Semantic Agreement and the mechanism of AGREE

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Disagreeing over Agreement

- Two major debates in the current literature on agreement:
  1. The Direction of AGREE: Does AGREE look upwards or downwards in the structure?
     - See among many others Chomsky (2000, 2001); Baker (2008); Preminger (2011); Wurmbrand (2011); Zeijlstra (2012); Bjorkman & Zeijlstra (2015); Preminger & Polinsky (2015).
  2. The Timing of AGREE: Is AGREE syntactic, post-syntactic, or a little bit of both?
     - See among many others Marantz (1991); Bobaljik (2008); Benmamoun et al. (2009); Bošković (2009); Arregi & Nevins (2012); Bhatt & Walkow (2013); Marušič et al. (2015).
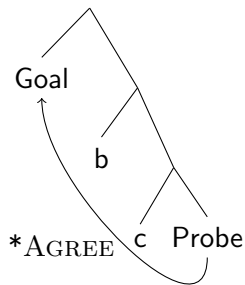
The Direction of AGREE

- AGREE was formulated initially in downward terms (Chomsky, 2000, 2001), such that the probe had to c-command the goal.
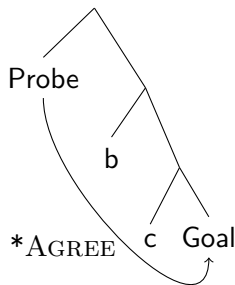

(1)

Probe

b

AGREE   c   Goal
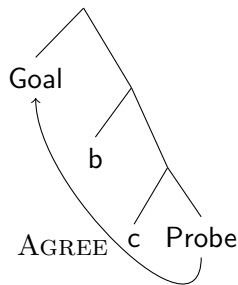
(2)

Goal

b

*AGREE   c   Probe
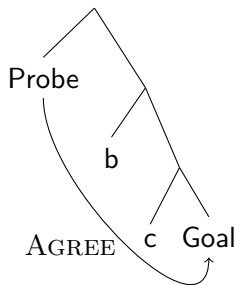
The Direction of AGREE

- However, it has also been argued that AGREE should be formulated in upwards terms (Wurmbrand, 2011; Zeijlstra, 2012).

(3)

Probe
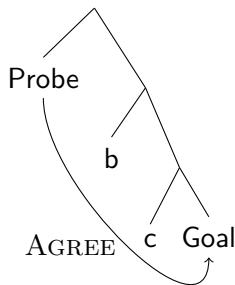
b

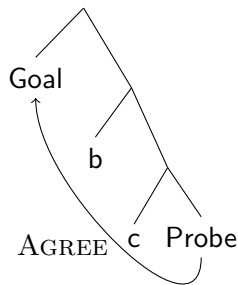*AGREE   c   Goal

(4)

Goal

b

AGREE   c   Probe

The Direction of AGREE

- There are also approaches that assume that direction can go either way, as long as c-command and locality are adhered to (Baker, 2008).

(5)

Probe

b

AGREE c Goal

(6)

Goal

b

AGREE c Probe

The Timing of AGREE

- There is also controversy over where in the derivation agreement happens.
- For Chomsky (2000, 2001); Bošković (2009); Preminger (2011, 2015) AGREE takes place in the syntax.
- For Marantz (1991); Bobaljik (2008), agreement takes place post-syntactically, in the morphological component.
- For Benmamoun et al. (2009); Arregi & Nevins (2012); Bhatt & Walkow (2013); Marušič et al. (2015), AGREE is split across the two components.

The position of features in grammar

(7)

B. et al, A/N, B/W

Chomsky, Preminger, Bošković

PF ←--------------------→ LF

Marantz, Bobaljik
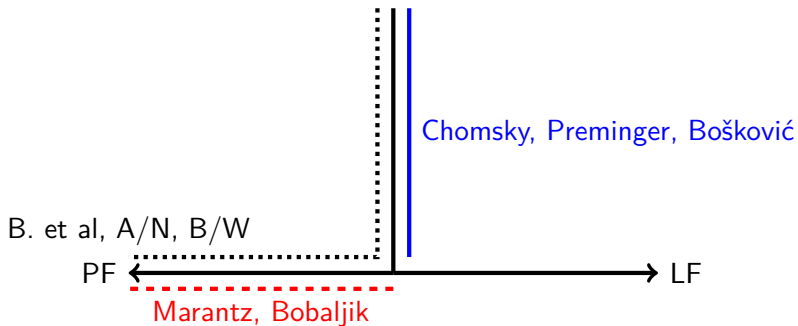
Major claims

- In this talk I will propose that AGREE is structured in the following way:
    1. AGREE is spread over both syntax and the post-syntax (building on Smith, 2013, 2015), and following various authors, is split into a process of AGREE-LINK and AGREE-COPY.
    2. AGREE can look both upwards and downwards in the structure, however, if AGREE takes place in the syntax, it can only look upwards.

- These claims are based on the phenomenon of semantically motivated agreement, as well as a particular proposal about how to capture Corbett's (1979) Agreement Hierarchy.

Modeling AGREE

- The version of AGREE that I will propose is the following, based in part on Arregi & Nevins (2012).

AGREE

Agreement between a controller and target proceeds in two steps:

  a. AGREE-LINK: in the syntax, a target has unvalued ϕ-features that triggers AGREE with controller. The result is a link between controller and target.
  b. AGREE-COPY: the values of the ϕ-features of controller are copied onto target linked to it by AGREE-LINK.
      i. if AGREE-COPY happens at transfer, this requires that controller c-command the target.

Roadmap

Semantic Agreement

- Certain elements in some (but not all) languages are allowed to vary between controlling morphologically based agreement and semantically based agreement.

Morphological vs Semantic agreement

Morphologically based agreement = agreement that tracks the morphological shape of the controller.
Semantically based agreement = agreement that tracks the semantic interpretation of the controller.

- Usually these line up, but we can notice mismatches between morphology and semantics.

  (8)   The committee is/are making the decision now.

Agreement Mismatches

- There being mismatches in agreement implies that features are themselves internally complex, and split between a morphological half, and a semantic half (Wechsler & Zlatić, 2003; Smith, 2015).

- It is usually the case that the values for the morphology and semantics line up, but certain nouns have a mismatch between the two.

- Agreement with the morphological half of a feature appears to be the general case, but certain nouns in certain languages allow the semantic half to be targeted by agreement.

- Terminology: iF = the *semantic* value of a feature, uF = the *morphological* value of a feature.

The position of features in grammar

(9)

Syntax
Both *u*Fs and *i*Fs

PF ⟵─────────────────────────⟶ LF
⟨·············· Transfer ··············⟩
*u*Fs   *i*Fs
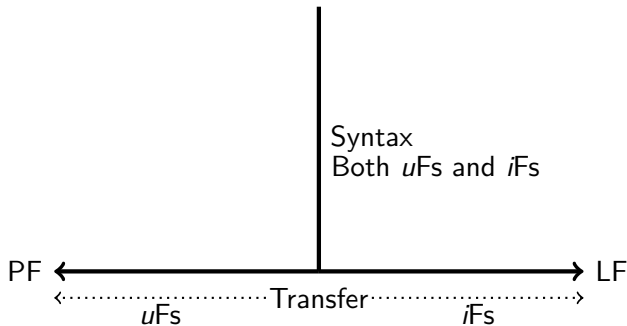
Semantic Agreement is only upwards agreement

- Semantic Agreement (SA) in English is shown in Smith (2015) to operate under different structural conditions than regular agreement.
- SA is possible only when the controller of agreement c-commands the target of agreement at LF (i.e. a Reverse Agree configuration, see Wurmbrand, 2011; Zeijlstra, 2012 for Reverse Agree.).

(10)

Controller

Target

SA Possible!

(11)

Target

Controller

SA impossible!
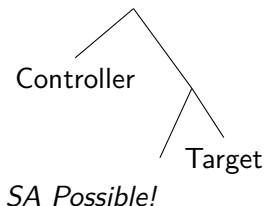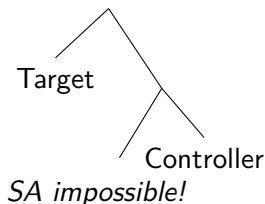
Upwards only

- Plural agreement is not possible in existential constructions.

  (12)   a.   There is a committee meeting in there.

         b.   *There are a committee meeting in there.

- Scope reconstruction is not possible if the agreement is plural.

  (13)   a.   A northern team is likely to be in the final.
             ∃ ≫ likely / likely ≫ ∃

         b.   A northern team are likely to be in the final.
             ∃ ≫ likely / *likely ≫ ∃

Existential constructions

(14)
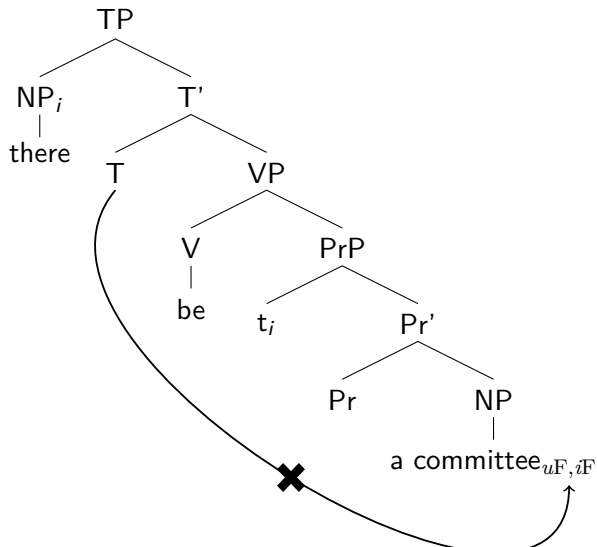
Scope Reconstruction

(15)
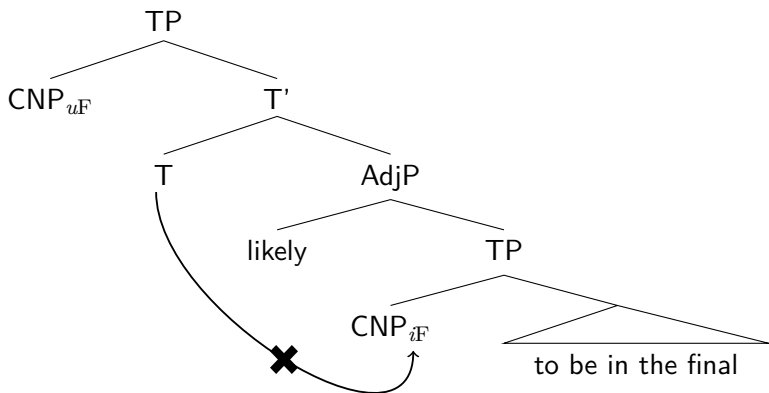
Wide Scope

(16)
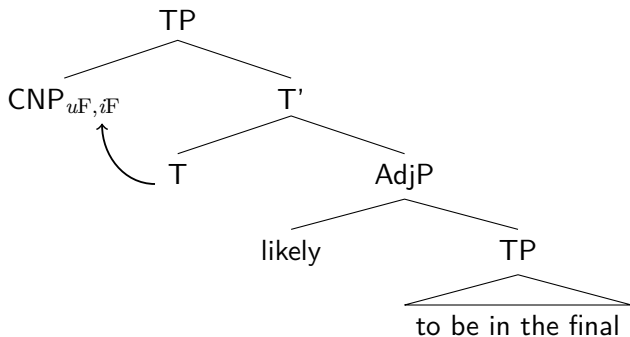
Semantic Agreement

- There is thus a representational aspect to SA; it is sensitive to the position of elements at LF.

- We can understand this there are two positions of agreement: agreement at the point of transfer (Bobaljik & Wurmbrand, 2005) and post-syntax (PF).

- Agreement at the point of transfer looks only upwards.

- Agreement in the post-syntax looks both upwards and downwards.

- **iFs are only in the syntax, not PF, so agreement targeting them can only look upwards.**

The Decomposition of AGREE

(17)

Narrow syntax

AGREE-LINK

TRANSFER
1. PRIVILEGE COPIES
2. AGREE-COPY
(both *i*Fs and *u*Fs)

PF ←

→ LF

AGREE-COPY
only *u*Fs

Modeling AGREE

AGREE

Agreement between a controller and target proceeds in two steps:

a. AGREE-LINK: in the syntax, a target has unvalued ϕ-features that triggers AGREE with controller. The result is a link between controller and target.

b. **Agree-Copy: the values of the ϕ-features of controller are copied onto target linked to it by Agree-Link.**
   i. **if Agree-Copy happens at transfer, this requires that controller c-command the target.**

Roadmap

The Agreement Hierarchy

- (Corbett, 1979, *et seq.*) gives the Agreement Hierarchy.
- This is a corpus level generalization that describes how likely elements in a language are to show semantic or morphological agreement.

(18) attributive — predicate — rel. pronoun — pers. pronoun
     ←-- morphological agreement   semantic agreement --→

- Elements to the right are more likely to show semantic agreement.
- Elements to the left are more likely to show morphological agreement.

The Agreement Hierarchy

- The Agreement Hierarchy is also implicational regarding what elements show what type of agreement.

(19)

(20)

3/4 Agreement Patterns

- With so-called 'hybrid' controllers, when there are two targets of agreement, we initially expect either 4 or 2 configurations.

(21)

Target 1	Target 2	Result
*u*F	*u*F	Matching morphological agreement
*i*F	*i*F	Matching semantic agreement
*u*F	*i*F	Morphological – semantic mismatch
*i*F	*u*F	Semantic – morphological mismatch

- In many cases, however we see that only 3 out of the possible 4 patterns are found.

British English

(22)   a. The government has offered itself up for criticism (with this policy).

   b. The government have offered themselves up for criticism.

   c. The government has offered ?themselves for criticism.

   d. *The government have offered itself up for criticism.

Russian (Corbett, 1983)

- *Vrač* has grammatical masculine gender.

(23) a. Novyj   vrač   skazal.
          new.MASC doctor said.MASC
          'The new doctor said.'

  b. Novaja   vrač   skazala.
      new.FEM doctor said.FEM
      'The new doctor said.'

  c. Novyj   vrač   skazala.
      new.MASC doctor said.FEM
      'The new doctor said.'

  d. * Novaja   vrač   skazal.
        new.FEM doctor said.MASC
        'The new doctor said.'

Hebrew (Landau, to appear)

- *be'alim* is morphologically plural, but can refer to singulars.

(24)   a.   ha-be'al-im   ha-kodm-im   maxru   et   ha-makom
           the-owner-PL the-previous-PL sold.3.PL ACC the-place
           lifney   šana
           before   year

           'The previous owners sold the place a year ago.'

       b.   ha-be'al-im   ha-kodem   maxar   et   ha-makom
           the-owner-PL the-previous.SG sold.3.SG ACC the-place
           lifney   šana
           before   year

           'The previous owner sold the place a year ago.'

Hebrew (Landau, to appear)

(25) a. ? ha-be'al-im   ha-kodm-im   maxar   et   ha-makom
          the-owner-PL the-previous-PL sold.3.SG ACC the-place
          lifney šana
          before year
          'The previous owner sold the place a year ago.'

      b. *ha-be'al-im   ha-kodem   maxru   et   ha-makom
          the-owner-PL the-previous.SG sold.3.PL ACC the-place
          lifney šana
          before year
          INTENDED: 'The previous owner(s) sold the place a year ago.'

Mismatches and the Agreement Hierarchy

- What is striking about these cases is that they are what one would predict if the Agreement Hierarchy controlled mismatches.

(26)   attributive   –   predicate   –   personal pronoun
       ←-- morphological   semantic -->

	Attributive	Predicate	Pronoun	
Russian				
Hebrew				Grammatical
BrE				
Russian				
Hebrew				Ungrammatical
BrE				

Mismatches and the Agreement Hierarchy

- The Agreement Hierarchy is stated over a corpus level.
- To see it apparently at work at a sentential level is surprising.
- We can say that it is a (rather cluncky) sentential level constraint:

3/4 Implicational Rule

When a controller controls agreement on two targets, the value assigned to the two targets can mismatch only if among the targets, the target which is to the right on the agreement hierarchy agrees with the *i*F of the controller and the target to the left on the hierarchy targets the *u*F value.

Mismatches without the Agreement Hierarchy

- Such a rule, aside from being relatively uninsightful offers no explanation as to what would happen if the two targets come from the same spot on the hierarchy.

- Such mismatches do exist, and again we find 3/4 patterns instead of 4/4 or 2/4.

Hebrew (Landau, to appear)

(27) a. ? ha-be'alim ha-pratiy-im   ha-axaron šel ha-tmuna   haya
            the-owner the-private-PL the-last.SG of the-painting was.3SG
          ha-psixo'analitika'i Jacques Lacan
          the-psychoanalyst Jacques Lacan

          'The last private owner of the painting was the psychoanalyst Jacques
          Lacan.'

      b. *ha-be'alim ha-prati   ha-axron-im šel ha-tmuna   haya/
          the-owner   the-private.SG the-last-PL of the-painting was.3.SG/
          hayu   ha-psixo'analitika'i Jacques Lacan.
          was.PL the-psychoanalyst   Jacques Lacan

          INTENDED: 'The last private owner of the painting was the
          psychoanalyst Jacques Lacan.'

Chichewa (Corbett, 1991)

- *Ngwazi* is class 9, but can show class 1 agreement (default animate class).

(28)   a.   ngwazi y-athu y-oyamba
        hero   9-our   9-first
        'Our first hero.'

       b.   ngwazi w-athu w-oyamba
        hero   1-our   1-first
        'Our first hero.'

       c.   ngwazi y-athu w-oyamba
        hero   9-our   1-first
        'Our first hero.'

       d.   *ngwazi w-athu y-oyamba
        hero   1-our   9-first
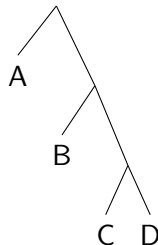   INTENDED: 'Our first hero.'

Hebrew versus Chichewa

- The DP-internal word order of Hebrew and Chichewa is different.
- Hebrew left to right order represents low to high structure (Sichel, 2002).
- Chichewa left to right order represents high to low structure (Carstens, 1991, 1993).

(29)
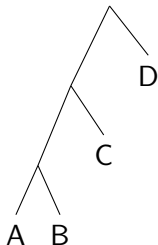
(30)

- This means that in the case of mismatches, the *higher* modifier in Hebrew shows semantic agreement, but the *lower* modifier in Chichewa shows semantic agreement.

Hebrew and Chichewa

- These two patterns from Hebrew and Chichewa are not readily amenable to an explanation of the Agreement Hierarchy.
- Thus, they seem to show something deeper at play than a sentential level AH constraint.

Summary

- Elements to the right on the AH restrict elements on the left.
- If the righter element shows semantic agreement, then either semantic or morphological agreement is possible to lefter elements. BUT.
- If the righter element shows morphological agreement, then only morphological agreement is possible for lefter elements.

Roadmap

1. Introduction
   - Debates surrounding AGREE
   - Major Claims

2. Semantic Agreement

3. The Agreement Hierarchy
   - Overview
   - 3/4 Agreement Patterns
   - Agreement Hierarchy based 3/4
   - Non-AH based 3/4s

4. Deriving attested mismatches through AGREE
   - Agreement Hierarchy based
   - Non-AH based

5. Conclusion

Towards an explanation: Schema

- We can capture the British English 3/4 pattern in the following schema.

(31) a. The order of agreements is: anaphor $\prec$ verb, where $\prec$ implies precedence

   b. If agreement targets both *i*Fs and *u*Fs on a controller, the *i*F must be agreed with first.

- This is very abstractly the approach offered in Smith (2012).
- But, the (finer points of the) approach offered there does not generalize to Russian or Hebrew.

Towards an explanation: Schema

- Again, looking somewhat abstractly, we can derive all patterns of the hierarchy if we add in adjectives.

(32)   a. The order of agreements is: anaphor $\prec$ verb $\prec$ adjective, where $\prec$ implies precedence

       b. If agreement targets both *i*Fs and *u*Fs on a controller, the *i*F must be agreed with first.

- These assumptions put together allow agreement to switch between semantic and morphological agreement, in such a way that rightward elements on the hierarchy will show semantic agreement.

Why anaphor ≺ verb ≺ adjective?

- The trick to all this is to make the ordering of agreement fall out from more general properties, rather than simply encode it as grammatical knowledge.

Anaphor ≺ verb

- I propose here that the reason why anaphors apparently restrict verbal agreement is because they merge into the structure before verbs.
- Anaphors are canonically objects, and will merge within the VP.
- The agreement features on the verb only merge in T.
- If AGREE happens at the first derivational step that target and controller are in the structure, then we can understand why anaphors precede verbs.
- N.B. This ignores languages where anaphors can appear in subject position - further investigation is needed into these instances.

Modeling AGREE

- I propose here that we can utilise AGREE-LINK.

AGREE

Agreement between a controller and target proceeds in two steps:

a. Agree-Link: a target has unvalued ϕ-features that triggers Agree with controller. The result is a link between controller and target.

b. AGREE-COPY: the values of the ϕ-features of controller are copied onto target linked to it by AGREE-LINK.

    i. if AGREE-COPY happens at transfer, this requires that controller c-command the target.

Assumptions

1. AGREE-LINK happens at the first possible derivational step.

2. In order for semantic agreement to be possible, *i*Fs on a target must be **active** for agreement.

3. If an *i*F is active, it cannot be ignored for agreement.

4. *i*Fs can be optionally deactivated through AGREE-LINK.

5. Activation is one-way: *i*Fs that are inactive cannot be (re-)activated (i.e. once you are inactive .

Deriving British English

(33) a. The government is stabbing each other in the back.
      b. *The government are stabbing itself in the back.

- Since anaphors are in the structure with the controller at a derivational point before T is, then agreement can shift from *i*F on anaphors to *u*F on verbs.
- With the *i*F active, AGREE-LINK links the anaphor to the *i*F on the CNP.
- If the *i*F is deactivated, then the verb will have to show agreement with the *u*F.

British English: Derivation
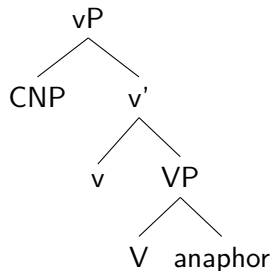
(34) *Firstly, the anaphor merges with V:*

VP
/\
V   anaphor

(35) *Merge of v*

v'
/\
v   VP
/\
V   anaphor
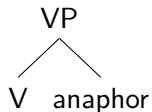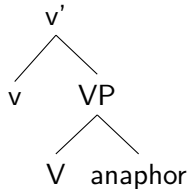
British English: Derivation

(36) *Merge of CNP subject into Spec,vP.*

```
            vP
           /  \
        CNP    v'
              /  \
             v    VP
                 /  \
                V   anaphor
```

- The anaphor undergoes AGREE-LINK with the subject at this point, being the first derivational step at which the two are in the structure.

British English: Derivation

(37) *T merges into the structure*

```
          T'
        /    \
       T      vP
             /   \
          CNP     v'
                 /   \
                v     VP
                     /   \
                    V   anaphor
```
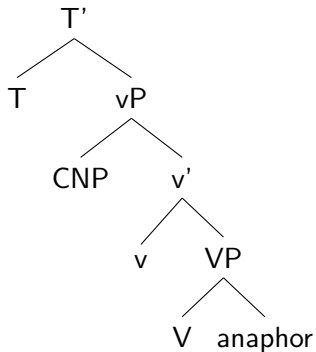
British English: Derivation

- The crucial point of the derivation is (36), where the anaphor and CNP undergo AGREE-LINK.
- This deactivates the *i*F before T undergoes AGREE-LINK, and allows for a mismatch to arise.
- Importantly, since activation cannot go the other way, it is not possible for the anaphor to receive singular agreement and the verb to receive plural agreement.
- ⇨ Only one mismatch is possible.

Russian and Hebrew

- The same logic will capture the same facts form Russian and Hebrew.
- Though the question arises why (attributive) adjectives should merge into the structure after verbs.
- We can explain it if adjuncts obligatorily undergo late adjunction into the structure (Stepanov, 2001).
- Since T is not an adjunct, and attributive adjectives are, then verbal agreement will precede adjectival agreement.
- Thus, we can see a shift from semantic verbal agreement to morphological adjectival agreement, but not vice versa.
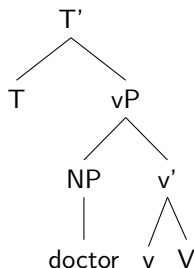
Russian: Derivation

(38) *Merge of v with V*

v'
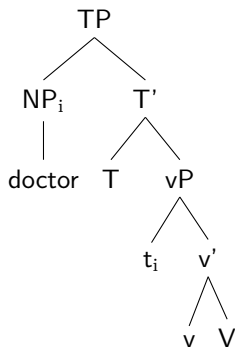/\
v V

(39) *Merge of vrač into Spec,vP*

vP
/\
NP   v'
| /\
doctor v V

(40) *Merge of T*

T'
/\
T   vP
/\
NP   v'
| /\
doctor v V
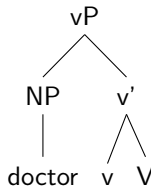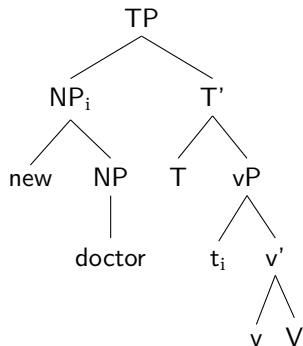
Russian: Derivation

(41) *Remerge of vrač into Spec,TP*

(42) *Late merger of adjunct*

Verb ≺ Adjective

- Using the same logic, we can account for why sentences are allowed where verbs show semantic agreement and adjectives morphological agreement, but not vice versa.
- We need an explanation of why verbal agreement should precede adjectival agreement.
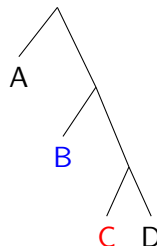
Multiple Attributives

- The above explanation can be extended to understand why there are constraints among multiple attributive elements.
- In case of mismatch, the element showing SA should merge before the element showing MA.
- However, recall the point of difference between Hebrew and Chichewa: in Hebrew the higher element showed SA, and in Chichewa the lower element showed SA.

(43)
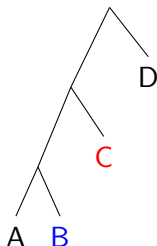
(44)

Multiple Attributives: Analysis

- Adjuncts always undergo countercylic (late) adjunction. There thus seems no reason for them to merge in a 'cyclic' countercylic manner (i.e. there is no reason to suspect that the lower element must merge first).
- Let's suppose that there is variation across languages on this point.
- Specifically, I propose the following point of variation.

(45)   In case of adjunction, adjoin to the {highest/lowest} segment of the adjunction site.
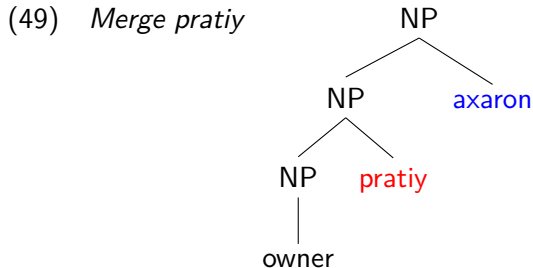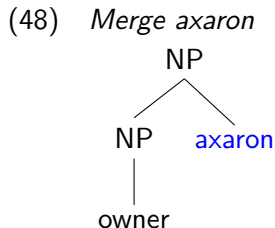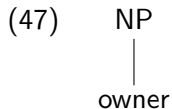
Hebrew

(46) In case of adjunction, adjoin to the {~~highest~~/lowest} segment of
      the adjunction site.

- This means that structurally higher adjectives will have merged into
  the derivation before structurally lower ones.
- The addition of new adjectives targets a position below existing
  adjectives.

Hebrew: Merge adjectives at lowest segment

(47)   NP
         |
        owner

(48)   *Merge axaron*

              NP
            /   \
          NP   axaron
           |
         owner

(49)   *Merge pratiy*

                  NP
                /   \
              NP   axaron
            /   \
          NP   pratiy
           |
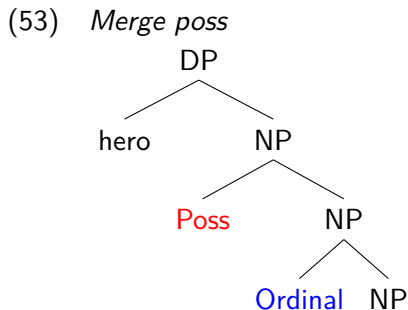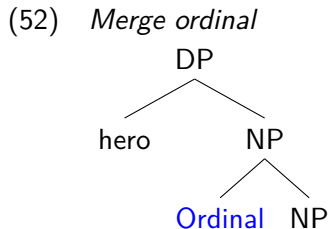   owner

Hebrew Multiple Attributives

- Since higher adjuncts merge first, then it is the higher element that is able to show semantic agreement, whilst the lower element shows morphological agreement.
- The converse is not possible, as for the

Chichewa

(50) In case of adjunction, adjoin to the {highest/~~lowest~~} segment of
the adjunction site.

- This means that structurally higher adjuncts will have merged into
the derivation after structurally lower ones.
- The addition of new adjectives targets a position above existing
adjectives.

Chichewa: Merge adjectives at the highest segment

(51)   DP
        hero   NP

(52)   *Merge ordinal*
        DP
        hero   NP
                Ordinal   NP

(53)   *Merge poss*
        DP
        hero   NP
                Poss   NP
                        Ordinal   NP
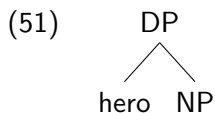
Chichewa

- Because Chichewa merges adjuncts at the highest segment of the adjunction site, then the lower element is able to show semantic agreement as they merge earlier.

- The minimal difference between Hebrew and Chichewa derives whether the language shows semantic agreement on structurally higher or lower elements.

- Furthermore, this approach derives the 3/4 patterns in exactly the same way as the Agreement-Hierarchy based mismatches seen above.

Roadmap

Conclusions

- This talk has offered an analysis of apparent sentence-internal Agreement Hierarchy effects.
- The 3/4 patterns summarised are derived through considerations of timing of agreement and merge.
- In terms of merge: anaphor $\prec$ verb $\prec$ adjective.

Conclusions

- Non-Agreement Hierarchy 3/4 patterns can be captured by assuming a parametric difference between languages in terms of adjunction.

(54) In case of adjunction, adjoin to the {highest/lowest} segment of the adjunction site.

- Setting the parameter to HIGHEST results in lower adjuncts showing semantic agreement in case of mismatches.
- Setting the parameter to LOWEST results in higher adjuncts showing semantic agreement in case of mismatches.

Conclusions

- By splitting AGREE into multiple operations of AGREE-LINK and AGREE-COPY, we can understand why SA appears to proceed both throughout the syntax, but also strictly after syntactic operations.
- AGREE-LINK happens throughout the derivation, optionally deactivating active *i*Fs, rendering them invisible for further agreement.
- However, AGREE-COPY happens only after the point of transfer, capturing why semantic agreement cares about the LF position of arguments.

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