Searching for Agree

David Adger

Department of Linguistics
Queen Mary University of London

Frankfurt Agreement Workshop, July 14th 2016

Agree

- ▶ An operation that establishes dependencies between syntactic objects
- ▶ Looks quite distinct from other syntactic operations (Merge, for example)
- ▶ Going to argue that what we think of as dependency formation is just a simple Select operation (of the same sort that is implicated in Merge) that writes items from one data-structure to another
- ▶ What constrains this is the interpretability of the output structure, which depends on independently given Extended Projection information
- ▶ Agree under c-command and Spec Head agreement are the same operation (Select), just dependent on which kind of structure it apples to when. No special operation Agree is required.
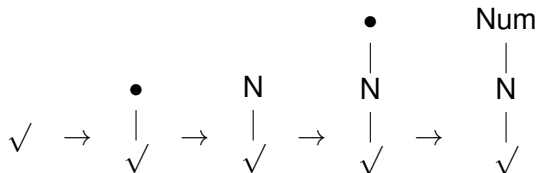
Selecting and Merging

We can think of the computational process as operating like this. There is a workspace, which has access to the lexicon of atomic elements, and contains any new object that is constructed. To carry a computation forward, an element X is selected from the workspace, and then a second element Y is selected. X and Y can be two distinct elements in the workspace, ..., what is called External Merge. Or one can be part of the other, called Internal Merge, ...   Chomsky 2015

Self Merge

The way the Merge operation is defined allows self Merge, which Adger 2013 exploits to generate Brody-style Telescoped Structures:

(1) a. Select X from workspace
     b. Select Y = X
     c. Merge({X, X}) = {X}

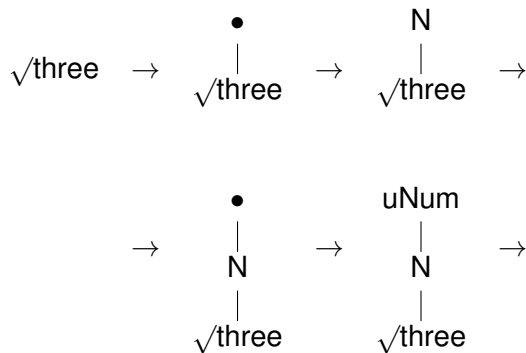If X is a lexical root, $\sqrt{\text{jump}}$, then this derivation builds {$\sqrt{\text{jump}}$}, requiring a label. Adger 2013 suggests labels are given exocentrically by independently specified Extended Projections (Functional Sequences)

Labelling Unary Structures

$$\sqrt{} \quad \rightarrow \quad \begin{array}{c} \bullet \\ | \\ \sqrt{} \end{array} \quad \rightarrow \quad \begin{array}{c} N \\ | \\ \sqrt{} \end{array} \quad \rightarrow \quad \begin{array}{c} N \\ | \\ \bullet \\ | \\ \sqrt{} \end{array} \quad \rightarrow \quad \begin{array}{c} Num \\ | \\ N \\ | \\ \sqrt{} \end{array}$$
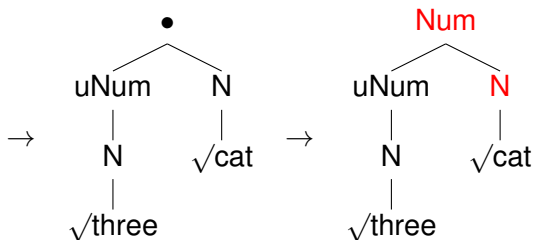
The next label up is determined by the Extended Projection (or the parts of it licensed in the language), which functions like a look-up table.

Labelling Binary Structures

$\sqrt{}$three $\rightarrow$

$$
\begin{array}{c}
\bullet \\
| \\
\sqrt{}\text{three}
\end{array}
\rightarrow
\begin{array}{c}
\text{N} \\
| \\
\sqrt{}\text{three}
\end{array}
\rightarrow
$$

$$
\rightarrow
\begin{array}{c}
\bullet \\
| \\
\text{N} \\
| \\
\sqrt{}\text{three}
\end{array}
\rightarrow
\begin{array}{c}
\text{uNum} \\
| \\
\text{N} \\
| \\
\sqrt{}\text{three}
\end{array}
\rightarrow
$$

Uninterpretable Labels

Complements maintain an interpretable extended projection in terms of categories. Specifiers break this with an uninterpretable categorial feature. In this case the uninterpretable categorial feature adds in a legitimate specifier to the same Extended Projection. There's no change of EP.
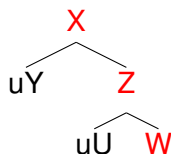
Uninterpretable Labels
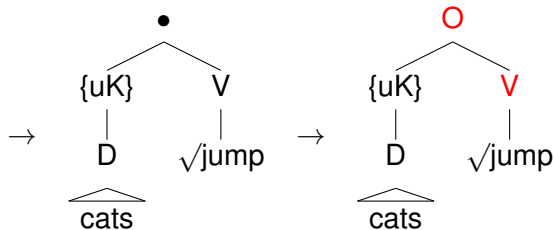
Special uninterpretable category feature K in the specifier connecting two distinct extended projections. Here we have a change of EP from nominal to verbal.

# Interpretability and Extended Projection

- ▶ The labels of every mother-daughter pair must be in a well-formed extended projection relation
- ▶ If a daughter's label is interpretable, the daughter is a complement
- ▶ If one sister is a complement, the other is a specifier
- ▶ Full Interpretation: every daughter must be uniquely either a specifier or a complement

Uninterpretable Labels

Consequences of the system

- No heads, so no head movement
- Rollup impossible, because roll-up derivations lead to two 'complements'
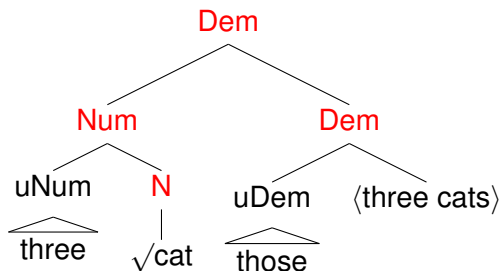
Incorporating Labels into the Computation

(2) a. Select(α, RS, OS)
     b. Select(β, RS/OS, OS)
     c. Merge(OS) = γ
     d. Label(γ) = L
     e. Select(γ, OS, RS)

Label simply checks a finite lookup table for the relevant Extended Projection, as in Adger 2013, and associates a label (possibly complex) with the structure.

Proposal: Agree is Select applied to Labels

In Adger 2013, I gave Label as

(3) Label(γ) = some L such that there is an extended projection that will take you from Label(α) and Label(β) to L.

(4) Category labels are interpretable in specific positions in an EP (scope) and Labelling 'grows' the EP in concert with Merge 'growong' the structure.

(5) Separation of structure building (just roots and structures built from roots) from structure labelling (Extended Projections)

Features vs Categories

Now this only mentions categorial labels, what about features on categories? These seem unfixed scopally, but:

(6)   Interpretability of features is relativized to Extended Projection (Verbal or Nominal)

(7)   tense/aspect features not interpretable on nominal EP; gender and number not interpretable on verbal ones (lets put aside pluractionals and temporally marked nominals just now, not to mention boundedness).

Agree is Select

Adger 2016 (as part of an argument ruling out sidewards movement):

(8)   Select(i, D_1, D_2) succeeds if i is in D_1 and is written to D_2.

An item that is selected is not copied. It is the same item. I used this as an operation that selects items to be Merged, or transfered between various kinds of data structure. It's a very basic read-write operation, needed in any computational system.

(9)   Proposal syntactic dependencies created by select

4 logical possibilities depending on whether you write upwards or downwards and to complement or specifier.

Agree is Select: 1st Possibility

X_4,F X_4,F

Y X_3 Y,F X_3
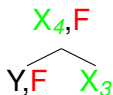
- F is uninterpretable on the EP of X. If we select(F, X_4, Y), and F is interpretable on Y (i.e. Y is a different EP), then F is not interpreted on X_4, and the final structure is well formed (cf. Adger/Ramchand's Interpret Once under Agree)

- F is uninterpretable on the EP of Y. Don't write it there!

(10)   Principle: do not apply Select if not required.

◇1   Select(F, X_4 , Y)   'head' to spec   selection
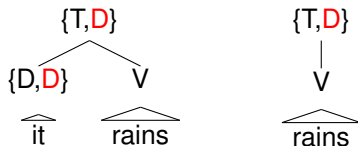
Agree is Select

Grimshavian c-selection
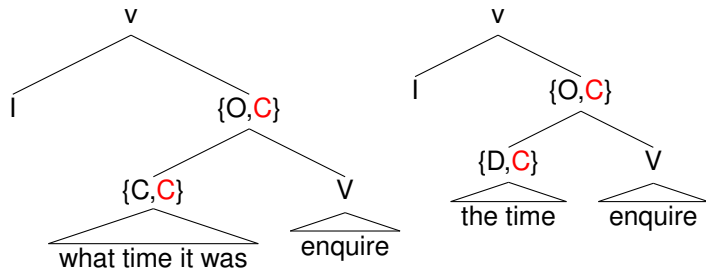
(11) a. I enquired what time it was
      b. *I enquired the time

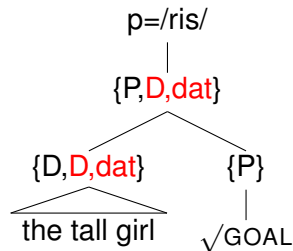Selection is encoded in the EP associated with the root.

Agree is Select

EPP

{T,D}
{D,D}   V
  it   rains

{T,D}
   V
 rains

The D feature can be interpreted on the spec in one case, but can't be interpreted anywhere in the second.

(12)   *(It) rains

Agree is Select

Case Selection—morphological interpretation

(13) chun   na   caileig mòir
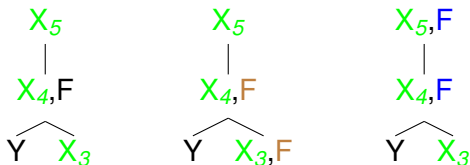   towards the.GEN girl.GEN tall.GEN
      'towards the tall girl'

(14) ris a'   chaileig mhòir
      to the.DAT girl.DAT tall.DAT
      'to the tall girl'

```
                    p=/ris/
                       |
                   {P,D,dat}
                   /        \
          {D,D,dat}          {P}
          /      \            |
      the tall girl        √GOAL
```

Agree is Select

- ▶ In general, government type structures, where the form of the 'argument' is determined by properties of the 'functor' involve this kind of Select. So the relevant features are stored in the labels (potentially connected to roots) and give a source of variation.
- ▶ C-Selection/EPP is predicted to be local, since select applies during labelling to a local tree, writing information downwards.
- ▶ This operation can apply to categorial features just when they match.

Agree is Select: 2nd and 3rd Possibilities

$$X_5 \qquad\qquad X_5 \qquad\qquad X_5,F$$
$$| \qquad\qquad | \qquad\qquad |$$
$$X_4,F \qquad\qquad X_4,F \qquad\qquad X_4,F$$
$$Y \quad X_3 \qquad\qquad Y \quad X_3,F \qquad\qquad Y \quad X_3$$

F is interpretable on the EP of X. If we select(F, X_4, X_3) or select(F, X_4, X_5), there's still just one interpretable F.

◇ 2   Select(F, X_4 , X_3)   'head' to 'compl'   inheritance
◇ 3   Select(F*, X_4, X_5)   'compl' to 'head'   percolation thru' EP

Agree is Select

(15)   Inheritance down the Extended Projection line

Say X_4 is C and F is +rel then X_3 becomes specified with +rel.

(16)   an duine a   bhuaileas   mi
        the person C[+Rel] hit.FUT.REL
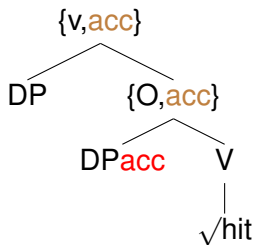   The person I will hit

Inheritance of [acc/nom] from C to T (depending on analysis of free functional items).

(17)   I plan for *(Anson) to be there.

(18)   I said that Anson was there.

Agree is Select

Inheritance of [acc] from v to O: Perlmutter/Burzio's Generalization

```
              {v,acc}
             /       \
          DP       {O,acc}
                   /      \
               DPacc      V
                          |
                        √hit
```

- Incompatible with interpretable categorial features, as will lead to incoherence (they are interpreted positionally).
- It follows from the cyclicity of the system that downwards inheritance, whether for specs or functional complements is restricted to one immediate containment relation.

Agree is Select

(19)   Percolation up the Extended Projection line

$$X_5, F$$
$$|$$
$$X_4, F$$
$$Y \quad X_3$$
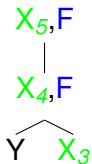
- ▶ Cannot be interpretable categorial feature (scopal).
- ▶ Cyclicity allows unbounded upwards percolation.

Agree is Select

(20)

$$\{K, -sg\}$$

$$|$$

$$\{D, -sg\}$$

$$|$$

$$\{Num, -sg\}$$

$$|$$

$$N$$

$$|$$

$$\sqrt{cat}$$
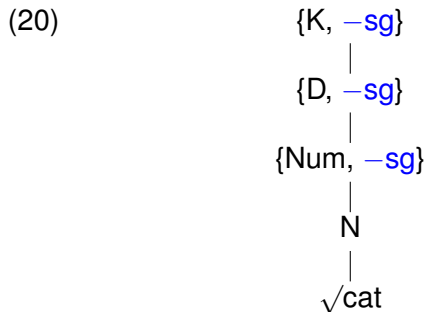
Interpreted once but present so able to mark concord.

Agree is Select

(21) ri caileig mhòir   shnuic
      to girl.DAT big.FEM,DAT nice.FEM,DAT
      shasainnaich
      English.FEM,DAT
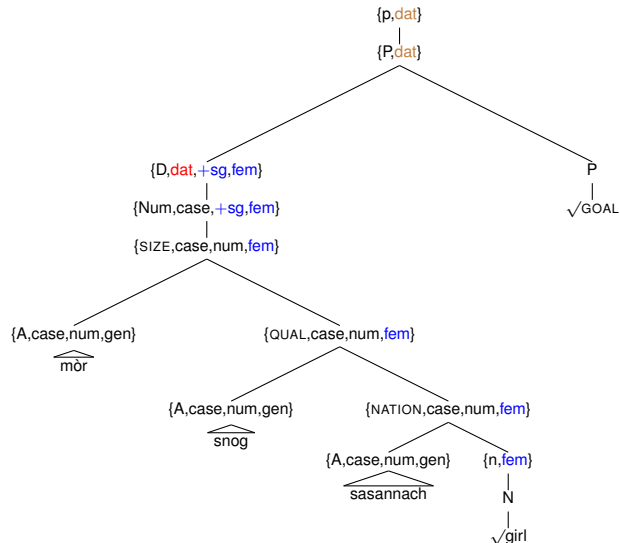   'to a tall nice English girl'

Assume case comes from the preposition via inheritance/spec-selection while gender percolates from n and number from Num (e.g. Landau). Everything is in the same EP.

Agree is Select
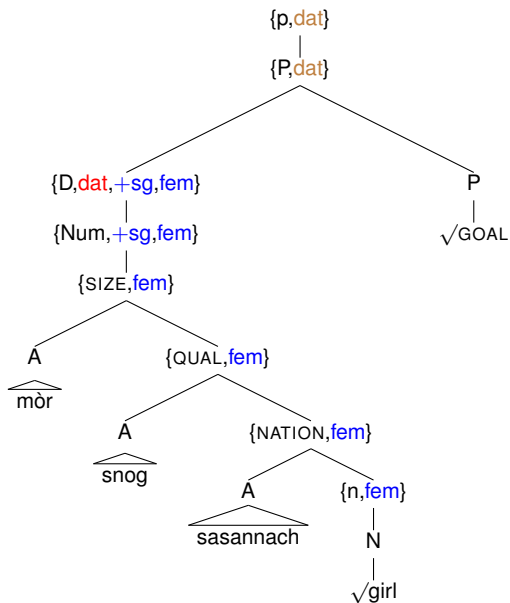
Agree is Select

unvalued features may also percolate.

Agree is Select: 4th Possibility

(22)   Final logical case is select from specfier to head.

$$X_4 \qquad\qquad X_4, F$$
$$Y,F \quad X_3 \qquad\qquad Y,F \quad X_3$$

(23)   a.   EP of Y = EP of X. F interpretable and
              interpreted once (cf. AP agreement above)
        b.   EP of Y $\neq$ EP of X. F interpretable on Y but
              not on X. ('downwards Agree')
        c.   EP of Y $\neq$ EP of X. F not interpretable on Y
              but interpretable on X. ('upwards Agree)

   ⋄ 4   Select(F, Y, X_4)   spec to 'head'   agreement

Agree is Select

(24) Principle: do not apply Select if not required.

(25) a. Rules out upwards percolation of a feature that is not interpreted in higher EP

    b. Upwards Spec-Head Agreement from one EP to another ruled out. Apparent upwards Spec Head agreement is upwards percolation plus downwards head-Spec selection for an unvalued feature
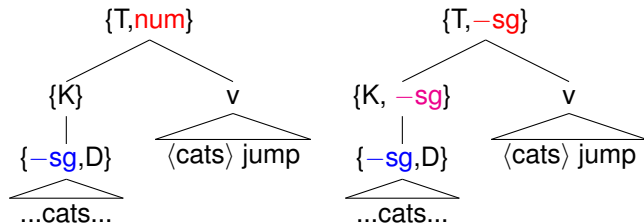
(26) spellout($\sqrt{}$jump$\frown$v$\frown${T, $-$sg}) = /jump/

Agree is Select

Long distance agree in one extended projection:

$$
\{T, -\text{sg}\} \\
| \\
\{v, -\text{sg}\} \\
| \\
\{O, -\text{sg}\}
$$

{K, −sg}   V

{−sg,D}   √jump
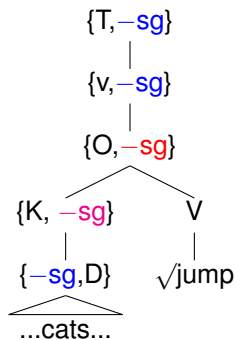
...cats...
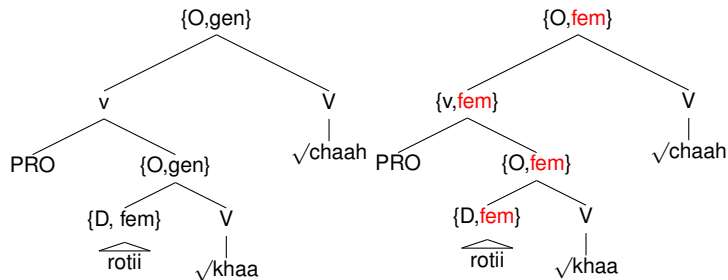
(27)   There jump.pl cats

Agree is Select

Long Distance Agree is head-spec select of an unvalued feature plus a requirement that you don't have mismatching features on a single EP projection (morphologically uninterpretable)
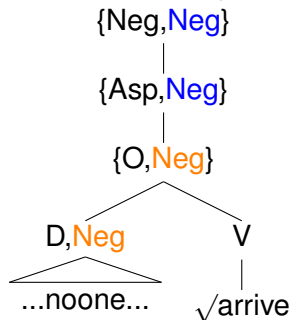
(28)   Firoz-ne   rotii   khaa-nii chaah-ii
        Firoz-ERG bread.F eat-INF.F want-PFV.3.FSG
        'Firoz wanted to eat bread.'

Agree is Select

(29)   EP of Y $\neq$ EP of X. G not interpretable on Y but interpretable on X.

This is 'upwards Agree', for example where Neg is not interpretable in the EP of N (cf. Zeijlstra, etc.).

{Neg,Neg}
|
{Asp,Neg}
|
{O,Neg}

D,Neg   V

...noone... $\sqrt{}$arrive

Agree is Select

- ▶ Single select operation (necessary as part of the definition of Merge) gives c-selection, EPP, inheritance, percolation, and both Agree under c-command and Spec-Head agreement (as side effects of specifier selection and percolation combining).

- ▶ The single operation is distinct in its effects because of (i) the cyclicity of the derivation and (ii) relativization of feature interpretability to extended projections.

- ▶ Categorial features are interpreted in scopal position, fixed by EP

- ▶ Non-categorial features are
    - ▶ unfixed scopally for interpretion in an EP
    - ▶ may be introduced at different points in an EP
    - ▶ interpretable relative to an EP (V or N)
    - ▶ able to be unvalued. Once EP is complete, they are valued (simple subsumption)

Agree is Select

- ▶ No special operation of Agree is necessary
- ▶ 'direction' of Agree is just a side effect of interpretability of features relativized to extended projections.
- ▶ Predicts overly strong intervention effects, since the projection line will unify features whenever they cooccur.
- ▶ Been searching for Agree in more basic operations. Not sure I've quite found it yet!