

The syntax-morphology interface problem

Robert D Borsley
University of Essex

Morphology in HPSG

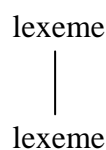
Almost all HPSG work has rejected a morpheme-based approach to morphology. HPSG focuses on signs, linguistic expressions with phonological, syntactic and semantic properties. It assumes that affixes are generally not signs. Rather they are just bits of phonology realizing certain morphosyntactic features.

Koenig (1999: 97, fn.3) suggests that there are just a few affixes that should be analysed as signs because they can be conjoined, e.g. *pre-* and *post-*.

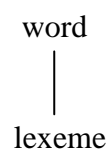
(1) *pre-* and *post-*World War II

Koenig (1999) and Sag (2012) propose that both derivational and inflectional morphology involves a relation between a mother and a daughter. In derivational morphology both mother and daughter are lexemes. In inflectional morphology the daughter is a lexeme but the mother is a word.

(2) Derivational morphology



Inflectional morphology



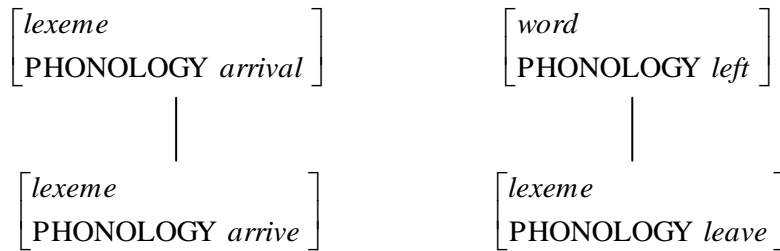
This means that words and derived lexemes have structure in the same way as phrases. However, unlike phrases they normally have a single daughter. An important exception is compounds with two daughters

In Koenig (1999) words, derived lexemes and phrases have structure in a precise sense. In addition to features PHON and SYNSEM encoding their phonological, syntactic and semantic properties they have a DTRS feature encoding their internal structure.

In Sag's (2012) framework, they only have structure in a loose sense. They do not have a DTRS feature. Instead constructions pair a sign with one or more daughters, and a sign is well formed if (a) it matches some lexical entry, or (b) it matches the mother of some construction.

Mother and daughter may have the same phonology. However, they commonly differ through the addition of phonological material at the beginning or the end or in some other way. Here are some simple examples (where I use ordinary orthography to represent phonology).

(3)



The changes to the phonology are triggered by various morphosyntactic features. There is no reason why some feature or features should not trigger more than one change. Hence, multiple exponence is unproblematic.

HPSG work on morphology draws on realizational work.

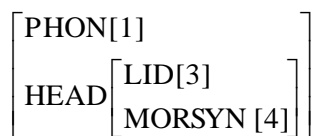
‘My approach to morphology here is realizational (Matthews 1991, Anderson 1992), perhaps closest in spirit to the approach developed by Stump (2001) and related work’ (Sag (2012: 107, fn. 54).

HPSG is combined with a version of Paradigm Function Morphology (PFM) in Miller and Sag’s (1997) analysis of French clitics and Bonami and Samvellian’s (2009) of Persian.

PFM provides sets of rules sensitive to the identity of the lexeme and the values it has for relevant features and introduces phonological material of various kinds.

Bonami and Samvellian (2009) propose the following constraint, where LID assigns a specific index to each lexeme and MORSYN groups features that are realized in inflection

(4) A sign of type *word* meeting the description

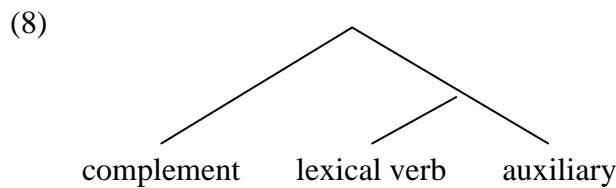
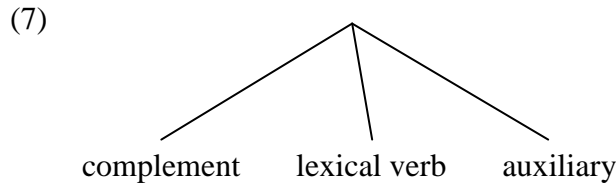
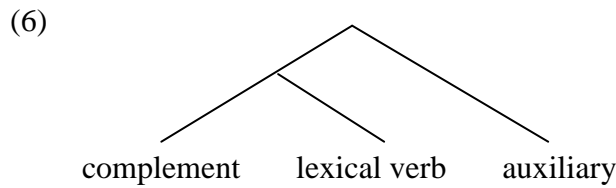


is well-formed only if the PFM grammar licenses phonology [1] as a realization of the features [4] for the lexeme [3].

The data

There is quite a lot that is not clear to me in the data. However, it seems to me that the most important fact is that there are pairs of affixes which sometimes realize agreement with a single controller and sometimes realizing agreement with two different controllers.

In earlier work, I proposed that clausal agreement involves an AGR-CLAUSAL feature whose value is the index of an absolutive argument with its NUMBER and GENDER features. Examples with multiple exponence are no problem for this approach. Thus, (1) from the problem set is unproblematic. (I place numbers from the problem in square brackets.)



Whatever constituent structure is assumed, agreement expected if both are in the same order domain as the absolutive argument.

In (12) agreement is realized on both the verb and logophor.

[12] o⟨r⟩ka-li ju-w-mu ja-r ʃ:onnol-ši žu-s:a⟨r⟩u
 ⟨II.SG⟩take.PFV-CVB this-I-SG.ERG this-II[SG.ABS] woman-ADVZ LOGOPH.OBL.I.SG-DAT.PCL⟨II.SG⟩
 ow-li o:q-u q'e⟨b⟩di-li
 [IV.SG]do.PFV-CVB wedding(IV)[SG.ABS]-and ⟨I/II.PL⟩sit.down.PFV-EVID
 Then he married her (took her as a wife for himself), they had a wedding and settled
 down.[T5:31]

This is rather like (5).

In (13) the pronoun *b-el-a⟨b⟩-ij⟨b⟩u* shows three realizations of agreement with the absolutive NP *mas:-u* 'bed'. The auxiliary and the lexical verb also agree with the absolutive.

[13] a⟨b⟩χa-s o⟨b⟩q^ʃa-mχur
 ⟨I/II.PL⟩lie.down-FIN ⟨I/II.PL⟩go.PFV-when
 b-el-a⟨b⟩-ij⟨b⟩u mas:-u b-a⟨r⟩ča-r-ši e⟨b⟩di
 III.SG-1PL.EXCL.DAT-PCL⟨III.SG⟩-PCL⟨III.SG⟩ bed(III)[SG.ABS]-and III.SG-⟨IPF⟩put-iPFV-CVB ⟨III.SG⟩be.PST
 Only once shepherds were gone to sleep, could we make our own beds [T31:6]

(14) shows four realizations of agreement.

[14] d-as:a-a⟨r⟩u-ej⟨r⟩u-t:u-r
 II.SG-of.myself-⟨II.SG⟩PCL-⟨II.SG⟩PCL-ATTR-II.SG
 'my own [female]' (Kibrik 1977: 127-30 via Corbett 1998: 196).

It doesn't appear to pose any problems.

Problems for the approach developed earlier arise from examples where a word shows agreement with two different controllers. (2) is a simple example.

- [2] ja-r lo s:iħru b-i-t:u-r d-i
 this-II.SG child(II)[SG.ABS] cunning(III)[SG.ABS] III.SG-be.PRS-ATR-II.SG II.SG-be.PRS
 This girl is cunning. (Literally ‘this female child is with cunning’)

Here, *b-i-t:u-r* shows agreement in the form of a prefix *s:iħru* ‘cunning’ and agreement in the form of a suffix with *ja-r lo* ‘this girl’. Both are absolutes, so the dual agreement is not too surprising. (7), (8), (9) also show agreement with two controllers but one is unexpressed.

- [7] lagi a:c’a-l-kan kummul-u kunne-t’u-t:u-r
 stomach(IV)[SG.ABS] [IV.SG]fill-FIN-TEMP food(IV)[SG.ABS]-and IV.SG.eat.PFV-NEG-ATTR-II.SG
 (who) never ate to the full [= she didn’t eat food to fill her stomach]

- [8] c’abu-t:u-t ĩ:an hanq:’-a-χut ak:u-r-t:u-r
 drink.PFV-ATTR-IV.SG water(IV)[SG.ABS] throat(IV)-IN-TRANS [IV.SG]see-IPFV-ATTR-II.SG
 drunk water can be seen through her throat. [T1:6]

- [9] jamu-t o<ɾ>q’a-t:u-t safat-li-t
 this-IV.SG <II.SG>go.PFV-ATTR-IV.SG time(IV)-SG.OBL-SUPRESS
 At the time of my going

Examples like these clearly necessitate some changes to the earlier approach.

A fairly obvious change is to make the value of AGR-CLAUSAL a list of indices. *b-immaaq:’u* in (1) would then have the feature specification in (9).

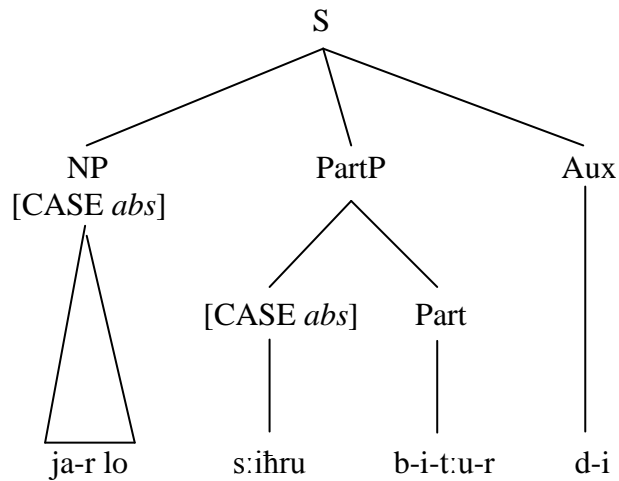
- (9)
- $$\left[\text{AGR-CLAUSAL} \left\langle \left[\begin{array}{l} \text{NUMB}_{iii} \\ \text{GEND}_{sg} \end{array} \right] \right\rangle \right]$$

For *b-i-t:u-r* in (2) one might propose the following feature specification:

- (9)
- $$\left[\text{AGR-CLAUSAL} \left\langle \left[\begin{array}{l} \text{NUMB}_{sing} \\ \text{GEND}_{iii} \end{array} \right], \left[\begin{array}{l} \text{NUMB}_{sing} \\ \text{GEND}_{ii} \end{array} \right] \right\rangle \right]$$

Of course, there are questions about how such feature specifications arise. The data suggests that it is only participles that agree with two different controllers. In the case of (2), one possibility is that the participle heads a phrase containing an absolute and has another absolute as its sister as follows:

(10)



Assuming that order domains reflect constituent structure in a straightforward way, PartP will agree with the higher absolutive NP and this agreement will be reflected on the head, which will also agree with the lower absolutive NP. It is not clear to me whether something similar could be proposed for the other examples.

There are also questions about how the values of AGR-CLAUSAL are realized. In the case of (2) morphological rules must spell out the single index as both a prefix and a suffix. In the case of (2) morphological rules must spell out the first index as the prefix *b-* and the second index as the suffix *-r*. One possibility is that the prefix rule refers to the first index in the AGR-CLAUSAL list whereas the suffix rules refers to the last index. When there are two indices in the list rules will pick out different ones. When there is just one they will both pick it out.

REFERENCES

- Anderson, S. (1992), *Amorphous Morphology*, Cambridge: Cambridge University Press.
- Bonami, O. and P. Samvelian (2012), The diversity of inflectional periphrasis in Persian. Draft of March 25, 2009.
- Kim, J-B., and I. A. Sag (2002), Negation without head movement, *Natural Language and Linguistic Theory* 20, 339-412.
- Koenig, J-P. (1999), *Lexical Relations*, Stanford: CSLI publications.
- Matthews, P. H.(1991), *Morphology*, Cambridge: Cambridge University Press, 2nd ed.
- Miller, P. and I. A. Sag (1997), French clitic movement without clitics or movement. *Natural Language and Linguistic Theory* 15, 573--639.
- Sag, I. A. (2012), Sign-Based Construction Grammar: An informal synopsis. In Hans C. Boas and Ivan A. Sag (eds.), *Sign-Based Construction Grammar*. Stanford: CSLI Publications, pp. 69-202.
- Stump, G. T. (2001), *Inflectional Morphology*, Cambridge: Cambridge University Press.