its lexicon contains lexical items with extremely complex descriptions comprising what they call *properties/offers* and *expectations/requirements*. The system does not build phrase structure trees, and the only admitted operation is unification. It handles word order constraints just like case or agreement constraints. This Totally Lexicalist Morphology (TLM) approach "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)" (2010: 108).

Szilágyi (2008) also emphasizes the fact that their system dispenses with phrase structure, and word order and "syntax" are handled by rank parameters: the adjacency requirement can/must be satisfied either directly or indirectly (in the latter case there is an "intervening" element higher-ranked for adjacency). Consider one of the examples she discusses.

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

The essence of the analysis is that 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. Consider Szilágyi's representation of (1) in Figure 1 on page 4. The nationality adjective (with its rank number 1) satisfies the adjacency requirement directly, the other elements do so indirectly. Their fixed order is encoded by their hierarchical rank numbers; thus, any other permutations of these elements are ungrammatical.

3. Representative analyses of Hungarian preverbal foci and verbal modifiers in Hungarian

The sentences in (2) and (3) contain an example of the classical type of Hungarian verbal modifiers (VMs): a preverb (aka coverb or (verbal) particle): *be* 'in'. In a neutral sentence, VMs have to occur immediately preverbally, see (2). In non-neutral sentences, which contain a focused constituent, a 'wh'-phrase or the negative particle in (clausal) negation, such an element must occupy the immediately preverbal position, and the VM must occur postverbally. Consider (3), one of the possible focused counterparts of (2). In this example, the object is focused, but it would be equally possible to focus the subject or the oblique argument. (As a special case, it is also possible to focus the VM.)

(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.'

3.1. Szilágyi (2008) offers the **GASG** analysis of (3) shown in Figure 2 on page 4. In the talk, I will discuss it in a detailed fashion. For the purposes of this abstract, its crucial aspects are as follows. GASG captures the fact Hungarian is basically a free word order language (except for the discourse functional configuration of the preverbal left periphery) 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 7s in Figure 2. VMs are treated as complements, so they also have this general complement rank, see *r7b* in Figure 2. However, in neutral sentences they immediately precede the verb. This 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). However, *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*.

3.2. The sketch of the analysis of (2) and (3) in the spirit of É. Kiss (2008) in Figure 3 on page 4 exemplifies the mainstream **cartographic MP** approach in its **phase theory** phase. In line with Brody's (1990) influential GB approach, she accounts for the preverbal complementarity of VMs and foci by assuming that "the head of a phase must be overt; thus it is always the highest overt head in the phase. Then in a phase represented by a FocP, the head is the V sitting in the head position of Non-Neutral P. When no FocP is projected, the extended v*P phase of the Hungarian sentence is represented by an AspP. […] AspP has an EPP feature, as a consequence of which Spec,AspP is filled with the verbal particle/bare nominal in Spec,PredP, with Asp remaining phonologically empty. The highest overt head, representing the head of the phase, is the V sitting in Pred in this case" (2008: 221). By contrast, the analysis of (2) and (3) in the spirit of Surányi (2011) in Figure 4 on page 4 exemplifies a non-cartographic, **interface MP** approach. He claims that the id-focus element does not move to Spec,TP for feature-checking purposes, nor is this movement primarily triggered by the EPP. It is a joint syntax-semantics-phonology interface requirement that overtly moves a constituent there: it is in this position (syntax) that it can have the id-focus interpretation (semantics) with the appropriate prosody (phonology). Given that the EPP imposed on TP in Hungarian on this account must be satisfied in a neutral sentence as well, Surányi postulates that in this case it is the VM that lands in Spec,TP. (In addition, he claims that in negative sentences even the negative particle, which is phrasal in nature, can satisfy the EPP in Spec,TP.) Notice that in this analysis VMs and foci (and even the negative particle) are in real positional complementary distribution, cf. É. Kiss' (1992) seminal GB analysis treating the complementarity of foci and VMs by assuming that they fight for the same Spec,VP position.

3.3. In his **HPSG** framework, Szécsényi (2009, 2011, 2013) postulates the structure shown in Figure 5 on page 4 for Hungarian finite sentences. Following the MP tradition in this respect, he assumes that a VM, which is a complement of the verb, makes up a complex predicate with that verb. In his analysis, a VM occupies a special, designated VP-initial position, immediately preceding the verbs. Not only a verbal particle, but other (designated) complements of the verb can have this VM status; for obvious reasons, in each individual case only a single element can function as a VM. Szécsényi identifies this designated element by a special feature CAR (standing for "verb-carrier", a term borrowed from Kálmán-Rádai 1998). This feature points to one of the verb's complements in its complement list. For instance, on his account the lexical form of the verb *hozott* 'brought' in (2) has four complements: the subject, the object, the oblique argument, and the verbal particle *be* 'in'. The CAR feature points to this particle (in the case of a neutral sentence), and, consequently, the particle occupies the VP-initial position, as in (2). Szécsényi treats focusing as a lexical process. Its essence is that the verb gives the focus feature (F-GIVE) to one of its complements or adjuncts. At the same time, the CAR feature must be (or must become) empty. See Szécsényi's (2011) schematized Focus Selecting Lexical Rule in Figure 6 on page 4. Notice that in this approach the focus and the VM occupy two distinct syntactic positions: the former is VP-adjoined and the latter is VP-initial. Their complementarity is encoded (or, rather, constrained or stipulated) by the rule in Figure 6.

3.4. In his **LFG** framework, Laczkó (2014a, 2014b) postulates the structure shown in Figure 7 on page 5 for Hungarian finite sentences, with the major functional annotations shown in Figure 8 (page 5). These (simplified, programmatic) annotations capture the following empirical and basic theoretical generalizations. ***(i)*** The topic field, dominated by the S node, is populated by (contrastive) topics and sentence adverbs. ***(ii)*** In the VP-adjoined quantifier zone, there are quantifiers and non-final 'wh'-phrases in multiple 'wh'-questions. ***(iii)*** In the single Spec,VP position, three major types of constituents are in complementary distribution: ***(a)*** a focused phrase (first disjunct); ***(b)*** a single 'wh'-phrase or the final 'wh'-phrase in multiple 'wh'-questions (second disjunct); ***(c)*** VMs (third disjunct). The { (↑GF)=↓ | ↑=↓ } disjunction in the third disjunct is used to distinguish two main types of VMs: verbal particles and the rest, i.e. all the other (sub)types. The functional head annotation (↑=↓) is for the particle (which is assumed to make up a real complex predicate with the verb: they are functional co-heads), while the (↑GF)=↓ is for all the other VM types, the assumption being that these VMs are complements of the verb, and they receive grammatical functions from it. The most important ingredients of the analysis of (2) and (3) in Laczkó's approach are as follows. He assumes that a verbal particle like *be* 'in' has a lexical form separate from that of *hozott* 'brought'. They are treated as a

complex predicate, and their joint argument structure is represented in the lexical form of the verb. In this lexical form it is also constrained, by the help of an appropriate CHECK feature pair, whose two members are included in the two respective lexical forms, that they must co-occur in syntactic structure (possibly in non-adjacent positions). In addition, the following disjunction is included in the lexical form of the particle: { (↑FOCUS) | ~(↑FOCUS) (↑CHECK _VM)=c + }. This regulates the distribution of foci and VMs: the particle must occur in the Spec,VP position if there is no focused constituent in the sentence (second disjunct), or it can occur anywhere if there is a focused constituent present (first disjunct). Notice that in this approach the preverbal complementarity of foci and VMs is captured in terms of syntactic positional complementarity (and functional annotational disjunctions).

4. A comparison of these MP, LFG, HPSG, and GASG approaches

In this abstract, I can only concentrate on those specific features of these approaches that are related to the treatment of foci and VMs in Hungarian with respect to certain criteria. Note that by referring to the four theories below I basically mean their representative approaches discussed above.

1. ***the treatment of the particle(VM)–verb relationship***
   a. they make up a complex predicate (of some sort): MP, LFG, HPSG, GASG
   b. special representation for the complex predicate in the lexicon: LFG, HPSG, GASG
   c. the preverbal position of the particles is lexically specified → no syntactic movement: LFG, HPSG, GASG
   d. syntactic complex predicate formation (in overt syntax or at LF) → movement: MP
   e. in the complex predicate, the particle is a complement of the verb: MP, HPSG, GASG
   f. the particle is not a complement of the verb syntactically: LFG
   g. the preverbal position of the particle is strongly motivated by its aspect marking potential: MP, GASG
   h. aspect marking (and the preverbal) position is lexically encoded: GASG
   i. aspect marking is syntactically achieved: MP
   j. currently no formal treatment (yet) of the aspect marking dimension: LFG, HPSG

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

3. ***the treatment of focus–VM complementarity***
   a. distinct preverbal syntactic positions: (cartographic) MP, HPSG
   b. the same syntactic position: (interface) MP, LFG, GASG

5. Concluding remarks

1) Naturally, 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 is much closer in spirit and architecture to GASG.
6) In my opinion, the behaviour of (real) 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).
7) By contrast, I think the essence of focusing is better treated syntactically, along the LFG lines shown above (and the interface MP approach is closest to it in spirit). Both GASG and HPSG use a lexical apparatus, which requires lexical focusing (redundancy) rules, the focusing of adjuncts in the lexicon and, consequently, the creation of as many lexical forms of a predicate as the number complements and adjuncts it may have.
8) It is the complementarity of foci and VMs that needs to be *partially* captured in the lexical forms of particles, again, along the LFG lines above. (In the talk, I will show that in the case of all the other VMs this complementarity is captured in the lexical forms of the predicates.)
9) 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.

FIGURES

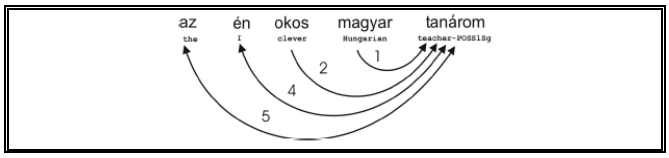

Figure 1. Szilágyi's (2008) GASG representation of (1)

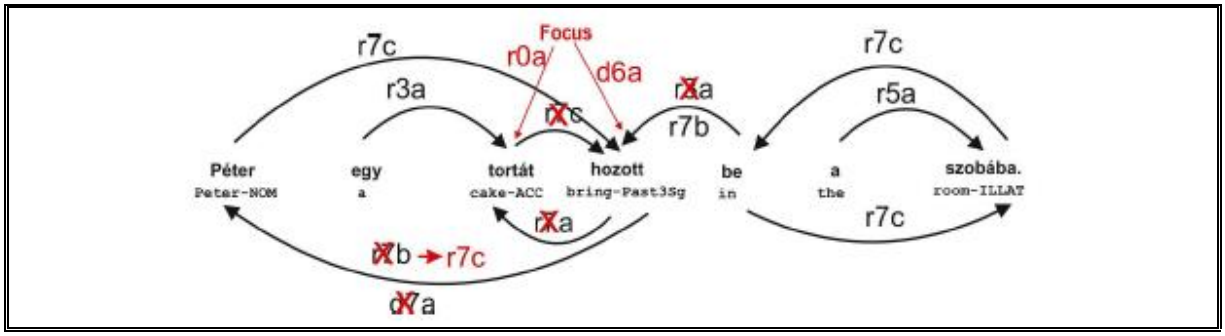

Figure 2. Szilágyi's (2008: 181) GASG analysis of (3)

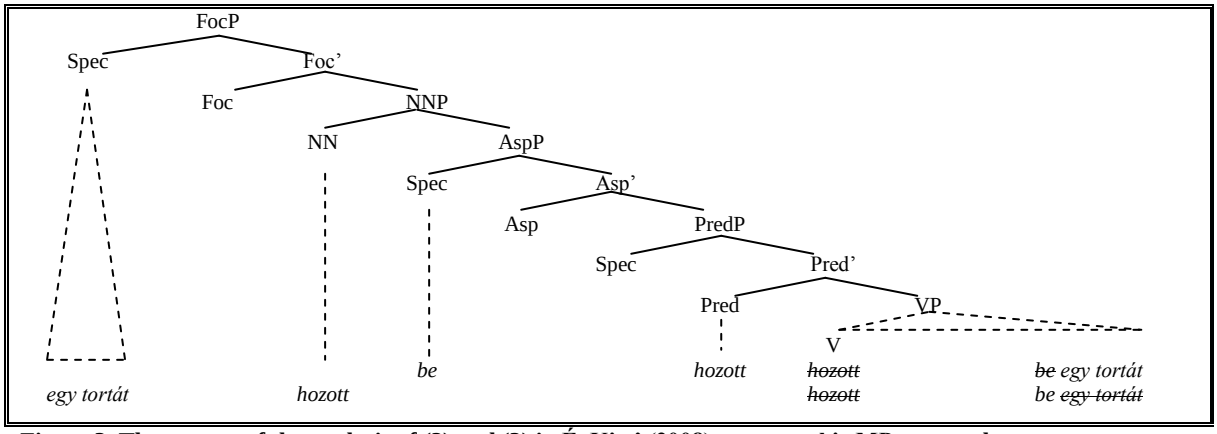

Figure 3. The essence of the analysis of (2) and (3) in É. Kiss' (2008) cartographic MP approach

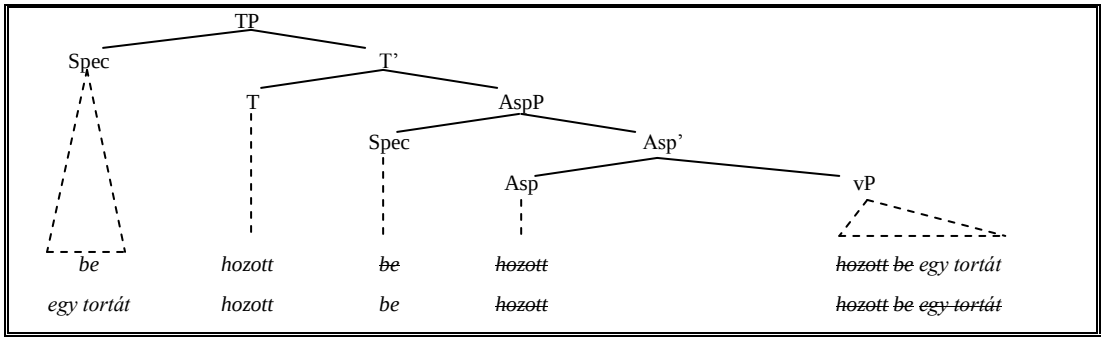

Figure 4. The essence of the analysis of (2) and (3) in Surányi's (2011) interface MP approach

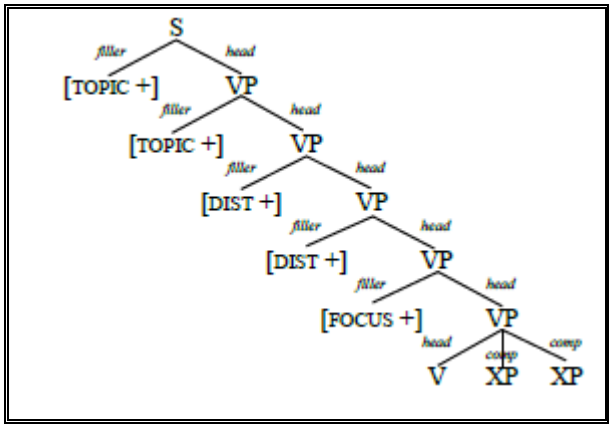

Figure 5. Szécsényi's (2013: 208) HPSG structure for Hungarian finite sentences

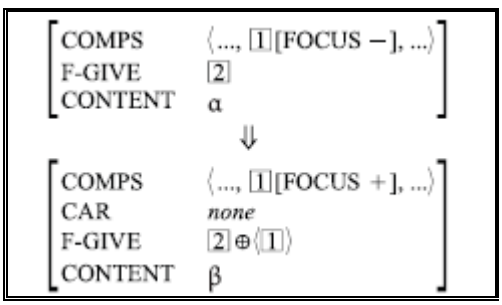

Figure 6. Szécsényi's (2011: 114) Focus Selecting Lexical Rule

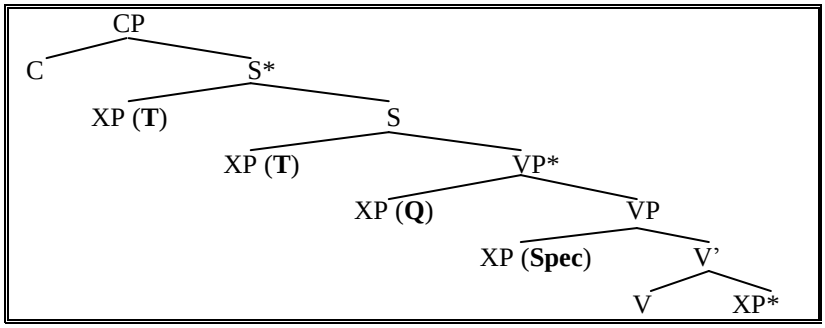

Figure 7. Laczkó's (2014a: 337) LFG structure for Hungarian finite sentences (S* and VP* mark iterativity of adjunction)

T: **{ (c-)topic | sent.adv. }**	**Q:** **{ quantifier | WH }**	**Spec:** **{ focus | WH | VM }**
{ (↑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)= ↓ | (↑GF)= ↓ (↓CHECK _VM-INTER)=c + ((↑CHECK _VM-INTER)= +) | { (↑GF)= ↓ | ↑=↓ } (↓CHECK _VM)=c + }

Figure 8. Disjunctive functional annotations for the structure in Figure 7

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