

# Syntax

## Last Resort and Agreement

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Phonology – Morphology – Syntax

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# Vehicle requirement on Merge

*Recall:*

- Restrictions on Merge were expressed by assuming that a lexical item (LI) can bear c-selectional features [uF].
- Since [uF] on a syntactic expression  $\phi$  is not interpretable, the Principle of Full Interpretation (1) requires [uF] to be deleted by merging  $\phi$  with another syntactic expression  $\psi$  that bears [F] (2).
- This forces  $\phi$  to be merged with  $\psi$ . More generally, it forces  $\phi$  to be merged.

(1) *Full Interpretation:*

Syntactic objects that are sent to the interfaces must not contain uninterpretable features.

(2)  $\text{Merge}(\phi[\text{uF}], \psi[\text{F}]) \rightarrow$

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graph TD; Root[ ] --- phi[phi]; Root --- psi[psi]; phi --- uF["[uF]"]; psi --- F["[F]"];
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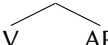
(where, for instance,  $\phi = \textit{shave}$ ,  $\psi = \textit{himself}$ ,  $F = N$ .)

# Vehicle requirement on Merge

*But:*

- In principle, Merge is free to apply. In other words, if some expression  $\phi$  does not bear any [uF], then  $\phi$  can merge with any other constituent  $\psi$  (also not bearing any [uF]).
- This leads to potential *overgeneration*, i.e., generation of structures that are not well-formed. For instance, one does not want an intransitive V (e.g., *breathe*) to be merged with an AP (e.g. *deep*).

(3) \*Dr. Brumm breathes deep.

(4) Merge(V, AP)  $\rightarrow$  

(where, for instance, V = *breathe*, AP = *deep*.)

# Vehicle requirement on Merge

## *Solution:*

- Not only do selectional features restrict the application of Merge, but the application of Merge is assumed to be contingent on the checking of (selectional) features (Svenonius 1994, Bobaljik 1995, Pesetsky and Torrego 2006).
- This is sometimes referred to as the Vehicle Requirement on Merge (VRM, Pesetsky and Torrego 2006):

## (5) *Vehicle Requirement on Merge:*

Merge of categories  $\phi$  and  $\psi$  is driven by checking a c-selectional feature [uF] on  $\phi$  with [F] on  $\psi$ .

- Applied to (3): If the intransitive V *breathe* does not bear a selectional feature [uA], then Merge of *breathe* with the AP *deep* is impossible to begin with.

# Vehicle requirement on Merge

*Note a):*

In contrast to (3), *Dr. Brumm breathes deeply* is grammatical. This may be because adverbs are introduced via adjunction, which is not subject to the VRM, or because they are selected by particular functional heads that can co-occur with intransitive verbs (see Alexiadou 1997, Cinque 1999).

*Note b):*

An alternative is to allow Merge to apply freely (Chomsky et al. 2019) and then filter out non-wellformed expressions (such as (3)) later, for instance in the semantics. Here, we will take the syntactic route via c-selection.

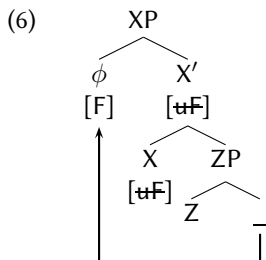
*Note c):*

Ultimately, the VRM (5) may be reducable to the need to identify the head of a structure. Recall that the head was defined as being the one of two arguments of Merge that bears the c-selectional feature to be checked: If there is no such feature, then there is no head.

# Vehicle requirement on Merge

## *Consequence:*

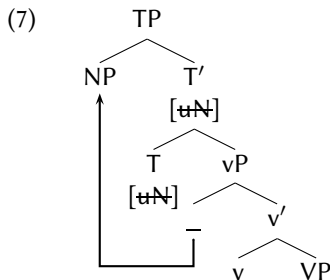
- Recall that movement = internal Merge. It follows that movement is also contingent on feature checking.
- This is often referred to as a constraint called Last Resort (see later) from Chomsky (1995), which can be subsumed under the VRM, provided movement is also driven by c-selectional features.
- Assuming that c-selectional features are projected, the sisterhood requirement on checking such features would be fulfilled when  $\phi$  bearing [F] undergoes movement to SpecX, where X bears [uF], (6).



# Vehicle requirement on Merge

*Example: subject raising:*

- In English, T bears not only  $[uv]$  (or  $[uv_{mod}]$ , or  $[uv_{perf}]$ , etc.), but also a  $[uN]$ -feature, which triggers Merge of an NP to SpecT.
- If no NP is taken from the lexicon (such as the expletive *there* (8-b)), then some NP from within the tree must undergo movement to satisfy this c-selection requirement (7)/(8-a).



- (8)
- Posy cried.
  - There died someone.

# Historical note

## *A historical note:*

- This is, in essence, the assumption about movement made in Chomsky (2000, 2001), which is adopted in much current work. For historical reasons, a feature such as [uN] is often called an *EPP-feature* (the expression stemming from the Extended Projection Principle of Chomsky 1981).
- In contrast, in Chomsky (1993, 1995) the assumption was that movement is contingent on the checking of features that are less abstract (than c-selectional features), namely features involved in agreement (e.g.,  $\Phi$ -features such as person, gender, and number, or maybe case features), which may surface in the morphology.
- In what follows, the theory of agreement pursued in Chomsky (1993, 1995) is briefly illustrated. Then, the reasons are documented why it was abandoned in Chomsky (2000, 2001).



# Spec-head agreement

## *Reminder:*

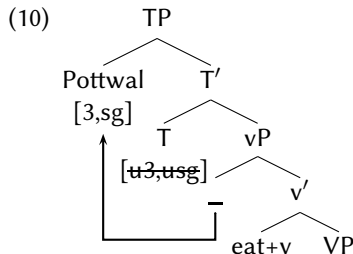
- T not only bears [tense], but (in English) it also bears the features [person] and [number], which are relevant for subject-verb agreement.
- This becomes evident, for instance, in contexts of VP-ellipsis: while such agreement is realized on the verb in the antecedent clause of ellipsis in (9-a) (here: agreement for 3rd person, singular), it is realized outside vP in the clause that involves VP-ellipsis (which, in fact, is vP-ellipsis), see (9-b).

- (9)    a.    Dr. Brumm eat-*s* the honey . . .  
      b.    . . . but Pottwal do-*es* not  $\Delta$ . ( $\Delta$  = *eat the honey*)

# Spec-head agreement

*Assumption (Chomsky 1993, 1995):*

- The agreement features on T are uninterpretable and have to be checked off. Such feature checking can apply if the interpretable corresponding features are located on a category that occupies the specifier of T: *Spec-head agreement* (10).
- This is what explains why there is movement to SpecT and, at the same time, makes such movement possible, given Last Resort (11).



(11) *Last Resort:*  
Movement of  $\phi$  to Spec $\psi$  is contingent on feature checking between  $\phi$  and  $\psi$ .

# Spec-head agreement

*Aside:*

- It is then not entirely correct to think of feature checking as being the “trigger” for movement. If this were the case, we would end up in an infinite loop: movement must be triggered by feature checking, and feature checking can only apply after movement (in spec-head configuration).
- Rather, one has to think about Last Resort as a condition that is checked after movement has applied. If the movement is followed by feature checking, the condition is fulfilled, otherwise not.

# Spec-head agreement

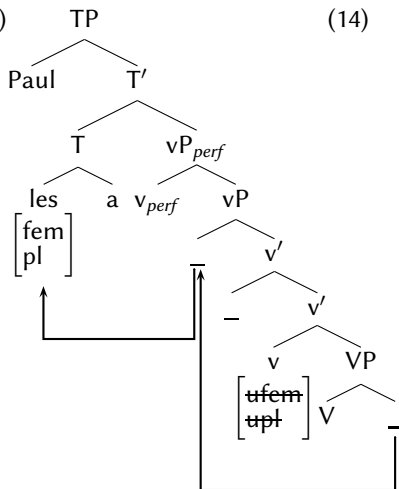
*Further motivation (Kayne 1989):*

- In French, past-participle agreement with the object does not arise if the object remains in the position where it is merged (12-a).
- Only if the object moves (e.g., because it is a clitic) does past-participle agreement becomes possible (12-b).
- On the way to its final position, the clitic makes an “intermediate stop” in the specifier of the projection responsible for participle agreement (let’s say an outer Specv), thereby inducing the specifier-head configuration necessary for agreement (13).

- (12) a. Paul a   repeint-(\*es)   les chaises.  
Paul has painted-FEM.PL the chairs.FEM.PL  
‘Paul painted the chairs (again).’
- b. Paul les               a   repeint-es.  
Paul them.FEM.PL has painted-FEM.PL  
‘Paul painted them (again).’

# Spec-head agreement

(13)



(14)

Paul les a repeintes.

# Another historical note

*However:*

- It turned out that the hypothesis of agreement obligatorily applying in a spec-head configuration is presumably not correct.
- If agreement is not restricted to apply in spec-head configuration, then it cannot be the trigger for movement to specifier position either.
- In the same vein, it turns out that there are cases of movement without agreement. Again, this means that checking of agreement features (in the narrow sense) cannot be the trigger for movement.

*Aside:*

In retrospect, it may seem strange that the hypothesis of spec-head agreement has been entertained at all. Fact is that it was the standard analysis for quite a few years. Counter-evidence was explained away by further assumptions.

# Agreement without movement

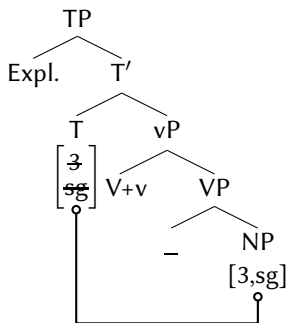
## *Expletives:*

- Some languages, among them English, have a construction where SpecT is not occupied by an argument but by an semantically empty element, an expletive (*it*, *there*, cf. (8-b)).
- Nevertheless, T agrees with some vP-internal argument (indicated by  $\circ \rightarrow$  in (16)), and not with the expletive, see (15-a-d). This required additional (ad hoc) assumptions under the hypothesis of spec-head agreement.

- (15)
- a. There arrive-s a train.
  - b. \*There arrive- $\emptyset$  a train.
  - c. There arrive- $\emptyset$  many trains.
  - d. \*There arrive-s many trains.

# Agreement without movement

(16)



(17)

There arrives a train.



# Agreement without movement

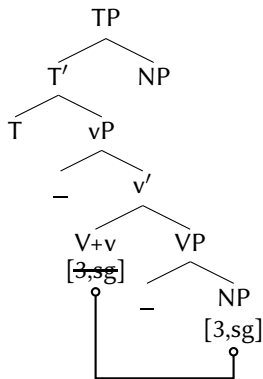
## *Object agreement:*

- Some languages exhibit object-verb agreement in the presence of a subject argument. (18) illustrates with Palauan (Austronesian; Georgopoulos 1991).
- The object appears to remain in the complement position of the verb, i.e., does not enter into a spec-head relation with v, here assumed to be responsible for object agreement.
- (Note: For simplicity, (19) involves a right-ward specifier for the subject. Under the assumption that there are no right-ward specifiers, the word order in (18) requires further assumptions.)

(18)    te-'illebed-ii a    bilis a    rngalek  
         3.PL-hit-3.SG ART dog ART children  
         'The kids hit the dog.'

# Agreement without movement

(19)



(20)

The kids hit the dog.

# Agreement without movement

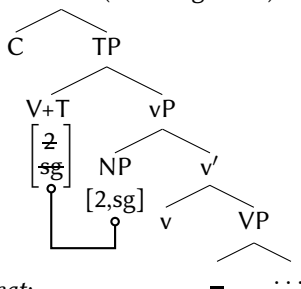
## *Irish VSO:*

- In (most) Celtic languages, the predominant word order in declaratives is VSO. For Irish, this is analyzed in McCloskey (1996) such that the verb moves to T while the EA remains vP-internally, see (21-a) (McCloskey and Hale 1984).
- With local (non-third) person pronouns, there is verbal agreement (21-b). This suggests that Irish exhibits agreement without spec-head configuration.

- (21) a. Chuirfeadh Eoghan isteach ar an phost sin.  
put.COND Owen in on that job  
'Owen would apply for that job.'
- b. Da gcuirfeá isteach ar an phost sin gheobhfá é.  
if put.COND.2.SG in on that job get.COND.2.SG it  
'If you applied for that job, you would get it.'

# Agreement without movement

(22) CP (V-to-v ignored)



(23) If you applied for that job, ...

*Caveat:*

- The situation is complicated by the fact that the subject must not be pronounced in Irish if agreement is morphologically realized.
- Thus, one cannot really see whether the subject in (21-b) is in Specv or SpecT. The argument extrapolates from the fact that putting the subject in SpecT is impossible with full nouns, and assumes that full nouns also trigger agreement (which is morphologically not realized).

# Agreement without movement

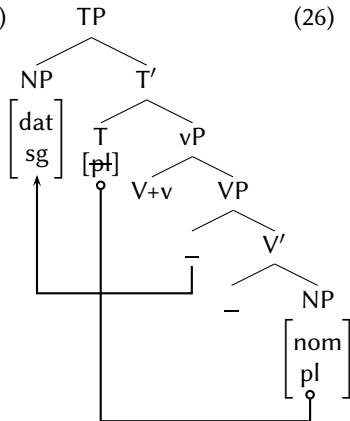
## *Icelandic “quirky” subjects:*

- In Icelandic, dative-marked NPs can become the subject of the clause, while agreement is always with a nominative marked argument.
- This is shown in (24-a,b) (Zaenen et al. 1985), where the dative-marked NP *Konungi* “the king” must have moved to SpecT because it precedes the past participle *gefnar* “given”. Nevertheless, T agrees with the object *ambáttir* “slaves”.
- (The expletive *það* and the PP *um veturinn* occupy SpecC; Icelandic is a V2-language!)

- (24)
- a. *það voru Konungi gefnar ambáttir í vetur.*  
EXPL were king.DAT given slaves.NOM in winter  
‘There was a king given slaves this winter.’
- b. *Um veturinn voru konunginum gefnar ambáttir.*  
in winter were the.king.DAT given slaves  
‘In the winter, the king was given slaves.’

# Agreement without movement

(25)



(26)

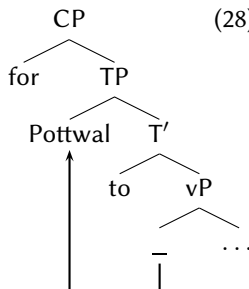
(There was) a king given slaves . . .

# Movement without agreement

*Note:*

- The dative-subject construction in Icelandic also illustrates that movement cannot be contingent on agreement: it is the non-agreeing dative-marked argument that moves to SpecT.
- Another instance of movement without agreement is raising in (non-agreeing) infinitives, which becomes detectable in case there is a pronounced subject within the infinitive, as is the case in *for*-infinitives in English (27).

(27)



(28)

[<sub>CP</sub> For Pottwal to go swimming ] ...

# Conclusion

## *Conclusion:*

- Movement and agreement (in the narrow sense of the word, e.g.  $\phi$ -agreement) are independent from one another: Neither does agreement license movement, nor is movement a prerequisite for agreement.
- Rather, movement is triggered by (abstract) c-selectional features (also called EPP-features).



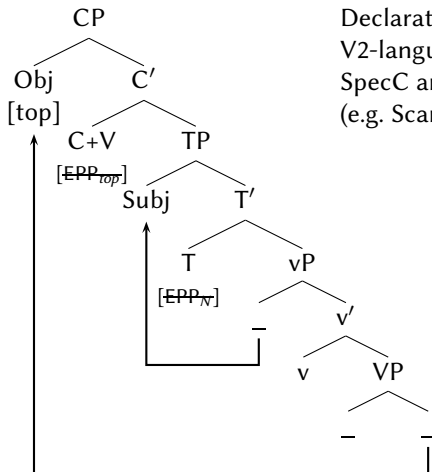
# Relativized EPP-features

*Note:*

- In many cases, EPP-features need to be relativized to properties other than category (as, e.g., category [N] in the case of subject raising in English).
- For instance, filling of SpecC in V2-languages can affect basically any category. It is often analyzed by applying to check  $EPP_{top}$ , i.e., an EPP-feature relativized to the “sub-feature” [top] (for “topicalization”). At least one category within a V2-clause must then be equipped with [top] in order to satisfy  $EPP_{top}$  on C.
- *Wh*-movement (movement of a *wh*-phrase such as *who*, *what*, etc.) to SpecC can be analyzed as involving  $EPP_{[wh]}$  on an interrogative C-head.

# Relativized EPP-features: V2

(29)



*Abstract example (29):*

Declarative clause in a VO

V2-language with object fronting to SpecC and subject raising to SpecT (e.g. Scandinavian).

*Chomsky (2000, 2001):*

- $\phi$ -agreement (agreement in general) applies when the uninterpretable  $\phi$ -feature(s) of a functional head (the *probe*), such as T, c-commands the interpretable  $\phi$ -features of an argument (the *goal*).
- Typically (but not logically necessarily), the probe lacks a value (it is taken unvalued from the lexicon). It receives its value by entering into the relation *Agree* (30) with a matching goal that bears a value.
- The dichotomy between valued and unvalued features reflects the fact that the  $\phi$ -values of the verb are not lexically fixed (such as gender or person on a noun) but depend on the  $\phi$ -values of the subject (in the case of subject-verb agreement).

(30) *Agree:*

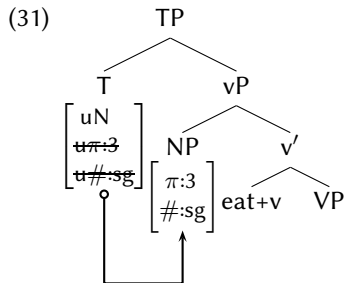
An (unvalued) probe  $[u\phi: \_]$  may enter into Agree with a goal  $[\psi: \omega]$  (value  $\omega$ ), only if

- a.  $[u\phi]$  and  $[\psi]$  match (i.e.  $\phi = \psi$ ), and
- b.  $[u\phi]$  c-commands  $[\psi: \omega]$ .

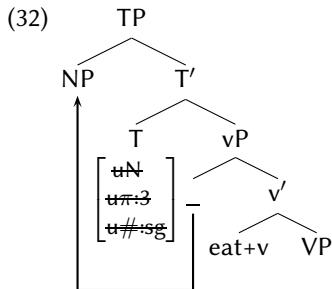
Agree leads to  $[u\phi: \omega]$  (valuation) and  $[u\phi]$  (checking).

*Example:*

(31) instantiates the functioning of Agree for a simple case of subject-verb agreement (plus subject raising) such as *Dr. Brumm eat-s the honey*.



( $\pi$  = person, # = number.)



(33) Dr. Brumm eat-s the honey.

# Morphology and agreement

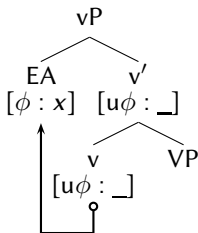
## Question:

If the  $\phi$ -features are located on T, why are they morphologically expressed on the verb (in simple cases for English: without auxiliary, modal, etc.)?

## Answer:

- Different options arise. At first sight, it may seem attractive to make use of Agree to transfer the  $\phi$ -features of the subject onto the verb (cf. Adger 2003).
- Assuming that there is a  $\phi$ -probe on v that can be projected onto the v'-level, the relevant c-command relation between the EA in Specv and the  $\phi$ -probe would be established (34).

(34)



# Morphology and agreement

*But:*

Such an analysis begs the question as to why  $\phi$ -agreement is not realized twice: once on the verb, once on T (e.g., via *do*-support), or twice on the verb, see (35-b,c). It therefore requires further assumptions.

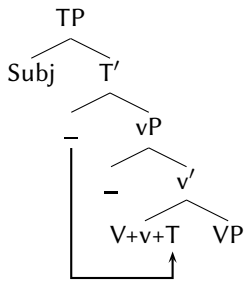
*Classic alternative (e.g., English):*

- Only T agrees with the subject. If T is empty, the  $\phi$ -features on T get onto the verb by *lowering* T, thereby adjoining it to V+v forming V+v+T (Chomsky 1957, *affix hopping*), see (38).
- Such lowering cannot be an instance of (internal) Merge, given the Extension Condition (Chomsky 1995). We will come back to this later in the course.

- (35)
- a. Dr. Brumm really do-es love the honey.
  - b. \*Dr. Brumm really do-es love-s the honey.
  - c. \*Dr. Brumm love-s-es the honey.

# Morphology and agreement

(36)



(37)

*eat-s* = [<sub>V</sub> eat ]+[<sub>v</sub> Ø ]+[<sub>T</sub> -es ]

*Note:*

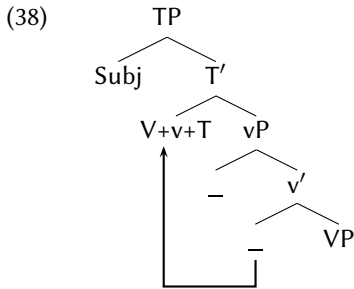
- Lowering depends on the overtness of T (does not apply if T is the target of head-movement of an auxiliary).
- This suggests that it applies after the syntax, presumably at the interface to phonology: PF.



# Morphology and agreement

*Other languages:*

- Languages that exhibit V+v-to-T movement (e.g., French, Icelandic) do not require lowering in the post-syntax.
- In such languages, it is syntactic head-movement that brings T into a position where its affixal nature can be satisfied in the morphology.



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