

# A Declarative Perspective on Agreement and Government

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Explorations in Syntactic Government and Subcategorisation  
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These are the slides I used for the talk; some of the data presented may require further checking for accuracy.

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- 2 Forward and Backward Raising and Control
  - “Dependent First” in Northern Causasian
  - Tsez: Forward Raising, Backward Control
  - Adyghe: Forward and Backward Raising
- 3 Declarative Frameworks
  - Information-Based Syntax
  - A Brief History
- 4 Information Flow
  - Subsumption
  - Asymmetric Information Flow
  - Sorting Out Case
- 5 Conclusion



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## Information-Based Syntax

- Declarative syntactic frameworks – here HPSG, LFG – are information-based. Why? – Because there are dependencies within a structure which have to be accounted for. Take the case of a *wh*-dependency:
  - (1) a. What did you buy?  
b. \*What did you buy [the book]?
- The fact that *what* is the object of *buy* is encoded by a flow of information (“upward” or “downward”, depending on the approach). As *buy* has all of the relevant information that it has an object in (1)a, it is not possible to also express the object as in (1)b.
- The notion that the properties of an argument are informationally present but not “physically” present is central to my main point(s) here.



## Transformational Accounts, Information, Features

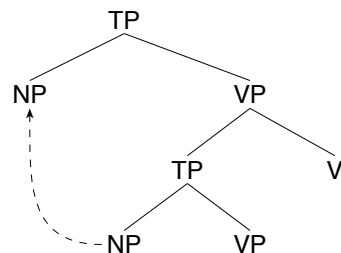
- In GB: things happen and this communicates information around (by carrying it along).
- Features have two functions in MP: they make things happen, and they express grammatical (and maybe ‘interpretable’) information.
- In early MP: things are caused to happen and this communicates information around.
- In latter-day MP: there are certain kinds of communication due to Agree, but then things happen (due to EPP or Edge Features).
- Agree is typically about Feature Valuation. This looks like unification (Miyagawa 2010).

## Information in Syntax

- Q: Why not use unification then? (See also Asudeh and Toivonen 2006.)
- A: Because there is nowhere to keep the information.
- Structure itself is not information-based. In transformational models, the structure **is** the information (more precisely, **some** of the information). The only way to get at all of the information would be to create a description of the whole structure, which is . . . .
- Some of the information in MP has to disappear, in order to record that something happened.
- In LFG, all of the (relevant) information is in f-structure, independent of the phrase structure. In HPSG, the entire syntactic description is all one feature structure.

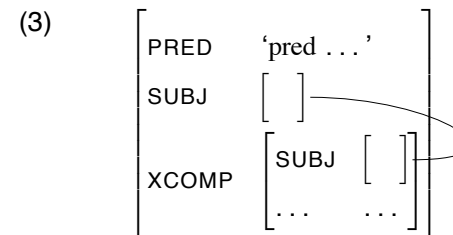
## Control and Raising

(2)



- Compare unification approaches and the Copy Theory of Movement.
- Look at structures where the upper NP is unpronounced/empty and the lower NP is overt.

## Control and Raising (in LFG)



**COMPLETENESS:** with regard to argument GFs like SUBJ, every thematic position – both in control, the lower one in raising – must have a PRED value, to express the semantic content of the argument.

## Information Flow

Blevins (2011):

*A comparison with transformational accounts provides an instructive perspective. Transformational accounts incorporate two independent assumptions: first, that information is propagated “upwards” in a syntactic representation, and second, that this propagation is achieved through constituent-structure displacement. Accounts that substitute structure-sharing for “NP movement” revise both of these assumptions. However, a feature-based model can also express an asymmetrical dependency . . . .*

## Structure Sharing

The LFG/HPSG analysis effectively foreshadows the more recent Minimalist-style analyses in which movement leaves a copy (a trace is an unpronounced copy – see Chomsky 1995), and in which control as well as raising is analyzed via movement (e.g., Hornstein 1999, Polinsky and Potsdam 2002, Hornstein and Polinsky 2010). Strictly speaking there may be differences, depending on whether movement creates literal copies (giving type- but not token-identity, see e.g., Asudeh 2005), or whether the same item is continuous ‘re-merged’, as in Fox and Pesetsky (2005).

## Forward/Backward Constructions

On the basis of this structure-sharing, such approaches would seem like prime candidates for extensions to insightful accounts of backward control and raising, phenomena that Polinsky and Potsdam (2002, 2006, 2011) have documented in detail. The structures corresponding to ‘forward’ and ‘backward’ are shown in (4), where  $\Delta_i$  marks an empty subject position (following the notation of P&P).

- (4) a. Kim<sub>i</sub> seems [ $\Delta_i$  to be singing]. (forward)  
 b.  $\Delta_i$  seems [Kim<sub>i</sub> to be singing]. (backward)

## Controlling Forward/Backward

- In the LFG analysis, e.g., Bresnan (1982b), the fact that control and raising are ‘forward’ in English is because the structure-sharing lexical forms select for a VP complement, which has no place for a ‘downstairs’ subject position.
- We will see that Backward Raising can have an upstairs or downstairs subject, and that Backward Control can be lexically determined.

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## Matasović (2007)

Matasović (2007) presents data from a variety of Northern Caucasian languages, illustrating what he calls the "dependent first" property. He discusses Adyghe, Archi, Dargwa, Hinukh, Ingush, Kabardian, Lezgian, Mingrelian, Tsakhur, and Tsez. His general characterisation is as follows:

*The "dependent first" syntactic patterns are those in which the syntactic structure of the embedded cores affects the syntactic structure of the matrix cores.*

## Adyghe

Say (2004): Adyghe has the the transitive verbs 'begin' *wəžən* and *wəblən*:

- (5) a. *axe-m* [qešo-n-x-e] *r-a-wəž'a-b*  
 they-ERG [dance-FUT-3PL.ABS] 3SG.ABS-3PL.ERG-begin-PAST  
 'They began to dance.'
- b. [*axe-r* qešo-n-x-e] *r-a-wəž'a-b*  
 [they-ABS dance-FUT-3PL.ABS] 3SG.ABS-3PL.ERG-begin-PAST  
 'They began to dance.'

*The basic 'strangeness' of [b] is that the absolutive argument that receives its case from the embedded verb triggers agreement on the matrix verb. Once again, word order phenomena together with some further indications allow us to assume that the overt subject belongs to the embedded clause in [b] and to the matrix clause in [a], as suggested by bracketing.*

## Tsez

Polinsky and Potsdam (2002) show that the Tsez verbs *-oqa* ('begin') and *iča* ('continue') are obligatory backward control. These verbs also have a raising use, in which case the raising is forward.

- (6) *-oqa* ('begin') is forward if raising or backward if control:
- a. *kid* [ziya b-išr-a] *y-oq-si* (forward raising)  
 girl.II.ABS [cow.III.ABS III-feed-INF] II-begin-PAST.EVID  
 'The girl began to feed the cow.'
- b. [*kid-bā* ziya b-išr-a] *y-oq-si* (backward control)  
 [girl.II-ERG cow.III.ABS III-feed-INF] II-begin-PAST.EVID  
 'The girl began to feed the cow.'

## Backward Control

- (7) a. kid<sub>i</sub> [t<sub>i</sub> ziya b-išr-a] y-oq-si (forward raising)  
 girl.II.ABS [ cow.III.ABS III-feed-INF] II-begin-PAST.EVID  
 'The girl began to feed the cow.'
- b. Δ<sub>i</sub> [kid-bā<sub>i</sub> ziya b-išr-a] y-oq-si (backward control)  
 [girl.II-ERG cow.III.ABS III-feed-INF] II-begin-PAST.EVID  
 'The girl began to feed the cow.'

In (7)a the raised argument passes the usual tests for being non-thematic with respect to the matrix predicate (see (8)), and the verb agrees in noun class with it. The facts in (7)b are more unusual – the matrix verb apparently agrees with the embedded clause ergative subject. This would be the only instance of agreement with an ergative. Polinsky and Potsdam (2002) argue that Δ<sub>i</sub> in (7)b represents the thematic subject position of the control verb, and that the verb agrees with this position.

## Evidence for Control

An inanimate, non-intentional and nonagentive subject is possible only with the raising use, not the control use (2002, (14)):

- (8) a. k<sup>w</sup>art'-ā č'ikay yexur-si  
 hammer-ERG glass.ABS break-PAST.EVID  
 'The hammer broke the glass.'
- b. #k<sup>w</sup>art'-ā č'ikay yexur-a roq-si (control)  
 hammer-ERG glass.ABS break-INF begin-PAST.EVID
- c. k<sup>w</sup>art'a č'ikay yexur-a roq-si (raising)  
 hammer.ABS glass.ABS break-INF begin-PAST.EVID  
 'The hammer began to break the glass.'

## Evidence for Constituency

Constituent structure tests also distinguish the two uses (2002, (23)). Only the Absolutive but not the Ergative may scramble with regard to the main clause adverb 'yesterday':

- (9) a. ħuʃ kid-bā/kid ziya bišr-a yoq-si  
 yesterday girl-ERG/girl.ABS cow.ABS feed-INF begin-PAST.EVID
- b. \*kid-bā ħuʃ ziya bišr-a yoq-si (control)  
 girl-ERG yesterday cow feed-INF begin-PAST.EVID
- c. kid ħuʃ ziya bišr-a yoq-si (raising)  
 girl.ABS yesterday cow feed-INF begin-PAST.EVID  
 'Yesterday the girl began to feed the cow.'

## Evidence for Constituency

Evidence for a subject in the matrix clause (2002, (38)):

- (10) Δ<sub>i</sub> nesa nesir<sub>i</sub> [irbahin-a<sub>i</sub> halmaγ-or γutku  
 (empty) REFL.I.DAT Ibrahim.I-ERG friend-DAT house.ABS  
 rod-a] ∅-oq-si  
 make-INF I-BEGIN-PAST.EVID  
 'Ibrahim began, for himself, to build a house for his friend.'

A reflexive may only have an antecedent (that is preceding and) in the same clause.

## Adyghe Raising

Backward raising is illustrated in the Adyghe data in (11) (from Polinsky and Potsdam 2006 and Polinsky (p.c.); also Polinsky and Potsdam 2011); here this particular verb ‘begin’ only has raising uses:

- (11) a.  $\text{\$alexe-r}$  [pjəsmə-r-q'əɣ zəč'e-m-jə a-txə-new]  
 boys-ABS letter-ABS-EMPH all-ERG-CONJ 3ERG-WRITE-INF  
 Ø-fjež'əɣe-x  
 3ABS-BEGAN-3ABS.PL  
 ‘The boys began to write the stupid letter all.’ (forward raising)
- b. [ $\text{\$alexe-m}$  pjəsmə-r-q'əɣ a-txə-new] zəč'e-r-jə  
 boys-ERG letter-ABS-EMPH 3ERG-WRITE-INF all-ABS-CONJ  
 Ø-fjež'əɣe-x  
 3ABS-BEGAN-3ABS.PL  
 ‘The boys began to write the stupid letter all.’ (backward raising)

## Adyghe Raising

- (12) a.  $\text{\$alexe}_i\text{-r}$  [ $\Delta_i$  pjəsmə-r-q'əɣ zəč'e-m-jə a-txə-new]  
 boys<sub>i</sub>-ABS [ $\Delta_i$  letter-ABS-EMPH all-ERG-CONJ 3ERG-WRITE-INF]  
 Ø-fjež'əɣe-x  
 3ABS-BEGAN-3ABS.PL  
 ‘The boys began to write the stupid letter all.’
- b.  $\Delta_i$  [ $\text{\$alexe}_i\text{-m}$  pjəsmə-r-q'əɣ a-txə-new] zəč'e-r-jə  
 $\Delta_i$  [boys<sub>i</sub>-ERG letter-ABS-EMPH 3ERG-WRITE-INF] all-ABS-CONJ  
 Ø-fjež'əɣe-x  
 3ABS-BEGAN-3ABS.PL  
 ‘The boys began to write the stupid letter all.’

## Backward Structures

- P&P argue that the only viable Minimalist analysis of the full range of facts involves treating both construction types as movement, with different strategies of chain reduction – spell-out of either the head (forward) or tail (backward) of the chain.
- They specifically argue for movement for the control cases as well: a backward structure cannot tolerate

[PRO<sub>i</sub> ... NP<sub>i</sub> ... ]

as this would violate Binding Theory (among other principles).

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## Agreement and Government

- (13) Predicate-to-argument relations (constraints):
- Agreement
  - Subcategorisation, lexically determined syntactic information
  - Selection, lexically determined semantic information

It's all static. It all looks the same. In the case of agreement, there is no directionality. Good? Bad? (See (14).)

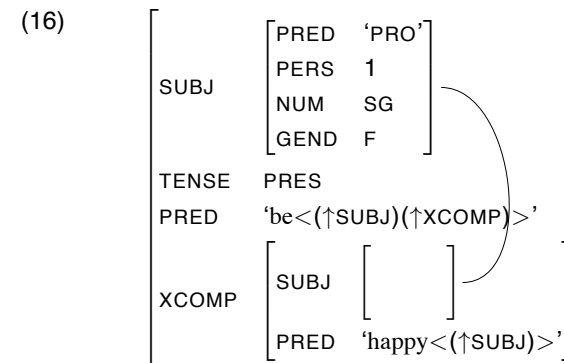
## And More?

- A predicate can control properties of its arguments. It can also control the information flow between arguments\*, and whether its argument(s) are overt or not.
- ... where argument\* is an argument of the verb or the subject of an embedded clause.

## Morphosyntactic Information

- Declarative theories distinguish the overt form of morphosyntactic features from the information that they express – this is because each item carries its own information, and does not ‘get it’ from the structure. The syntactic structures of a given language indicate how the lexical information is aggregated.
  - A simple study as to where information comes from (Pollard and Sag 1994):
- (14) a. un homme heureux ‘a happy man’  
b. une femme heureuse ‘a happy woman’
- (15) a. je suis heureux ‘I am happy(M).’  
b. je suis heureuse ‘I am happy(F).’

## Je suis heureuse



## Lexical Information

- (17) a.  $\left[ \begin{array}{l} \text{PRED 'PRO'} \\ \text{PERS 1} \\ \text{NUM SG} \end{array} \right] = \text{je}$
- b.  $\left[ \begin{array}{l} \text{SUBJ} \left[ \begin{array}{l} \text{PERS 1} \\ \text{NUM SG} \end{array} \right] \\ \text{TENSE PRES} \\ \text{PRED 'be} \langle (\uparrow \text{SUBJ}) (\uparrow \text{XCOMP}) \rangle' \\ \text{XCOMP} \left[ \text{SUBJ} [ ] \end{array} \right] \end{array} \right] = \text{suis}$
- c.  $\left[ \begin{array}{l} \text{SUBJ} \left[ \begin{array}{l} \text{GEND F} \\ \text{NUM SG} \end{array} \right] \\ \text{PRED 'happy} \langle (\uparrow \text{SUBJ}) \rangle' \end{array} \right] = \text{heureuse}$

## Incomplete F-Structure

- (18) \*suis heureuse
- $$\left[ \begin{array}{l} \text{SUBJ} \left[ \begin{array}{l} \text{PERS 1} \\ \text{NUM SG} \\ \text{GEND F} \end{array} \right] \\ \text{TENSE PRES} \\ \text{PRED 'be} \langle (\uparrow \text{SUBJ}) (\uparrow \text{XCOMP}) \rangle' \\ \text{XCOMP} \left[ \begin{array}{l} \text{SUBJ} [ ] \\ \text{PRED 'happy} \langle (\uparrow \text{SUBJ}) \rangle' \end{array} \right] \end{array} \right]$$

## Lexical-Functional Grammar

LFG: Bresnan (1982, 2001); Dalrymple (2001)

- Factored syntax into grammatical information and the structures which express it (f-structure and c-structure);
- Provided a declarative framework within which to express syntactic generalisations.
- Provided a notion of “enough information” for structures to be well-formed.

## Generalised Phrase Structure Grammar

GPSG: GKPS (1985)

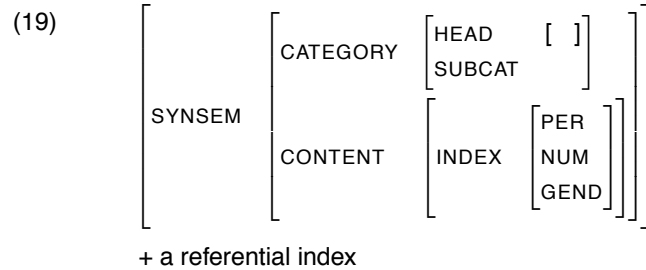
- Dealt with selection via head features; effects “Affix-Hopping” using only local selection;
- e.g. *have* selects a VP[FORM: *pastprt*], *be* selects a VP[FORM: *presprt*];
- GPSG classified features, but did not structure them.



## Head-Driven Phrase Structure Grammar

HPSG-1: Pollard and Sag (1987)

- HPSG structured features;
- Built in a strict version of locality (like the PIC);
- Started to structure information to account for linguistic (im)possibilities (e.g., INDEX and Agr).



## Head-Driven Phrase Structure Grammar

HPSG-2: Pollard and Sag (1994), Sag, Wasow and Bender (2003)

- More on “feature geometry” and also the typology of syntactic structures.
- Cf. Sag (2007) on “prevent from VP[ger]”

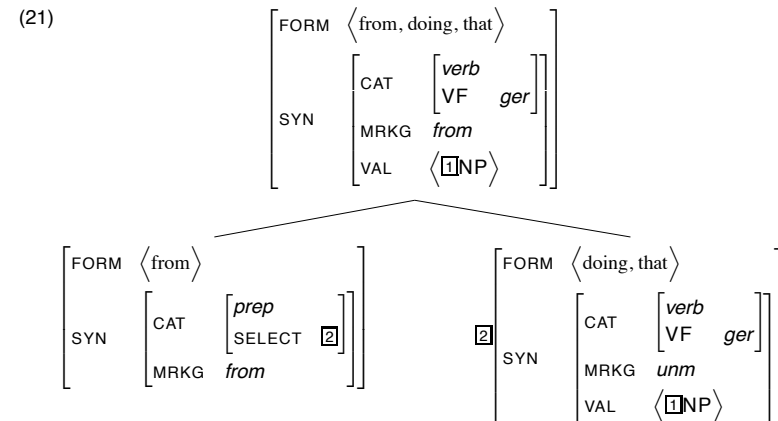
## Prevent From

- (20)
- Kim prevented Pat [from reading Proust].
  - \*Kim prevented Pat [for/to ... reading Proust].
  - \*Kim prevented Pat [from (to) read Proust].
  - \*Kim prevented Pat [from the Proust recital].
  - Kim spared Pat [from the Proust recital].

Sag (2007)

## Analysis

Abeillé, Bonami, Godard, and Tseng (2005, 2006) on weak heads and Van Eynde (2007) on SELECT:



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## Subsumption

Zaenen and Kaplan (2002, 2003) proposed to analyse some cases of structure-sharing in terms of the relation of subsumption, rather than equality. They anticipated the need to express restrictions on information flow in the lexical entries of verbs, and what I present here is an extension of their proposals. For subsumption,  $f_1$  subsumes  $f_2$  if the information associated with  $f_1$  is a subset of that associated with  $f_2$  – in other words,  $f_1$  is more general than  $f_2$ . An example from Zaenen and Kaplan (2002) is shown in (22):

(22) Subsumption – the left subsumes (is more general than) the right

$$\left[ \begin{array}{c} A \\ [C \ +] \end{array} \right] \sqsubseteq \left[ \begin{array}{c} A \\ [C \ +] \\ D \ - \\ B \ E \end{array} \right]$$

Equality is mutual subsumption.

## Subsumption in Linguistic Analyses

- In many languages, the agreement information on a verb subsumes the information on the agreed-with subject; for example, the verb may inflect for person and number, while the subject may be coded for person, number and gender. Shieber (1992) discusses an application of subsumption to coordinations in the complement of English *be*.
- Dalrymple and Kaplan (2000) used subsumption for the analysis of case in coordinate structures.
- Zaenen and Kaplan (2002) proposed an LFG analysis of German Partial VP Fronting using subsumption for the flow of information from the initial topic position to the ‘remnant’ VP XCOMP position. Zaenen and Kaplan (2003) used subsumption for Stylistic Inversion in French. Fang and Sells (2007) used subsumption for Chinese “VP Copying”.
- Blevins (2011) provides a fuller discussion of the linguistic relevance of subsumption, and motivations for its necessity in some analyses.

## Controlling Information Flow

(23) Forward Subsumption: SUBJ  $\sqsubseteq$  XCOMP SUBJ:  
Control: forward only;  
Raising: forward, or backward.

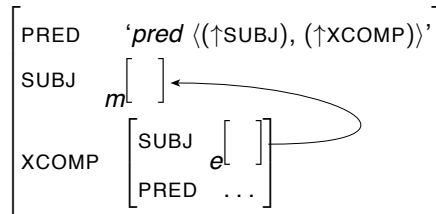
The matrix subject position contributes to  $m$ , the embedded subject position contributes to  $e$ . If only the embedded subject position is filled,  $m$  does not get a PRED value (at least), and the matrix is INCOMPLETE if its subject is thematic

$$\left[ \begin{array}{c} \text{PRED} \quad \text{'pred } \langle (\uparrow\text{SUBJ}), (\uparrow\text{XCOMP}) \rangle \\ \text{SUBJ} \quad m \\ \text{XCOMP} \quad \left[ \begin{array}{c} \text{SUBJ} \quad e \\ \text{PRED} \quad \dots \end{array} \right] \end{array} \right]$$

## Controlling Information Flow

- (24) Backward Subsumption: XCOMP SUBJ  $\sqsubseteq$  SUBJ:  
Control: backward only;  
Raising: backward only.

The matrix subject position contributes to  $m$ , the embedded subject position contributes to  $e$ . If only the matrix subject position is filled,  $e$  does not get a PRED value (at least), and the XCOMP is INCOMPLETE.



## Lexical Specification of the Position of Arguments\*

- The fact that predicates can be forward or backward seems to be naturally analyzed within the LFG account of functional control based on equality. For Adyghe raising, we simply propose a solution which allows the matrix subject position in the c-structure to be absent.
- However, Tsez is problematic under this view. In Tsez, the predicate 'begin' is forward if it is raising, and backward if it is control, so there cannot be any general requirement in the c-structure of the language one way or the other as to which subject positions are obligatorily filled or absent. The equality-based account will simply allow either possibility for either type of verb, incorrectly.
- It is clear that the restrictions on forward or backward functional control need to be relativized to particular verb forms – they have to be encoded in the lexical entries of verbs. We can do this with subsumption.

## Backwards Raising Has Symmetric Information Flow

- In most known cases, Backward Raising allows the subject in either position (e.g., Adyghe, Polinsky and Potsdam 2011; Malagasy, Potsdam 2009; Greek Alexiadou et al. 2010).
- Hence it looks like the information flow is symmetric; in MP terms, either the higher or the lower copy may spell out.
- Nevertheless, case is not shared.

## Raising and Case

- The classic arguments about case in raising and control from Icelandic. Quirky subject case is preserved upwards under raising:
- (25) a. Barninu batnaði veikin.  
the.child.DAT recovered from the.disease.NOM  
'The child recovered from the disease.'
- b. Barninu virðist hafa batnað veikin.  
the.child.DAT seems have recovered from the.disease.NOM  
'The child seems to have recovered from the disease.'

## Control and Case

Yet quirky case on subjects (in a-b below) is not preserved upwards under control (in c-d below) even though the secondary predicate in d shows that the subject in the embedded clause has genitive case:

- (26) a. Stúlkan beið mín.  
the.girl.NOM awaited me.GEN  
'The girl waited for me.'
- b. Mín var beðið.  
I.GEN was awaited  
'I was awaited.'
- c. Ég/\*Mín vonast til að verða beðið.  
I.NOM/\*GEN hope to COMP be awaited  
'I hope to be awaited.'
- d. Ég vonast til að verða vitjað eins.  
I.NOM hope to COMP be visited alone.GEN  
'I hope to be visited alone.'

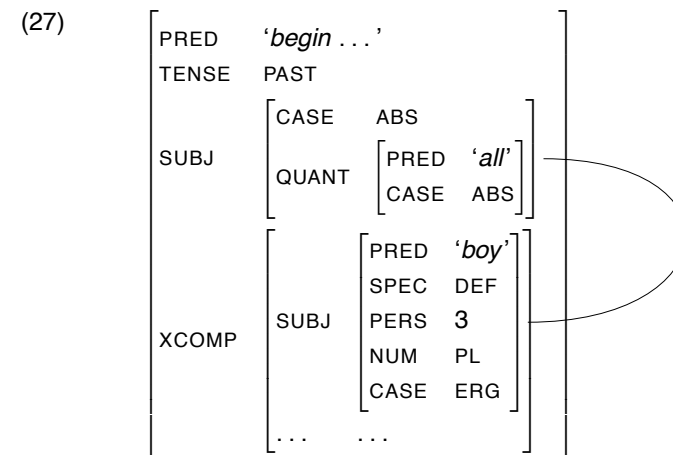
## What is Shared?

- This is the classic argument for movement vs. PRO control: everything is shared in raising; only the INDEX is shared in control. Any analysis of control (movement, information-sharing) which shares anything more than an INDEX seems to run into trouble with case facts.
- But the case facts are actually more complicated (Landau 2008).

## Backward Raising in Adyghe and Case

- (11) b. [šalexe-m pjəsmə-r-q'əɛ a-txə-new] zəč'e-r-jə  
boys-ERG letter-ABS-EMPH 3ERG-WRITE-INF all-ABS-CONJ  
ø-fjež'əɛ-x  
3ABS-BEGAN-3ABS.PL  
'The boys began to write the stupid letter all.'

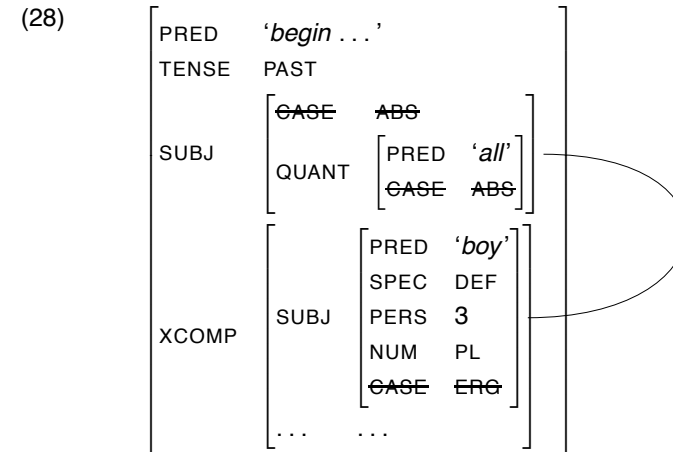
## The Case Conflict



## Asymmetric Flow – Of What?

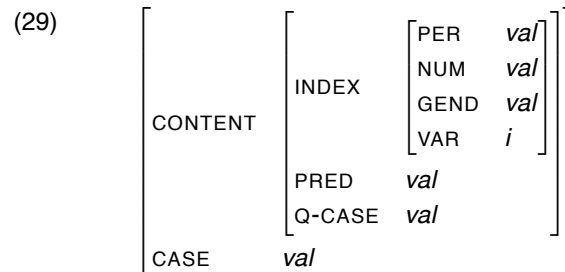
- The fact that the shared structure actually has two differing cases is a problem for all approaches which assume that what is shared is the total feature structure of the subject.
- Blevins (2011) comments on this as a general issue – do we really need to assume that all features are shared in raising?
- Zaenen and Kaplan (2002) note examples in German where case cannot be shared between two positions, and propose to restrict equality or subsumption by the Restriction Operator of Kaplan and Wedekind (1993).

## The Case Conflict



## What's To Be Done?

- We should structure the syntactic information. Quirky case is obviously more “inherent”, and does not qualify as structural case – quirky case-marked arguments still have to be “licensed”.



- Information-sharing in syntax: either INDEX (will require PRO for forward control) or CONTENT.
- PRED information is needed for every thematic argument position.

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## Summary of Points

- Predicates can control whether their arguments are fully grammatical specified – and null.
- This is actually quite difficult to do, outside of the kind of approach advocated here.
- The right outcome can be accomplished by allowing predicates to specify information flow across their arguments\* – by having that information available and using subsumption in some cases to dictate flow.
- Information (features) is not merely agglomerated, but structured, in linguistic representations. (How closely does this structuring correspond to the constituent structure?)

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