

# What has labelling ever done for us?

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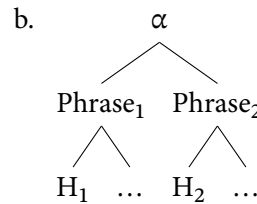
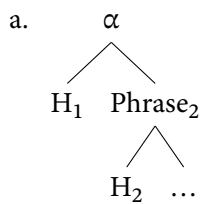
## 1 Labelling and Bare Phrase Structure

(1) The Labelling Algorithm (LA) (Chomsky, 2013, p. 43)

- LA is just minimal search, presumably appropriating a third factor principle, as in Agree and other operations.
- In the best case, the relevant information about SO will be provided by a single designated element within it: a computational atom, to first approximation a lexical item LI, a head.
- This LI should provide the label found by LA, when the algorithm can apply.

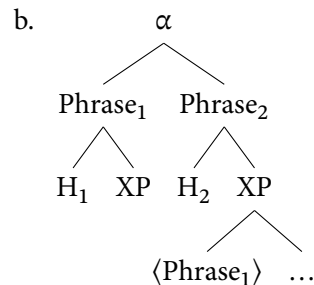
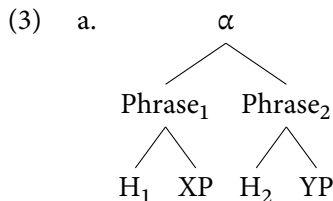
### What is a single designated element?

(2) Relevant configurations to consider (Rizzi, 2016)



- Determining “closest head” in (2a) requires identifying certain heads as lexical.
- If  $H_1$  is to be deemed the closest head, then  $\text{Phrase}_2$  must not be identical to  $H_2$ .
- In (2b) both  $H_1$  and  $H_2$  are equally close.

### Differences between Internal and External Merge



- In cases of External Merge (3a)  $\alpha$  is unlabellable.
- If  $\text{Phrase}_1$  moves, then becomes invisible, and  $\alpha$  can be labelled by  $H_2$
- In cases of Internal Merge (3b)  $\alpha$  is labellable assuming  $H_2$  is a criterial position, and  $H_2$  agrees with  $H_1$

## 2 What does agreement have to do with all this?

- Spec/Head agreement configurations allow labelling of  $\alpha$  because  $H_1$  and  $H_2$  become indistinct.
- In other words: Spec/Head agreement allows either  $H_1$  or  $H_2$  to label, since they agree.
- If agreement facilitates (according to Chomsky and Rizzi) the labelling of the containing phrase then agreement patterns should inform us about how labelling works.

### Our view

- Projection labelling via a head (2a) is distinct from labelling of a complex phrase/phrase merge (2b).
- We focus here only on labelling of a complex SO in a phrase/phrase configuration.
- The label of a complex SO via Agree with a goal is an emergent property, that is not determined solely by the goal but by the relation between the probe and the goal.
- The relevant sets of features are determined dynamically.
- Agreement tells us more about properties of the probe than the goal.
- If agreement is implicated in labelling, then it is solely through the probing properties of the labelling head.
- The Spec/Head agreement configuration *is* special, but not in the way conceived of in Chomsky's formulation of the problem.
- Agreement behaves differently in different syntactic configurations.

### Two relevant empirical observations

- The *sets* of features that label are different in different syntactic configurations.
- The *kinds* of features that label are different in different syntactic configurations.

### Feature selectivity

- (4) Some toy examples
- a. Who/what/where/when/how/why did X VP?
  - b. \* Quickly/on Tuesday/For no reason/ is a dog in the garden.
- C is sensitive only to +WH, not category (D, P, Adv, etc).
  - T is sensitive only to D, not +WH
  - neither C nor T are sensitive to e.g. gender, definiteness etc.

### Feature selectivity is dependent on syntactic position

- (5)
- a. There is squirrel and a rabbit in the garden.
  - b. \* There are a squirrel and a rabbit in the garden.
  - c. \* A squirrel and a rabbit is in the garden.
  - d. A squirrel and a rabbit are in the garden.
- When T agrees with the postverbal subject in (5a) and (5b) the verb must be singular, but when it agrees with the preverbal subject in (5c) and (5d) it must be plural.

- Since we see plural agreement in (5d) and singular agreement in (5a) the full features of the coordinate structure must have been accessed in (5d) but only some subset of the features (presumably those of the first conjunct) are accessed in (5a).
- But examination of non-coordination data shows that this fact is about *kinds* of features, not subsets of features. (Corbett, 1979; Munn, 1999; Sauerland & Elbourne, 2002; Smith, 2017)

(6) British English

- There is a band playing at 6:00.
- \* There are a band playing at 6:00.
- A band is playing at 6:00.
- A band are playing at 6:00.

- The Spec/Head configuration seems to require access to semantically relevant features.
- The downward agree configuration seems to not have access to semantically relevant features.
- The data in (5) cannot be solely about coordination.

### 3 Agreement and coordination in Czech

- Czech, as an A-scrambling language, allows us to investigate more syntactic configurations in which agreement can occur.
- In addition to replicating the pattern shown in English, we will show that downward agree can also lead to semantic agreement effects but only with internally merged DPs.

#### First conjunct agreement: the basics

- Czech, like many other languages, allows first conjunct agreement in a postverbal position but requires plural agreement with a coordination in a preverbal position.
- First conjunct agreement displays agreement with the complete set of  $\phi$ -features

- (7) a. Petr a Marie **přišli/** \***přišel/** \***přišla** do kavárny.  
Petr.MA.SG and Marie.F.SG came.MA.PL / came.M.SG / came.F.SG to cafe
- b. Marie a Petr **přišli/** \***přišel/** \***přišla** do kavárny.  
Marie.F.SG and Petr.MA.SG came.MA.PL / came.M.SG / came.F.SG to cafe
- c. Do kavárny **přišli/** **přišel/** \***přišla** Petr a Marie.  
to cafe came.MA.PL / came.M.SG / came.F.SG Petr.MA.SG and Marie.F.SG
- d. Do kavárny **přišli/** \***přišel/** **přišla** Marie a Petr.  
to cafe came.MA.PL / came.M.SG / came.F.SG Marie.F.SG and Petr.MA.SG  
'Petr and Marie came to the cafe.'

#### First conjunct agreement is not conjunction reduction

- First conjunct agreement is a genuine first conjunct agreement, not conjunction reduction
- We know this because the coordination forms a constituent as evidenced by variable binding facts

- (8) a. Každé děvče a její přítel **šli** aspoň jednou do kina.  
every girl.N.SG and her boyfriend went.MA.PL at\_least once to cinema

- b. Aspoň jednou **šlo** do kina každé děvče a její přítel.  
 at\_least once went. N.SG to cinema every girl.N.SG and her boyfriend  
 ‘Every girl<sub>i</sub> and her<sub>i</sub> boyfriend went at least once to the movies.’

### First Conjunct Agreement requires an in-situ subject

- Although it looks like that FCA versus resolved agreement with a postverbal conjunction is optional, a closer look demonstrates that resolved agreement is not available with an in situ subject.
- Plural agreement arises with coordinations that underwent scrambling (in the examples below–focus movement)
- assumptions: A-scrambling of an object to [spec,TP] requires head movement to T (V-to-v followed by v-to-T); external argument based generated in spec,vP can scramble to the middlefield or rightward (appear sentence finally)

- (9) a. Jablka **jedli/ jedlo** o vánocích jenom jedno malé děvče a jeho bratr.  
 apples.ACC ate. MA.PL / ate. N.SG on Christmas only one small girl.N.SG and its brother.MA.SG
- b. Jablka **??jedli/ jedlo** jenom jedno malé děvče a jeho bratr o vánocích.  
 apples.ACC ate.MA.PL/ ate. N.SG only one small girl.N.SG and its brother.MA.SG on Christmas

‘Only one small girl and her brother ate apples during Christmas.’

- Unresolved (FCA) agreement is only possible with downward agree
- Downward agree -> resolved only for semantic reasons
- Spec/head agreement with internal merged subject -> only resolved agreement

### FCA is still sensitive to semantic plurality

- When an agreeing predicate requires semantic plurality, FCA does not satisfy this requirement
  - plural agreement is obligatory even in a postverbal position
  - note that the ?? means a semantic oddity, not straight ungrammaticality
- (10) a. Petr a Marie se **\*potkal/ \*potkala/ potkali** v kavárně.  
 Petr and Marie REFL met.MA.SG/ met.F.SG/ met. MA.PL in cafe
- b. V kavárně se **??potkal/ \*potkala/ potkali** Petr a Marie.  
 in cafe REFL met.MA.SG/ met.F.SG/ met. MA.PL Petr and Marie
- c. V kavárně se **\*potkal/ ??potkala/ potkali** Marie a Petr.  
 in cafe REFL met.MA.SG/ met.F.SG/ met. MA.PL Marie and Petr  
 ‘Petr and Marie/Marie and Petr met in a cafe.’
- But a coordination of two collective nouns can trigger singular FCA:

- (11) V kavárně se **potkal** dívčí tým a chlapecký tým.  
 in cafe REFL met. M.SG girl team.M.SG and boy team.M.SG  
 ‘The girl team and the boy team met in a cafe.’

### Resolved agreement is sensitive to distributive operators

- The requirement on resolved agreement in postverbal position is not restricted to predicates like ‘gather’ but shows up with distributive operators as well.

- (12) a. Jan a Marie **mávali**/ **\*mával** jeden na druhého z okna.  
Jan and Marie waved.<sub>[MA.PL]</sub>/ waved.M.SG one on second from window
- b. Z okna jeden na druhého **mávali**/ **\*mával** Jan a Marie.  
from window one on second waved.<sub>[MA.PL]</sub>/ waved.M.SG Jan and Marie  
*‘Jan and Marie waved at each other from their windows.’*
- (13) a. Petr a Jan **přemístili**/ **\*přemístil** každý židli sám.  
Petr and Jan moved.<sub>[MA.PL]</sub>/ moved.M.SG each.M.SG chair.F.SG alone.M.SG
- b. Židli **přemístili**/ **??přemístil** Petr a Jan každý sám.  
chair.F.SG moved.<sub>[MA.PL]</sub>/ moved.M.SG Petr and Jan each.M.SG alone.M.SG  
*‘Petr and Jan each moved a chair on their own.’*

### Further semantic effects in post-verbal position

- Resolved agreement in the postverbal position implies individuated plurality and animacy
- Resolved agreement in the preverbal position does not bring about semantic implications of this sort

- (14) a. Na stole **stála**/ **??stály** váza a talíř.  
on table stood.<sub>[F.SG]</sub>/ stood.M.PL vase.F.SG and plate.M.SG  
*‘A vase and a plate were on the table.’ [the plural reading sounds like if the objects were animate]*
- b. Váza a talíř **\*stála**/ **stály** na stole.  
vase.F.SG and plate.M.SG stood.F.SG/ stood.<sub>[M.PL]</sub> on table  
*‘A vase and a plate were on the table.’ [when the plural is the only option, there is no additional semantic implication]*
- (15) a. V kavárně se **potkal** dívčí tým a chlapecký tým.  
in cafe REFL met.<sub>[M.SG]</sub> girl team.M.SG and boy team.M.SG  
*‘The girl team and the boy team met in a cafe.’ [collective reading]*
- b. V kavárně se **potkali** dívčí tým a chlapecký tým.  
in cafe REFL met.<sub>[MA.PL]</sub> girl team.M.SG and boy team.M.SG  
*‘The girl team and the boy team met in a cafe.’ [implies members of the team; collective reading lost]*
- c. Dívčí tým a chlapecký tým se **potkali** v kavárně.  
girl team.M.SG and boy team.M.SG REFL met.<sub>[MA.PL]</sub> in cafe REFL  
*‘The girl team and the boy team met in a cafe.’ [both collective and individuated readings available]*

### Interim conclusion

- Coordination in the postverbal position by default triggers first conjunct agreement
- Resolved agreement in postverbal position requires either movement or a probe seeking semantic plurality

- Resolved agreement implies additional semantic meanings (individuation, animacy) but only in postverbal position
- that is, only the  $\phi$ -features of the first conjunct (closest agree) seems freely accessible to downward probe; resolved agreement, that is, combined features of both conjuncts require additional syntactic, and possibly semantic, operations
- in contrast, coordination in the preverbal position is by default represented by a combined set of features (manifested as resolved agreement)

#### 4 Partitive agreement in Czech

- the association of the preverbal position with the ability to access more features of a complex DP is not restricted to coordinations
- Czech has a class of singular quantifiers that take a pronominal complement
- The features of the pronominal complement can be reflected in the agreement
- When the QP raises to Spec,TP, three different agreement patterns are possible:
  - Expected grammatical agreement ( $\phi$ -features of the quantifier head)
  - Mixed grammatical and resolved agreement: an auxiliary agrees with person and number of the pronominal complement but the verbal participle agrees with the  $\phi$ -features of the quantifier head
  - Resolved agreement: both the auxiliary agrees with person and number of the pronominal complement
  - Kučerová (2000, Data from)

- (16) a. Každá z nás četla aspoň něco od Prousta.  
 every.F.SG from us read.F.SG at\_least something from Proust
- b. Každá z nás jsme četla aspoň něco od Prousta.  
 every.F.SG from us AUX.1PL read.F.SG at\_least something from Proust
- c. Každá z nás jsme četly aspoň něco od Prousta.  
 every.F.SG from us AUX.1PL read.F.PL at\_least something from Proust  
*'Everyone of us (females) read at least something by Proust.'*

- when the QP is below TP but in a position in which coordinations can trigger resolved agreement, only two patterns are possible:
  - Expected grammatical agreement ( $\phi$ -features of the quantifier head)
  - Mixed agreement: an auxiliary agrees with person and number of the pronominal complement but the verbal participle agrees with the  $\phi$ -features of the quantifier head
  - No fully resolved agreement: the plural agreement with the participle is out

- (17) a. Od Prousta četla každá z nás aspoň něco.  
 from Proust read.F.SG every.F.SG from us at\_least something every.
- b. Od Prousta jsme každá z nás četla aspoň něco.  
 from Proust AUX.1PL every.F.SG from us read.F.SG at\_least something
- c. \* Od Prousta jsme každá z nás četly aspoň něco.  
 from Proust AUX.1PL every.F.SG from us read.F.PL at\_least something  
*'Everyone of us (females) read at least something by Proust.'*

- when the QP is in a position in which coordinations only triggers FCA, only the expected grammatical agreement is possible

- (18) a. Od Prousta **četla** aspoň něco každá z nás.  
 from Proust read.F.SG at\_least something every.F.SG from us
- b. ?? Od Prousta **jsme četla** aspoň něco každá z nás .  
 from Proust AUX.1PL read.F.SG at\_least something every.F.SG from us
- c. \* Od Prousta **jsme četly** aspoň něco každá z nás .  
 from Proust AUX.1PL read.F.PL at\_least something every.F.SG from us  
*'Everyone of us (females) read at least something by Proust.'*

### Summary

- The pattern with QPs forms a minimal pair with coordinations
  - fully resolved agreement when the coordination is preverbal
  - mixed pattern (both FCA and resolved) when the coordination moved but it's still postverbal
  - only FCA (grammatical agreement) when the coordination is in its first merge position

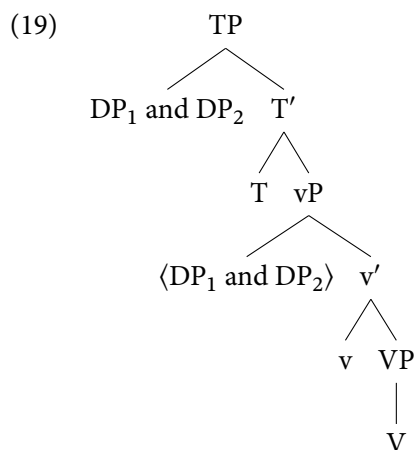
### 5 What is so special about internally merged specifiers?

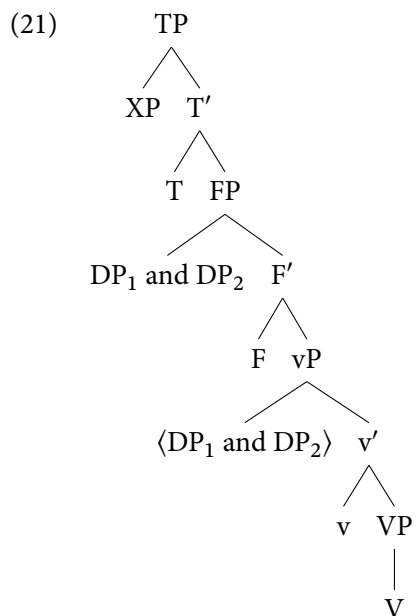
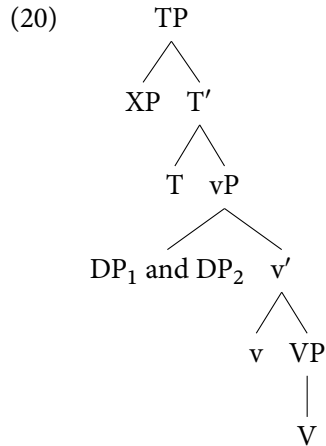
- Resolved agreement is dependent on an internally merged specifier.
- Resolved agreement is dependent on semantic as well as syntactic features.

### Two ideas from the literature

- Semantic features only become available to affect morphology when the syntax fails to provide a valued feature (Kučerová, 2018)
- Agreement reflexes arise when an edge feature is discharged before probing for valued features takes place (Georgi, 2017)

### Accounting for the Czech patterns





### It's all about probes

- Downward Agree is an instance of 'trivial' projection labelling.
- The probing relation itself identifies the head that labels.
- Edge features only trigger internal merge and do not determine the identity of the head, making projection labelling unavailable.
- Since syntax has not provided a valued set of features to the probe, semantic features will always be available to play a role in determining agreement.
- Agreement then provides the features on the probe to allow 'trivial' head labelling again.

## 6 Conclusion

- At the end of the day, all labelling reduces to the trivial case of projection labelling.



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