

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 a c-selectional feature [uF].
- Since [uF] on a syntactic expression ϕ is not interpretable, the Principle of Full Interpretation (1) requires [uF] to be deleted by merging ϕ with another syntactic expression ψ that bears [F] (2).
- This forces ϕ to be merged with ψ . More generally, it forces ϕ to be merged.

(1) *Full Interpretation:*

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

(2) $\text{Merge}(\phi[\text{uF}], \psi[\text{F}]) \rightarrow \begin{array}{c} \phi \\[-1ex] \swarrow \qquad \searrow \\[-1ex] [\text{uF}] \qquad [\text{F}] \end{array} \psi$

(where, for instance, $\phi = \text{shave}$, $\psi = \text{himself}$, $\text{F} = \text{N}$.)

Vehicle requirement on Merge

But:

- In principle, we assumed so far that Merge is free to apply. In other words, if some expression ϕ does not bear any [uF], then ϕ can merge with any other constituent ψ (also not bearing any [uF]).
- A theory-internal complication of such Merge is that we do not know what the head of the resulting constituent is. Recall that we defined the notion of head such that the head is the category whose [uF] gets deleted via Merge.

$$(3) \quad \text{Merge}(\phi, \psi) \rightarrow \begin{array}{c} ? \\ \backslash \quad / \\ \phi \quad \psi \end{array}$$

Vehicle requirement on Merge

Parametrization:

- Another complication involves parametrization: If Merge (and thus also Move, which is an instance of Merge) is feature-driven, then it becomes easy to model why some languages exhibit a certain movement and others do not.
- Thus, one may assume that German scrambling of one object across the other (4-b) is possible because German has the relevant feature to trigger the movement, while, for instance, English does not (5-b).

- (4) a. Karl gab Maria [NP das Buch].

Karl gave Maria the book

'Karl gave Maria the book.'



- b. Karl gab [NP das Buch] Maria _.

Karl gave the book Maria

- (5) a. John gave Mary [NP a book].

- b. *John gave [NP a book] Mary _.



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, Collins 2002, Kobele 2006, Stabler 2013).
- This is sometimes referred to as the Vehicle Requirement on Merge (VRM, Pesetsky and Torrego 2006):

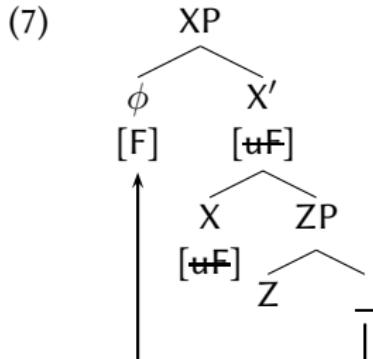
(6) *Vehicle Requirement on Merge:*

Merge of categories ϕ and ψ is driven by (only possible due to) checking a c-selectional feature [uF] on ϕ with [F] on ψ .

Vehicle requirement on Merge

Consequence:

- The idea that movement is contingent on feature checking is often referred to as a principle called *Last Resort* (8) from Chomsky (1995) (now derivable from the VRM).
- Assuming that c-selectional features are projected, the sisterhood requirement on checking such features would be fulfilled when ϕ bearing [F] undergoes movement to SpecX, where X bears [$\neq F$], (7).
- The following implication holds: movement \rightarrow feature checking.

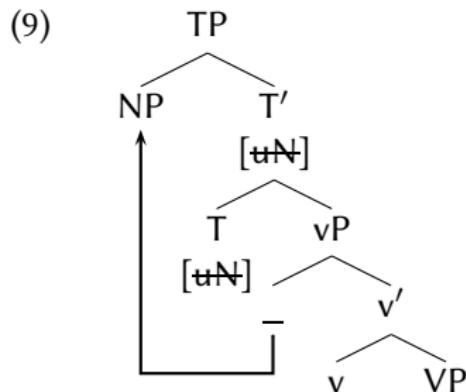


(8) *Last Resort:*
Movement of ϕ to SpecX is
contingent on feature
checking between ϕ and X.

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* (10-b)), then some NP from within the tree must undergo movement to satisfy this c-selection requirement (9)/(10-a).



- (10) a. Posy arrived _.
b. There arrived several trains.

Historical note

A historical note:

- This is, in essence, the assumption about subject raising 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 Chomsky (1993, 1995) the assumption was that movement is contingent on less abstract features, namely features involved in agreement (e.g., ϕ -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 (at least in English, perhaps universally) 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 (11-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 (11-b).

- (11) a. Dr. Brumm love-s honey ...
 b. ... but Pottwal do-es not Δ .
 ($\Delta = \text{love honey}$)

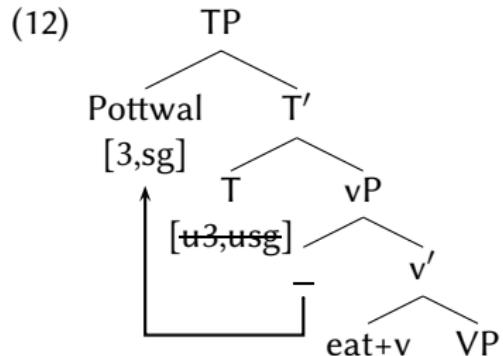
Note:

Until now, we have not addressed the question how it is ensured that the values of the person and number feature on T match with those of the subject (resulting in subject-verb agreement). We come back to this at the end of these slides.

Spec-head agreement

Assumption (Chomsky 1993, 1995):

- The agreement features on T are uninterpretable and have to be checked off. By assumption, such feature checking can apply only if the corresponding interpretable features on the subject are located in the specifier of T (Chomsky 1986): *Spec-head agreement* (12).
- This ensures that the feature values on T and the subject match. And this was also supposed to explain why there is movement to SpecT of the category that agrees with T.



Spec-head agreement

Consequence:

- Thus, the following implication holds: agreement (feature checking) → movement (qua instance of Merge).
- The implication behind the principle *Last Resort* (movement → feature checking) was also maintained.
- This way, one ended up with the following biconditional: movement ↔ feature checking.

Aside:

In principle, the spec-head configuration could also come into existence via external Merge. Here, we concentrate on Movement (internal Merge).

Spec-head agreement

Further motivation (Kayne 1989):

- In French/Italian, past-participle agreement with the object (with respect to gender and number) does not arise if the object remains in the position where it is merged (13-a)/(14-a).
- Only if the object moves (e.g., because it is a clitic) does past-participle agreement become possible (13-b)/(14-b).

- (13) a. Paul a repeint les chaises.
Paul has paint.PTCP.MASC.SG the chairs.FEM.PL
'Paul painted the chairs (again).'

- b. Paul les=a repeint-es.
Paul them.FEM.PL=has paint.PTCP-FEM.PL
'Paul painted them (again).'

- (14) a. Teresa ha lavat-o la camicia.
Teresa have.PRS.3SG wash.PTCP-MASC.SG the shirt
'Teresa has washed the shirt.'

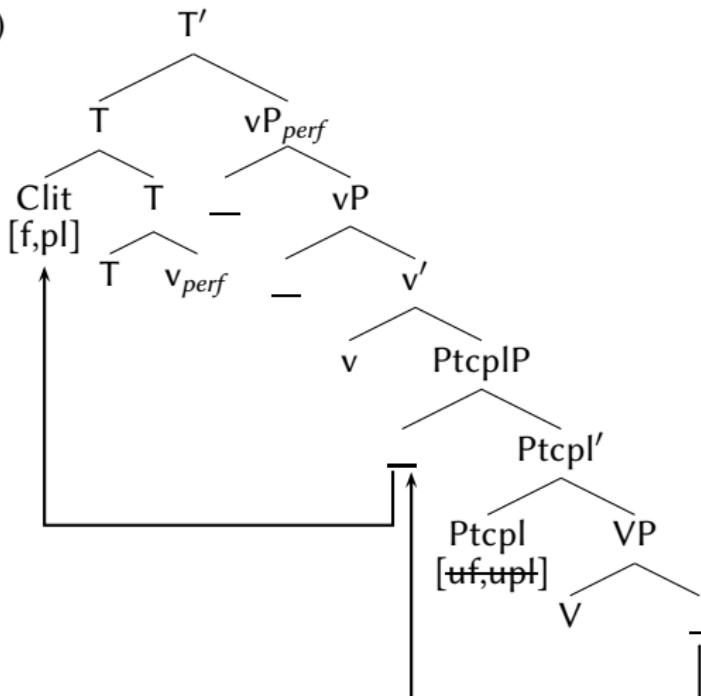
- b. Teresa l=ha lavat-a.
Teresa ACC.SG.F=have.PRS.3SG wash.PTCP-SG.F
'Teresa washed it.'

Spec-head agreement

Assumption:

On its way upwards, the clitic makes an “intermediate stop” in the Spec of the projection bearing participle agreement (here: SpecPtcpl) (16).

(15)



Spec-head agreement

Some comments:

- The assumption that the features gender and number on v are checked must not prevent their morphological realization in terms of agreement.
- If movement of the clitic to SpecPtcpl in (15) is enforced by checking of ϕ -features (in order to comply with the Principle of Full Interpretation), why doesn't a full NP raise to SpecPtcpl, too, resulting in participle agreement (cf. (13-a)/(14-a))?
- For an approach to past participle agreement without spec-head configuration, see Amato (2021).

From Spec-head to Agree

Undermining the biconditional:

- On the one hand, there are cases of agreement without spec-head configuration. This means that agreement is not restricted to spec-head configurations (agreement $\not\rightarrow$ movement).
- On the other hand, there are cases of movement without ϕ -agreement. This means that a) either movement is triggered by features different from ϕ , or b) movement is not feature-driven at all (movement $\not\rightarrow$ feature checking).

Phenomena to be discussed:

- TP-expletives
- Verb initial constructions
- Object agreement
- Quirky subjects

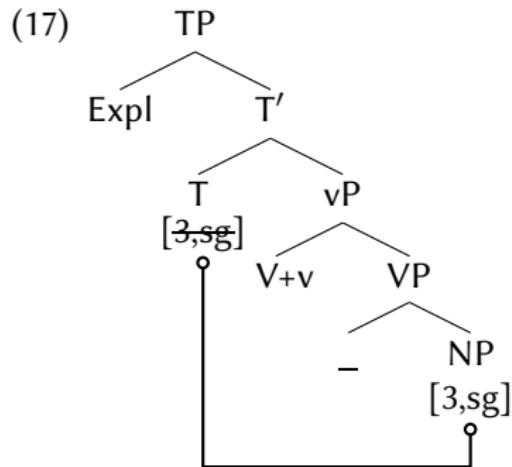
Agreement without movement: Expletives

Expletives:

- Some languages, among them English, have a construction where SpecT is not occupied by an argument but by a semantically empty element, an expletive (*it*, *there*, cf. (10-b)).
- Nevertheless, it seems as if T agreed with some vP-internal argument (indicated by \circ —in (17)), and not with the expletive, see (16-a-d). This requires additional (ad hoc) assumptions under the hypothesis of spec-head agreement.

- (16)
- a. There arrive-s a train.
 - b. *There arrive-Ø a train.
 - c. There arrive-Ø many trains.
 - d. *There arrive-s many trains.

Agreement without movement: Expletives



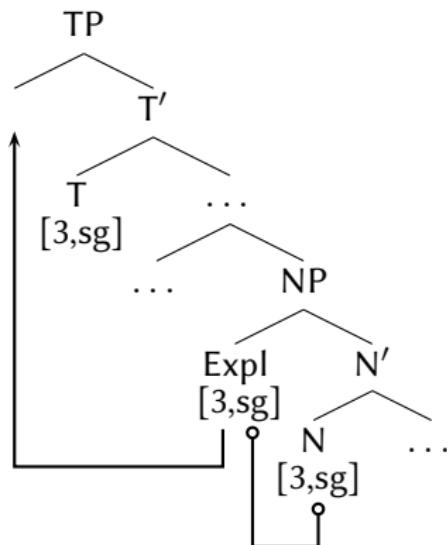
(18) There arrives a train.

Agreement without movement: Expletives

Tentative explanation (proposed by anyone?):

- First, the expletive agrees with the subject, then it agrees with T.
- In order to ensure spec-head configuration for all instances of agreement, the expletive has to be merged in the specifier of the subject, from where it raises to SpecT.

(19)



Agreement without movement: Expletives

Further complication:

- In French, the expletive *il* ('he/it') does not seem to engage with its associate argument phrase in such an agreement relation.
- Rather, agreement appears to be completely determined by the inherent features of the expletive ([3SG,MASC]).
- One may integrate this by assuming that *there* is specified for person ([3]) but is unspecified for number, receiving the number feature from the argument. (French *il*, in contrast, would be specified as [3sg]).
Note that this requires a notion of agreement in terms of feature valuation (instead of feature checking), see below.

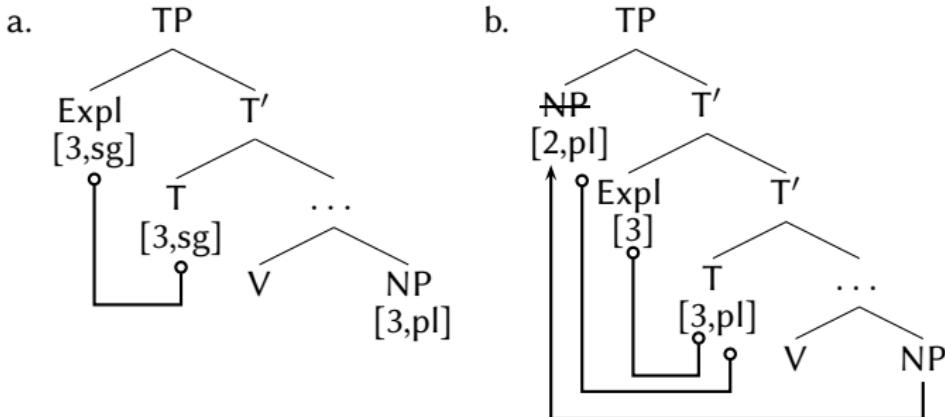
- (20) a. Il est arrivé plusieurs trains.
EXPL be.3SG arrive.PTCPL.MASC.SG some train.MASC.PL
'There arrived some trains.'
- b. *Il sont arrivés plusieurs trains.
EXPL be.3PL arrive.PTCPL.MASC.PL some train.MASC.PL

Agreement without movement: Expletives

Chomsky (1991):

In English, the associate argument raises covertly (here: to SpecT). In order for this to (really) work, three assumptions are necessary: a) the raised argument does not “replace” the expletive but targets an outer SpecT; b) *there* is specified as [3] (but unspecified for number, see (21-b)), *it* is specified as [3sg], see (21-a); c) covert movement means spelling out the lower copy. In French, no covert raising would apply because there is no agreement with the argument.

(21)



Agreement without movement: Expletives

Remaining problem (den Dikken 1995):

- (22) a. Some applicants_i seem to each other_i [TP] to be eligible for the job].
- ↓
- b. *There seem to each other_i [TP] to be some applicants_i eligible for the job].

Comment:

- In (22-a), the raised subject can act as an antecedent of the reciprocal pronoun, thereby licensing it.
- If there were covert movement of the embedded subject in (22-b), then one would expect the reciprocal in (22-b) to be licensed, too. This is, apparently, not the case.

Agreement without movement: Verb-initial constructions

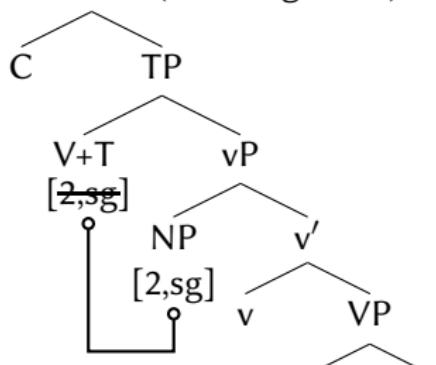
Irish VSO:

- 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 (23-a) (McCloskey and Hale 1984).
- With local (non-third) person pronouns, there is verbal agreement (23-b). This suggests that Irish exhibits agreement without spec-head configuration.

- (23) 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: Verb-initial constructions

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



Caveat:

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

— ...

- 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 (23-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: Verb-initial constructions

Arabic VSO:

- Arabic has a neutral VSO word order, along with SVO. In addition to this, there is subject-verb agreement in Standard Arabic.
- In modern dialects, such as Moroccan Arabic, there is constant subject-verb agreement (with respect to person and number) in both constructions, see (26-a,b) (Benmamoun 2000).
- As Benmamoun (2000) argues, there is V-to-T movement in Arabic. The postverbal position of the subject can thus be interpreted as Specv. This is a clear instance of downward agreement (without spec-head), cf. (24).

- (26)
- a. kla-w lə-wlad
 eat.PAST-3PL the-child.PL
 ‘The children ate.’
 - b. lə-wlad kla-w
 the-child.PL eat.PAST-3PL

Agreement without movement: Verb-initial constructions

Spanish VOS:

- In Spanish, it is possible to have the word order VOS (27-a,b).
- There still is agreement between T and the subject in Specv (see, in particular, plural agreement in (27-a)).

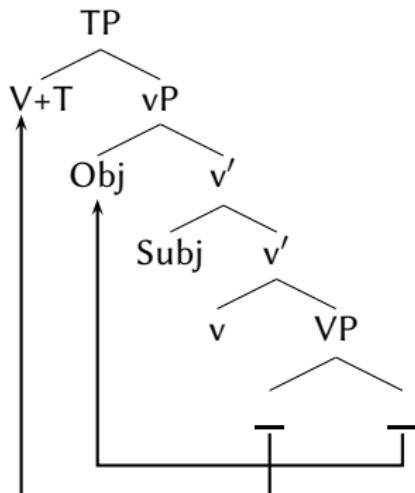
- (27) a. Compraron un libro todos los estudiantes.
buy.PST.3.PL a book all the students
'All the students bought a book.'
- b. Leyó la carta María.
read.PST.3.SG the letter María
'María read the letter.'

Agreement without movement: Verb-initial constructions

Analysis:

- The subject remains in (the inner) Spec_v, while the object shifts to an outer Spec_v. Finally, the usual verb movement to T applies (28) (Ordóñez 1997, Gallego 2013; V-to-v movement is ignored in (28)).
- No Spec-head relation obtains between subject and T. Yet, there is agreement.

(28)



Agreement without movement: : Nominative objects

Icelandic nominative objects:

- In Icelandic, dative-marked NP (for instance an indirect object) can show up in a position preceding a past participle.
- This is shown in (29-a,b) (Zaenen et al. 1985), where the dative NP *konungi(um)* “(the) king” precedes *gefnar* “given”. In this construction, T agrees with the nominative marked object *ambáttir* “slaves”.
- (The expletive *það* and the PP *um veturinn* occupy SpecC; Icelandic is a V2-language!)

- (29) a. *það voru konungi gefnar ambáttir í vetur.*
EXPL were king.DAT given slaves.NOM.PL 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.NOM.PL
‘In the winter, the king was given slaves.’

Agreement without movement: : Nominative objects

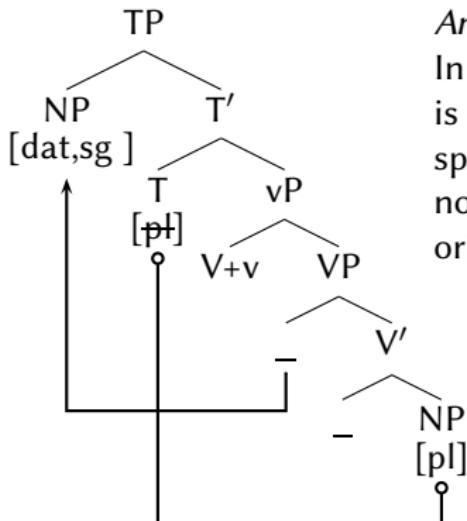
Russian nominative objects:

- Likewise, dative arguments in Russian can show up in preverbal position, leaving a nominative marked co-argument to the right of the verb (see (30-a) from Moore and Perlmutter 2000).
- Crucially, it is the nominative argument that agrees with T. As in Icelandic, agreement is actually constrained to nominative arguments in Russian. (30-b) (again Moore and Perlmutter 2000) illustrates that there is default agreement (NEUT.SG) if the post-verbal argument is in the genitive (due to negation).

- (30) a. Takomu professoru nužny den'gi.
such professor.DAT.MASC.SG need.PL money.NOM.PL
'That kind of professor needs money.'
- b. Takomu professoru ne nužno deneg.
such professor.DAT.MASC.SG NEG need.NEUT.SG money.GEN.PL
'That kind of professor doesn't need money.'

Agreement without movement: Nominative objects

(31)



Analysis:

In both Icelandic and Russian, agreement is downward in these cases, not in spec-head configuration: The nominative-marked object remains in its original position.

Agreement without movement: Nominative objects

Aside:

- It is much harder to reach such unambiguous evidence in favor of downward agreement by looking at languages that show object agreement that is presumably related to v (alongside subject agreement related to T).
- The reason is that one has to control for other factors (for instance presence of V-to-T movement), which may make an analysis of spec-head agreement in Specv possible.

Movement without agreement: Quirky subjects

Quirky subjects:

- In the Icelandic (29-a), the participle marks the position of v. It is generally assumed that the dative is in SpecT (e.g., Zaenen et al. 1985, Sigurðsson 2002): It has become the (*quirky*) subject (see (31)).
- The situation in Russian is more complex, but it is often assumed that such datives are subjects (= in SpecT), for instance because they can control into adjunct clauses (Avrutin and Babynyshev 1997; (32) from Moore and Perlmutter 2000).
- The quirky-subject construction in Icelandic (and Russian) thus also illustrates that movement to SpecT cannot be contingent on ϕ -agreement: It is the non-agreeing dative-marked argument that moves to SpecT.

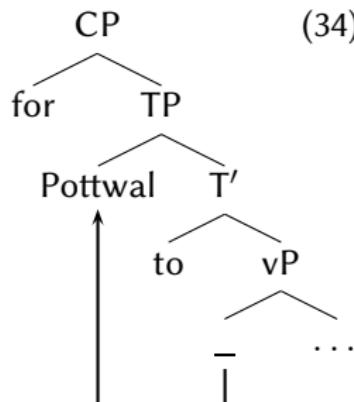
(32) ?[PRO_i leža v bol'nice], vam_i pridesja slušat'sja ukazanij
 lying in hospital you.DAT necessary obey orders
 vrača.
 doctor.GEN
‘Lying in the hospital, you will have to obey the doctor’s orders.’

Movement without agreement: Infinitives

English for-infinitives:

- Another instance of movement without agreement is raising in (non-agreeing) infinitives, which becomes detectable if there is a pronounced subject within the infinitive.
- This is the case with *for*-infinitives in English (33).

(33)



(34)

[_{CP} For Pottwal to go swimming] ...

Conclusion

Conclusion:

Movement and agreement (in the narrow sense of the word, e.g. ϕ -agreement) are independent from one another: Neither does agreement license movement, nor is movement a prerequisite for agreement.

Consequences:

- The implication feature checking → movement is abandoned. Rather some cases of feature checking (ϕ -agreement) simply apply under c-command (see below).
- The implication movement → feature checking is maintained (in order to comply with the VRM). There is a price, however. One must postulate an abstract type of feature (i.e., a feature without morphological reflex) triggering Merge, called EPP-feature.

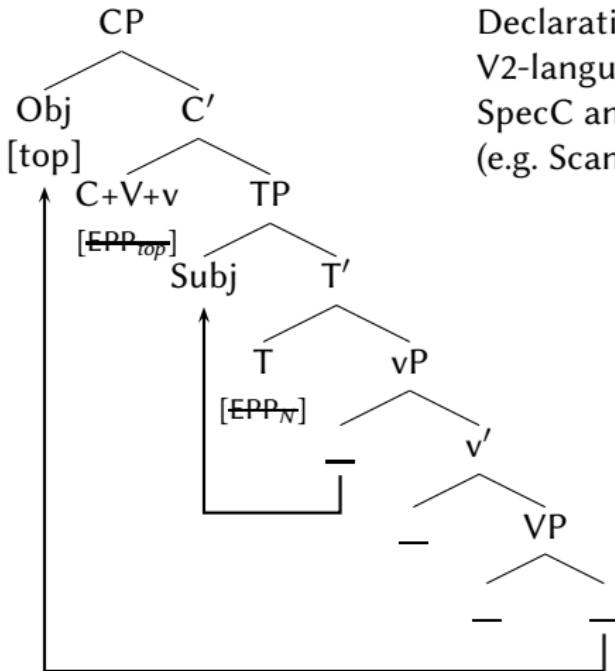
Relativized EPP-features

Note:

- In many cases, it is useful to relativize EPP-features to certain properties of the attracted category: In the case of subject raising in English, only nominals are affected: EPP_[N].
- *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.
- The filling of SpecC in V2-languages can affect basically any category. It is often analyzed by means of 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.

Relativized EPP-features: V2

(35)



Abstract example (35):

Declarative clause in a VO
V2-language with object fronting to
SpecC and subject raising to SpecT
(e.g. Scandinavian).

Agree

Chomsky (2000, 2001):

- ϕ -agreement (agreement in general) applies when the uninterpretable ϕ -feature(s) of a functional head (the *probe*), such as T, c-commands the interpretable ϕ -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* (36) with a matching goal that bears a value.
- The dichotomy between valued and unvalued features reflects the fact that the ϕ -values of the verb are not lexically fixed (such as gender or person on a noun) but depend on the ϕ -values of the subject (in the case of subject-verb agreement).

Agree

(36) *Agree:*

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

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

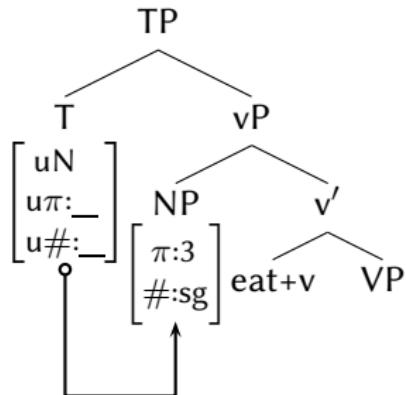
Agree leads to $[u\phi:\omega]$ (valuation) and $[\#\phi]$ (checking).

Example:

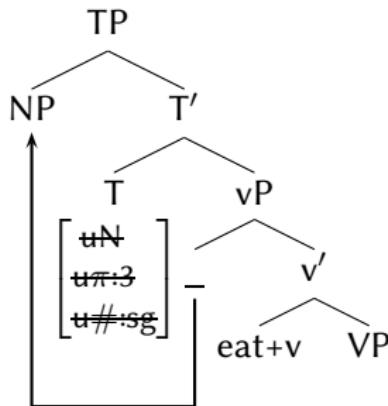
(37) instantiates the functioning of Agree for a simple case of subject-verb agreement (plus subject raising) such as *Dr. Brumm eat-s the honey.*

Agree

(37)



(38)



(π = person, $\#$ = number.)

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

Two types of active features

Summary:

- We end up with two different types of active (operation triggering) features: $[uF]$ and $[uF:_]$.
- Features of type $[uF]$ are c-selectional features that trigger internal and external Merge (often referred to as EPP-features when triggering internal Merge). They do not bear any value (they are privative) and are satisfied under sisterhood (presupposing feature projection for the creation of specifiers) by a matching privative feature $[F]$.
- Features of type $[uF:_]$ are often referred to as probes. They are typically unvalued and need matching feature (the goal) that bears a value ($[F:x]$). In principle, $[uF:_]$ can enter into Agree with any goal inside its c-command domain.

(40)

feature	value	function	checking configuration
$[uF]$	privative	Merge	sisterhood
$[uF:_]$	unvalued	Agree	c-command

Morphology and agreement

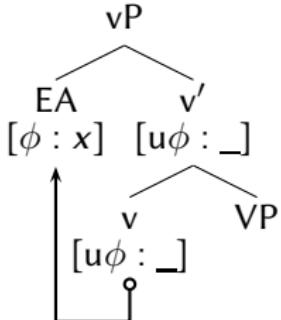
Question:

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

Answer:

- At first sight, it may seem attractive to make use of Agree to transfer the ϕ -features of the subject onto the verb (cf. Adger 2003).
- Assuming that there is a ϕ -probe on v that can be projected onto the v'-level, the relevant c-command relation between the EA in Specv and the ϕ -probe would be established (41).

(41)



Morphology and agreement

But:

Such an analysis begs the question as to why ϕ -agreement is not realized twice: once on the verb, once on T (e.g., via *do-support*), or twice on the verb, see (42-b,c). It therefore requires further assumptions.

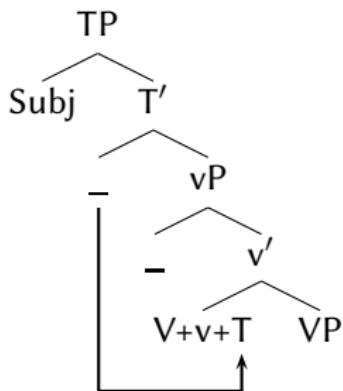
Classic alternative (e.g., English):

- Only T agrees with the subject. If T is empty, the ϕ -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 (43).
- Such lowering cannot be an instance of (internal) Merge in the syntax, given the Extension Condition (Chomsky 1995). We will come back to this later.

- (42)
- a. Dr. Brumm really do-es love the honey.
 - b. *Dr. Brumm really do-es love-s the honey.
 - c. *Dr. Brumm love-s-(e)s the honey.

Morphology and agreement

(43)



(44)

$$eat\text{-}s = [_{\text{V}} \text{eat}] + [_{\text{V}} \emptyset] + [_{\text{T}} \text{-}s]$$

Note:

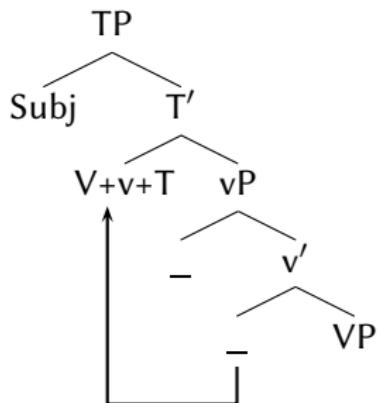
- Lowering depends on the overtness of T (does not apply if T is the target of syntactic head-movement of an auxiliary).
- This suggests that it applies after the syntax in the morphology/ the interface to phonology: PF.

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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