

# HPSG AND AGREEMENT

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## 1. HPSG

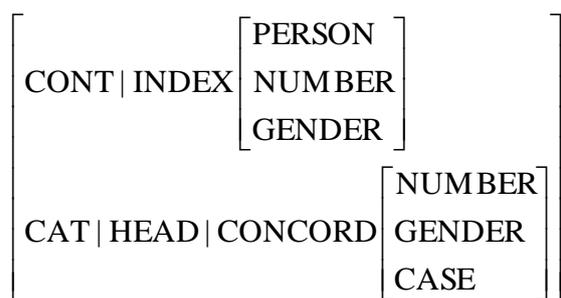
- HPSG is a monostratal theory, in which the syntactic structure of a sentence is a single relatively simple constituent structure. There are no movement processes as in the various forms of transformational grammar.
- HPSG is a constraint-based theory, in which a grammar consists of a set of word and phrase types, and a set of constraints to which they are subject. The constraints are implicational statements, saying that if a linguistic object has some property or properties then it must have some other property or properties.

## 2. Types of agreement and agreement features

Much HPSG work assumes that in addition to semantic/pragmatic agreement there are two types of syntactic agreement and two sorts of agreement features: index agreement features which are the value of the feature INDEX and concord agreement features which are the value of a feature CONCORD (or in some work AGR). INDEX is part of the value of CONT(ENT) and CONCORD is part of the value of HEAD, which is part of the value of CAT(EGORY).

For Wechsler & Zlatic (2001, 2003) and Wechsler (2011), the value of INDEX is the features PERSON, NUMBER and GENDER while the value of CONCORD is the features NUMBER, GENDER and CASE.

(1)



Since pronouns and their antecedents have the same index, CASE cannot be part of the value of INDEX, but PERSON could be part of the value of CONCORD.

Wechsler sees subject–verb agreement as the main example of index agreement, and NP-internal agreement as the main example of concord agreement.

NUMBER and GENDER normally have the same value in INDEX and CONCORD.

$$(2) \left[ \begin{array}{l} \text{CONT | INDEX} \left[ \begin{array}{l} \text{NUMBER [1]} \\ \text{GENDER [2]} \end{array} \right] \\ \text{CAT | HEAD | CONCORD} \left[ \begin{array}{l} \text{NUMBER [1]} \\ \text{GENDER [2]} \end{array} \right] \end{array} \right]$$

But with some nouns, e.g. Serbo-Croatian *deca* ‘children’ they differ.

- (3) Ta            dobra            deca            su            doš-l-a.  
 that.FEM.SG good.FEM.SG children AUX.3PL come.PPRT-NT.PL  
 ‘Those good children came.’

*Deca* will have the following features:

$$(4) \left[ \begin{array}{l} \text{CONT | INDEX} \left[ \begin{array}{l} \text{NUMBER } plur \\ \text{GENDER } neut \end{array} \right] \\ \text{CAT | HEAD | CONCORD} \left[ \begin{array}{l} \text{NUMBER } sing \\ \text{GENDER } fem \end{array} \right] \end{array} \right]$$

See Danon (2011) for an argument that Minimalism needs to incorporate the INDEX–CONCORD distinction.

### 3. Agreement features in controller and target

Following Pollard & Sag (1994), Wechsler & Zlatic (2001, 2003) and Wechsler (2011) treat agreement as a case of selection. A third person singular verb is one which selects a third person singular subject, a masculine plural adjective is one that modifies a masculine plural noun, etc.

$$(5) \left[ \begin{array}{l} \text{HEAD } verb \\ \text{SUBJ } \langle \text{NP}[3, sing] \rangle \\ \dots \end{array} \right] \left[ \begin{array}{l} \text{HEAD } adj \\ \text{MODN } [masc, plur] \\ \dots \end{array} \right]$$

The value of SUBJ is a list of *synsem* objects (combinations of syntactic and semantic information). The list probably never has more than one member. The value of MOD is a single *synsem* object and it is part of the value of HEAD.

Kathol (1999) provides a number of objections to this approach.

- It has a problem with situations, e.g. in Swahili, where the controller and the various targets have essentially the same morphology

(6) Kikapu kikubwa kimoja kilianguka. (Swahili)  
 basket large one fell  
 ‘One large basket fell.’

- It has a problem with German impersonal passives which apparently have third person singular marking while not selecting any subject.

(7) An jenem Abend wurde viel gelacht. (German)  
 during that evening was.3SG much indeed  
 ‘There was much laughter that evening.’

This means either that agreement must be treated in some different way or that it must be possible for a verb which selects no subject to have the same phonological form as one which selects a third person singular subject.

#### 4. The relation between agreement features and phonological form

Questions about the relation between agreement features and phonological form also arise with finite verbs in Welsh.

In Welsh most prepositions and non-finite verbs and nouns agree with a following pronoun but show no agreement with a following non-pronominal NP.

A typical preposition:

(8) a. arno fo (Welsh)  
 on.3SGM he  
 ‘on him’  
 b. arni hi  
 on.3SGF she  
 ‘on her’  
 c. arnyn nhw  
 on.3PL they  
 ‘on them’

(9) ar y bachgen/yr eneth/y bechgyn  
 on the boy the girl the boys  
 ‘on the boy/the girl/the boys’

Finite verbs show agreement with a following pronominal subject:

(10) a. Gwelodd e / hi ddraig. (Welsh)  
 see.PAST.3SG he she dragon  
 ‘He saw a dragon.’

b. Gwelon       nhw ddraig.  
 see.PAST.3PL they dragon  
 ‘They saw a dragon.’

With a non-pronominal subject, either singular or plural, what looks like the third person singular form appears:

(11) Gwelodd     y bachgen/bechgyn ddraig. (Welsh)  
 see.PAST.3SG the boy boys dragon  
 ‘The boy/boys saw a dragon.’

Two possible analyses:

- Finite verbs with a non-pronominal subject have no agreement features (like prepositions, nouns and non-finite verbs that combine with a non-pronominal NP) but are formally identical to the third person singular form.
- Finite verbs with a non-pronominal subject have third person singular agreement features through some special constraint.

### 5. More on INDEX and CONCORD

Levine (2010) argues that subject–verb agreement is not INDEX agreement but AGR agreement.

He argues that *they* in an example like (12) has the description in (13).

(12) I know someone<sub>1</sub> who thinks they<sub>1</sub>’re the greatest thing since sliced bread.

(13)

$$\left[ \begin{array}{l} \text{PHON } they \\ \text{SYNSEM } \left[ \begin{array}{l} \text{CAT | HEAD | AGR } \left[ \begin{array}{l} \text{PER } 3rd \\ \text{NUM } plur \end{array} \right] \\ \text{CONT | INDEX } \left[ \begin{array}{l} \text{PER } 3rd \\ \text{NUM } sing \end{array} \right] \end{array} \right] \end{array} \right]$$

The INDEX features allow coindexing with *someone*. The AGR features are responsible for subject–verb agreement

Bender & Flickinger (1999: 212) propose a similar analysis for *they* in (14).

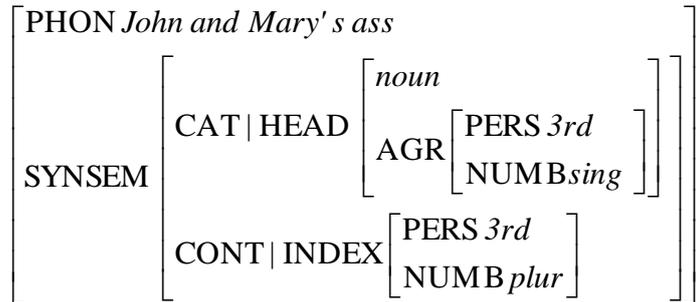
(14) Everyone wins, don’t they?

Levine’s main focus is the *ass* camouflage construction of AAVE, exemplified by (15).

(15) John and Mary’s ass is making theysself mad. (AAVE)

He proposes an analysis in which *John and Mary's ass* has the description in (16).

(16)



The value of AGR comes from *ass* and the value of INDEX from the possessor.

## 6. The level of agreement

HPSG has a single level of constituent structure, but it is possible that something other than constituent structure is relevant to agreement.

### ARG-ST

The basic combinatorial properties of a word are encoded as the value of the ARG-ST (ARGUMENT-STRUCTURE) feature.

The superficial combinatorial properties of a word are encoded as the value of the features SUBJ and COMPS.

The values of the three features are normally related as follows:

(17)



But null subjects are commonly analyzed as elements which appear in ARG-ST lists but not in SUBJ lists.

The Polish verb *czytałem* ‘read’ in (18) has the simplified description in (19):

(18) Czytałem książkę. (Polish)  
 read.1SGM book  
 ‘I read a book.’

(19)

$$\left[ \begin{array}{l} \text{HEAD} \left[ \begin{array}{l} \textit{verb} \\ \text{VFORM } \textit{fin} \end{array} \right] \\ \text{SUBJ } \langle \rangle \\ \text{COMPS } \langle [1] \rangle \\ \text{ARG-ST } \langle \text{NP}, [1]\text{NP} \rangle \end{array} \right]$$

Assuming such an analysis, subject–verb agreement cannot refer to constituent structure or to the SUBJ feature but must refer to the ARG-ST feature.

## DOM

In some languages, agreement seems to involve reference to linear order. This seems to be the case in Welsh, where finite verbs, prepositions, non-finite verbs and nouns all agree with an immediately following pronoun (Borsley 2009).

In HPSG the only place where order is represented in the syntax is in order domains.

Phrasal constituents have both a list of daughters (encoded as the value of the DTRS feature) and a list of domain elements (encoded as the value of the DOM feature). Commonly there is a one-to-one correspondence between daughters and domain elements, but sometimes there are more domain elements than daughters.

One might propose that (20a) has a one-to-one correspondence between daughters and domain elements, but that (20b) has an extra domain element, giving the schematic analyses in (21):

- (20) a. Mae            chwant mynd adref arna' i.    (Welsh)  
be.PRES.3SG desire go home on.1SG I  
'I desire to go home.'
- b. Mae            chwant arna' i fynd adref.  
be.PRES.3SG desire on.1SG I go home  
'I desire to go home.'

(21) a.

$$\left[ \begin{array}{l} \text{SYNSEM S} \\ \text{DTRS } \langle [\textit{mae}], [\textit{chwant mynd adref}], [\textit{arnaf i}] \rangle \\ \text{DOM } \langle [\textit{mae}], [\textit{chwant mynd adref}], [\textit{arnaf i}] \rangle \end{array} \right]$$

b.

$$\left[ \begin{array}{l} \text{SYNSEM S} \\ \text{DTRS } \langle [\textit{mae}], [\textit{chwant fynd adref}], [\textit{arnaf i}] \rangle \\ \text{DOM } \langle [\textit{mae}], [\textit{chwant}], [\textit{arnaf i}], [\textit{fynd adref}] \rangle \end{array} \right]$$

If Welsh agreement involves reference to linear order, it requires a constraint on order domains.

If this is right, Welsh null subjects (and other null arguments) must be represented in order domains.

It is possible that agreement involves different levels in different languages and also that it involves more than one level in some languages.

## 7. Some issues

Should agreement be seen as selection?

How simple/complex is the relation between agreement features and phonological form?

Is subject–verb agreement index agreement or concord agreement?

## REFERENCES

- Bender, E. & D. Flickinger. 1999. Peripheral constructions and core phenomena: Agreement in tag questions. In G. Webelhuth, J-P. Koenig & A. Kathol (eds.), *Lexical and Constructional Aspects of Linguistic Explanation*, 199–214. Stanford, CA: CSLI Publications.
- Borsley, R. D. 2009. On the superficiality of Welsh. *Natural Language & Linguistic Theory* 27, 225–265.
- Danon, G. 2011. Agreement with quantified nominals: Implications for feature theory. In O. Bonami & P. Cabredo Hofherr (eds.), *Empirical Issues in Syntax and Semantics* 8, 75–95.
- Kathol, A. 1999. Agreement and the syntax–morphology interface in HPSG. In R. D. Levine & G. Green (eds.), *Studies in Current Phrase Structure Grammar*, 223–274. Cambridge: Cambridge University Press.
- Levine, R. D. 2010. The *ass* camouflage construction: Masks as parasitic heads. *Language* 86, 265–301.
- Pollard, C. & I. A. Sag. 1994. *Head-driven Phrase Structure Grammar*. Chicago: University of Chicago Press.
- Wechsler, S. 2011. Mixed agreement, the person feature, and the index/concord distinction. *Natural Language & Linguistic Theory* 29, 999–1031.
- Wechsler, S. & L. Zlatic. 2001. A theory of agreement and its application to Serbo-Croatian. *Language* 76, 799–832.
- Wechsler, S. & L. Zlatic. 2003. *The Many Faces of Agreement*. Stanford, CA: CSLI Publications.