Person, Number, and the Architecture of Grammar

PART ONE: *Probing & valuation*

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The probe-goal turn

Superiority in *wh*-movement

- While our focus here is φ-features —
  - the **probe-goal** model that is at the center of φ-feature syntax originates in the treatment of movement
    - and, in particular, *wh*-movement
- The basic empirical observation was this:

> Superiority effects in multiple-*wh* questions are inelegant for "foot-driven" theories of movement.

Superiority in *wh*-movement

- To see why, consider:

(1) a. Who did Morty think built what?
    b. * What did Morty think who built?

(2) a. Who did Morty think *t* built what?
    b. * What did Morty think who built *t*?

➢ **Crucially**, we can't just say that *what* in (1–2) is not a potential mover:

(3) What did Morty think Rick built *t*?

⇒ In a "foot-driven" model of movement —

(where movement is driven by the *wh*-phrases)

— the different *wh*-phrases would have to "consult" one another to determine which one moves

Superiority in *wh*-movement

(2) a. Who did Morty think *t* built what?
b. * What did Morty think who built *t*?

(3) What did Morty think Rick built *t*?

- In particular, *what* would have to "check" if there's another potential mover higher up in the tree
  (like *who* in (2a–b), but not *Rick* in (3))
  — before deciding whether it could, itself, move.
- And, crucially, we can create examples where *what* is unboundedly far away from the other phrase
  · the phrase it has to "check" with

(4) ☐ did you think who/Rick claims Beth knows [...] Jerry broke what?

Solution: the probe-goal model

- Chomsky (in his 1989 class notes on Rizzi's 1990 *Relativized Minimality*, which was circulating as a manuscript at the time) —
  ○ we can solve this problem by assuming that *wh*-phrase move not because of their *own* needs;
  ○ but because of the needs of an element at (or near) the landing site
- Assume that interrogative C^0 is a **probe** — which means:
  ○ it has a featural need;
  ○ in this case, to seek and find a phrase bearing [*wh*]-features
  – a.k.a., a **goal**

Solution: the probe-goal model

- One more ingredient: **Iterative Downward Search**
  (a.k.a., "minimal search")
  ○ I'll give a formal definition in a moment;
  ➢ but the intuition is:
  – starting from the probe, and searching downward
  – so that *closer* potential goals will be encountered earlier than *farther* potential goals
  · where 'closer' and 'farther' are defined structurally
  · i.e., in terms of (asymmetric) c-command

Solution: the probe-goal model

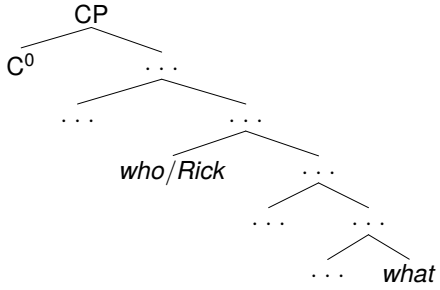
⇒ Looking once again at our paradigm:

(2) a. Who did Morty think *t* built what?
b. * What did Morty think who built *t*?

(3) What did Morty think Rick built *t*?

➢ the different *wh*-phrases no longer have to "consult" with one another:

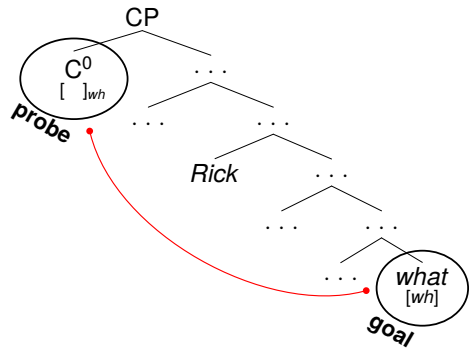
(5)



Solution: the probe-goal model

- Instead, C^0 simply scans the tree for the closest bearer of [*wh*]-features it can find

(6)

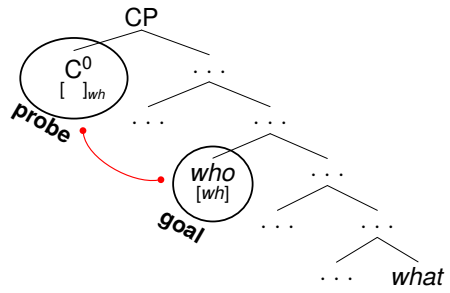


- here, C^0 acts as the **probe**;
- and the closest *wh*-phrases acts as the **goal**.

Solution: the probe-goal model

- And, of course, if the closer noun phrase is already a bearer of [*wh*]-features:

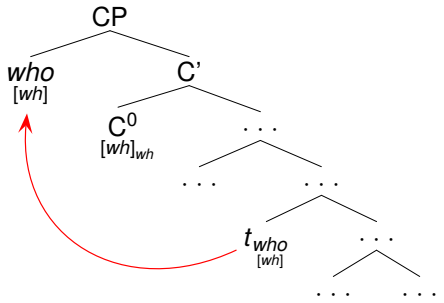
(7)



Solution: the probe-goal model

- In interrogative constructions of this sort:
  - the **goal** is then moved to (=remerged at) the [Spec,CP] position

(8)



Probe-goal: summary

- What we have seen so far:
  - superiority in multiple-*wh* questions
    - inelegant for "foot-driven" models of movement

⇒ SOLUTION: the **probe-goal** model of movement.

The empirical question: is the lodel suitable for φ-features?

- Before turning to "how the probe-goal model works with φ-features" —
  - we should first ask:
    Is the probe-goal model well suited, empirically, as a model of φ-feature interactions?

➢ You already know the answer is "yes"…
(otherwise why am I telling you all this)

- But let's see why.

The empirical question: Is the model suitable for φ-features?

- The probe-goal model takes it as a given that:
  (i) the element with the featural need—the "probe"—is a **head** (=X^0)
  (ii) the "probe" **c-commands** the element that may satisfy that featural need (the "goal")

- Reminder:

φ-features
The set of syntactic features that, at the LF interface, trigger interpretations that are exclusively related to PERSON, NUMBER, and GENDER(/NOUN-CLASS).

The empirical question: Is the model suitable for φ-features?

⇒ When it comes to φ-features:
  - what would be an "element with a featural need"?
  - and what would be an "element that may satisfy that need"?

➢ Chomsky (1995:277–278) provides the following suggestion:
  - features like PERSON, NUMBER, and GENDER are **meaningful** on the DPs where they occur
    - with some well-known exceptions in each class
    - e.g. politeness marking, pluralia tantum, and grammatical gender, respectively
  - but they are **meaningless** when they occur on a verb or a TAM(=Tense/Aspect/Mood) marker
    - e.g. "build.1sg" and "build.2sg" have no meaning difference beyond the difference *already encoded on the argument*

The empirical question: Is the model suitable for φ-features?

⇒ Chomsky's (1995:277–278) suggestion:

- **φ-features get copied from nominals (where they "belong") to verbs / TAM markers**
  - to satisfy a featural need that verbs / TAM markers have

➢ Crucially, verbs & TAM markers are heads

- in accordance with tenet (i) of the probe-goal model, repeated here:
  (i) the element with the featural need—the "probe"—is a **head** (=X^0)

The empirical question: Is the model suitable for φ-features?

- This brings us to the second tenet, repeated here:
  (ii) the "probe" **c-commands** the element that may satisfy that featural need (the "goal")

➢ Does this hold for φ-feature dependencies in syntax?

- Preminger (2013), Polinsky & Preminger (2015):
  local, clause-internal dependencies are not where one goes to investigate these matters!
  - that's because the directionality (who c-commands who) of local relationships can be easily reversed
  - e.g. by positing various hard-to-detect movement operations that reverse the relevant structural relations
    - cf. agreement with English subjects — is it before or after the subject moves to [Spec,TP]…?

The empirical question: Is the model suitable for φ-features?

- Instead, we should look at cross-clausal agreement relations

➢ Polinsky & Potsdam (2001) provide the paradigm case

- based on **Long-Distance Agreement (LDA)** in **Tsez**, a Nakh-Daghestanian spoken in the northeast Caucasus

The empirical question: Is the model suitable for φ-features?

- Some basic facts about Tsez:

(9) a. **ziya** **b**-ik'i-s (Tsez)
cow.III.abs III-go-past.evid
'The cow left.'

b. eniy-ā **ziya** **b**-išer-si
mother-erg **cow.III.abs III**-feed–past.evid
'The mother fed the cow.' [*Polinsky & Potsdam 2001:586*]

- ergative-absolutive language
- agreement in noun-class(=gender) only
  - and with absolutive argument only
- movement in Tsez is only possible within a single clause; there is no cross-clausal movement of any kind (Polinsky & Potsdam 2001:590, 602–604)

The empirical question: Is the model suitable for φ-features?

- Now here's the crucial data point:

(10) a. Eni-r [**uži** ϕ-āy-ru-łi] ϕ-iy-xo.
mother-dat **boy.I(abs)** **I**-arrive-past.prt-nmz **I**-know-pres
'The mother knows that as for the boy, he arrived.'

b. Eni-r [už-ā **magalu** **b**-āc'-ru-łi] **b**-iy-xo.
mother-dat boy-erg **bread.III(abs)** **III**-eat-past.prt-nmz **III**-know-pres
'The mother knows that as for the bread, the boy ate it.'
[*Polinsky & Potsdam 2001:606*]

➢ verbs in Tsez show φ-feature agreement with nominals located inside an embedded clause

(and recall: there is no cross-clausal movement in Tsez)

- and since these clauses are complements of the matrix verbs —
  ⇒ the nominal, the source of gender features, is **c-command** by the verb

The empirical question: Is the model suitable for φ-features?

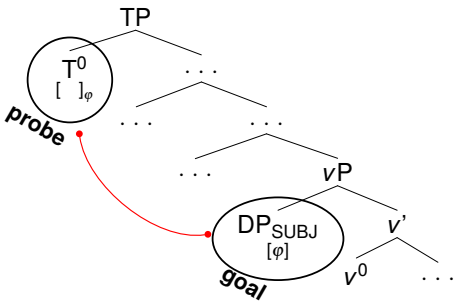
➢ In other words, the behavior of φ-features in syntax accords with tenet (ii) of the probe-goal model, as well:

(ii) the "probe" **c-commands** the element that may satisfy that featural need (the "goal")

Valuation

- Okay, so: suppose a φ-feature **probe**, e.g. T^0 (a.k.a., I^0 or $Infl^0$) has located a nominal **goal**

(11)



➢ *What happens then?* **Valuation**.

- We know what valuation amounts to <u>empirically</u> —
  - the features of the nominal end up on T^0

Valuation

- But note that there are <u>several</u> possibilities for what this means, grammatically speaking —
  - traditionally, valuation was taken to be a *copy-and-overwrite* process:
    - T^0 starts out with placeholders for PERSON, NUMBER, and GENDER

(12)

$$T^0 \begin{bmatrix} \text{PERSON:} & \square \\ \text{NUMBER:} & \square \\ \text{GENDER:} & \square \end{bmatrix} \Rightarrow T^0 \begin{bmatrix} \text{PERSON:} & 1 \\ \text{NUMBER:} & \text{pl} \\ \text{GENDER:} & \text{fem} \end{bmatrix}$$

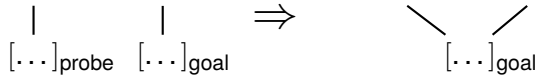
      - we can call these placeholders 'unvalued features', or 'uninterpretable features', or whatever

    - and valuation consists of the relevant feature values being copied from the nominal **goal** onto T^0
      - and replacing these placeholders

Valuation

- another possible implementation of **valuation** is FEATURE SHARING
  (Andrews 1971, Frampton & Gutmann 2000, 2006, Gazdar et al. 1985, Koster 1987, Pesetsky & Torrego 2007, Pollard & Sag 1994)
  - on this view, valuation amounts to taking the **goal**'s features —
    - ➢ and associating them with *both* the **goal** and the **probe**

(13) *probe* *goal* ⇒ *probe* *goal* [*cf. Frampton & Gutmann 2006:128*]



⇒ consequently, any subsequent modification to this feature bundle will affect *both* the **goal** and the **probe**

Valuation

- in the extreme, the **goal** and the **probe** can enter into FEATURE SHARING while both are still unvalued
  - acquiring actual values only later in the derivation

Valuation

- here is an example of that — not from φ-features, but from case:

(14) emmenomen **hois$_1$** ho:mologe:samen ***t*$_1$ dikaiois ousz**, e: ou?
we.abide.by **which.DAT** we.have.agreed **just.DAT being.DAT** or not
'Do we abide by those things which we consider just, or not?'
[*Ancient Greek; Andrews 1971:138*]

- in (14), the predicate "being just" enters into FEATURE SHARING with the *wh*-phrase while neither has case yet
- only later does the predicate "abide" assign the value 'dative' (DAT) to this feature bundle
  - ➢ yielding dative morphology on *both* the *wh*-phrase and the stranded predicate

Valuation

- and there is yet another, third possible implementation of **valuation**, which we will not discuss until later in the course —
  - feature-geometric valuation

➢ but before we can discuss that, we have to acquaint ourselves with the notion of a **φ-feature geometry** … *stay tuned!*

References 29 / 30

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