Labeling and Determinacy

Elly van Gelderen

Arizona State University

CRISSP Seminar

27 April 2022, KU Leuven

Third Factors in
Language Variation
and Change

Outline

Paradigm shift: from UG to Third factors

Third factors, e.g. Labeling and Determinacy

Changes due to labeling needs
        and to determinacy

The CP-TP bottleneck: *that*-t, subject null RC, null C

(V2: between labeling and determinacy)

From UG to Third factors

UG of the 1950s to late 1970s: language-specific instructions and rules (principles and parameters) e.g. for antecedent-reflexive relations and for *wh*-movement.

Evolvability: if the Faculty of Language developed in humans only 100,000 to 200,000 years ago – as is speculated: attribute less to language specific principles.

UG in the Minimalist Program: Merge that combines two elements into a set.

Third factors do the rest (second factors mainly being relevant to acquisition).

Three Factors (Chomsky 2005: 6)

1.   Genetic endowment, apparently nearly uniform for the species, which interprets part of the environment as linguistic experience, a nontrivial task that the infant carries out reflexively, and which determines the general course of the development of the language faculty. ..., some may impose computational limitations that disappear in a regular way through genetically timed maturation ...;

2.   Experience, which leads to variation, within a fairly narrow range, as in the case of other subsystems of the human capacity and the organism generally.

Third factors

3.   Principles not specific to the faculty of language. (a) principles of data analysis that might be used in language acquisition and other domains; (b) **principles of structural architecture and developmental constraints that enter into canalization, organic form, and action over a wide range, including principles of efficient computation**, which would be expected to be of particular significance for computational systems such as language.

Towards simpler computations

The spirit of the current Minimalist Program from Chomsky (1995) through Problems of Projection (PoPE) in Chomsky (2015) and Determinacy in Chomsky (2019) is to attribute as little as possible to the computation, restricting it to simple merge with a labeling algorithm as the derivation is transferred to the interfaces.

Examples of Third Factors

(1)   **Minimal Search**
A head finds a lower head or phrase in a set/workspace.
(2)   **Phase Impenetrability Principle (PIC)**
"The domain of H [v or C] is not accessibe to operations, but only the edge of HP[the head and specifiers]." (Chomsky 2004: 108)
(3)   **Inclusiveness Condition (IC)**
"[N]o new objects are added in the course of computation." (Chomsky 1995: 228)
(4)   **Extension Condition (EC)**
"Merge always applies in the simplest possible form: at the root" (Chomsky 1995: 254).
(5)   **The No Tampering Condition (NTC)**
Merge cannot make changes to the objects it affects.

and

Labelling is done at the interfaces (Chomsky 2013; 2015); XP, YP labeling paradoxes are resolved in two ways (movement and feature sharing).

-Phrase to Head reanalysis is a third way

-Larger questions: Feature sharing vs MS

Determinacy (Chomsky et al 2017) requires anti-local movement.

-Explains reanalysis of topic as subject

Labeling was part of X'-theory

Labelling a phrase as VP or DP was a core component of phrase structure in the generative framework.

Phrases were headed and expanded to a maximal projection with a specifier, head, and complement.

The X'-schema is seen by many as perhaps one of the greatest generative insights into syntactic structure.

Movement was by heads to head positions and by phrases to specifier positions.

PoP and labelling

All Syntax does: it takes objects and yields unordered sets {X, Y} without a label (Chomsky 2013: 42)

(1)

v^*P

DP $v^*{}'$ > {{D, NP}, $v^*{}'$}

D   NP v^* VP   > {v^*, {V, …}}

V   …
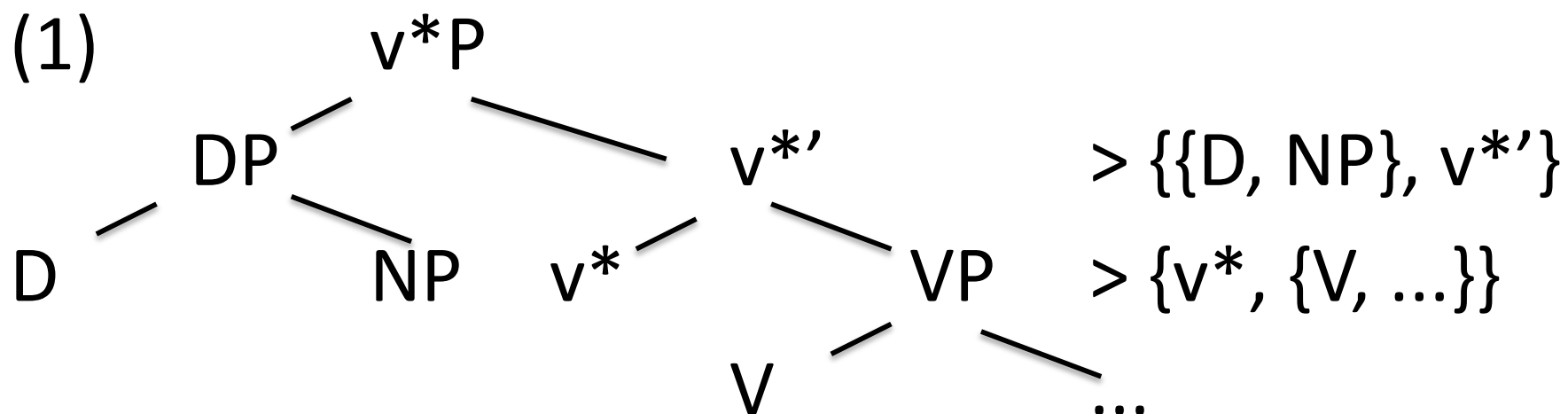
Labeling the set is not part of Merge and should be left to a requirement of the interface.

The **Labeling Algorithm** is "a special case of minimal search" seeking "heads H within its search domain … it must take place at the phase level, as part of the Transfer operation" (Chomsky 2015: 6).

{X, YP}, {XP, YP}, and {X, Y}

- {X, YP} is unproblematic: take X

- {XP, YP} is problematic: no obvious label

Several cases, e.g. first merge in Spec vP/PredP

(2)
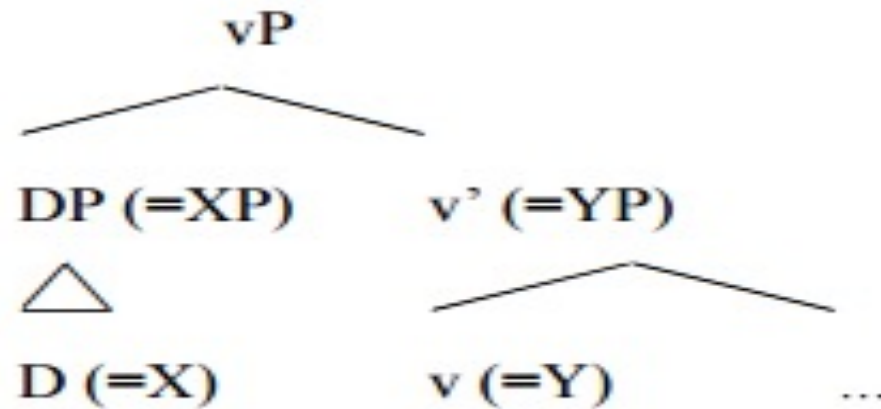
and

(3) copula {XP YP}

Solution 1: move

Solution à la Moro: **move** one of the maximal projections. Chomsky: "modify SO so that there is only one visible head". (2013: 43) [invisible copy is problematic]

But: movement creates new {XP, YP}:

(4)   α[Tom TP[T v*P [~~Tom~~ v* read a book]]]
        (adapted from Chomsky 2015: 10)

where α cannot be labeled.

Solution 2: Share features and use these as label
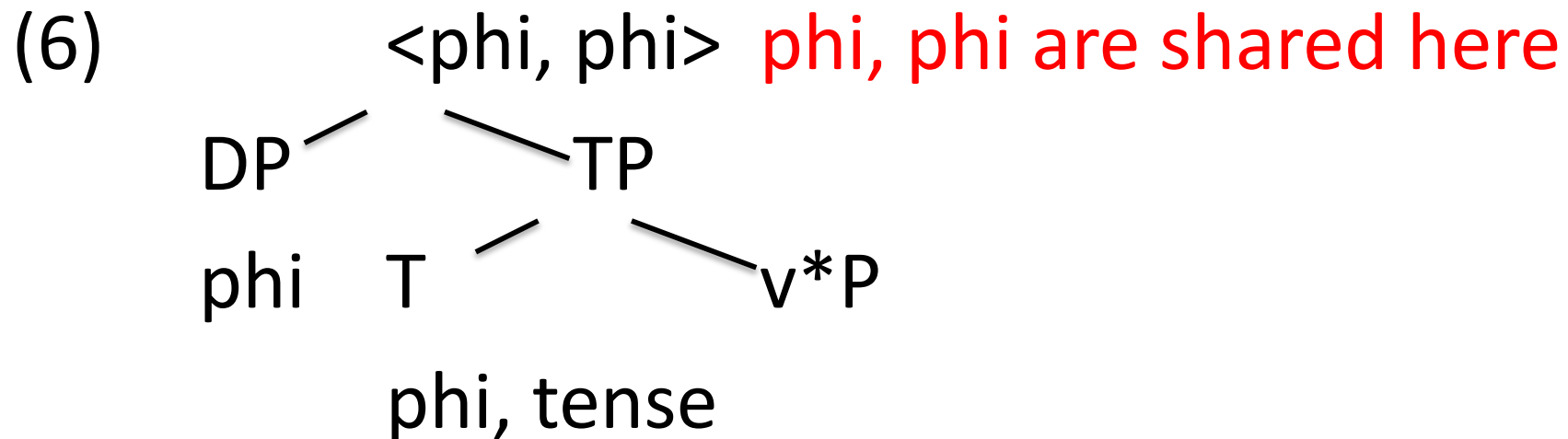
Chomsky (2013: 43): "X and Y are identical in a relevant respect, providing the same label, which can be taken as the label of the SO".

What are they? phi, Q

Sharing

(5) α[Tom TP[T v*P[~~Tom~~ v* read a book]]].

Hence the features.
(6)   <phi, phi> phi, phi are shared here

            DP   TP

          phi   T   v*P

                phi, tense

What counts as the label?

"LA simply determines a **property** of X for externalization and CI" (Chomsky 2015: 6)

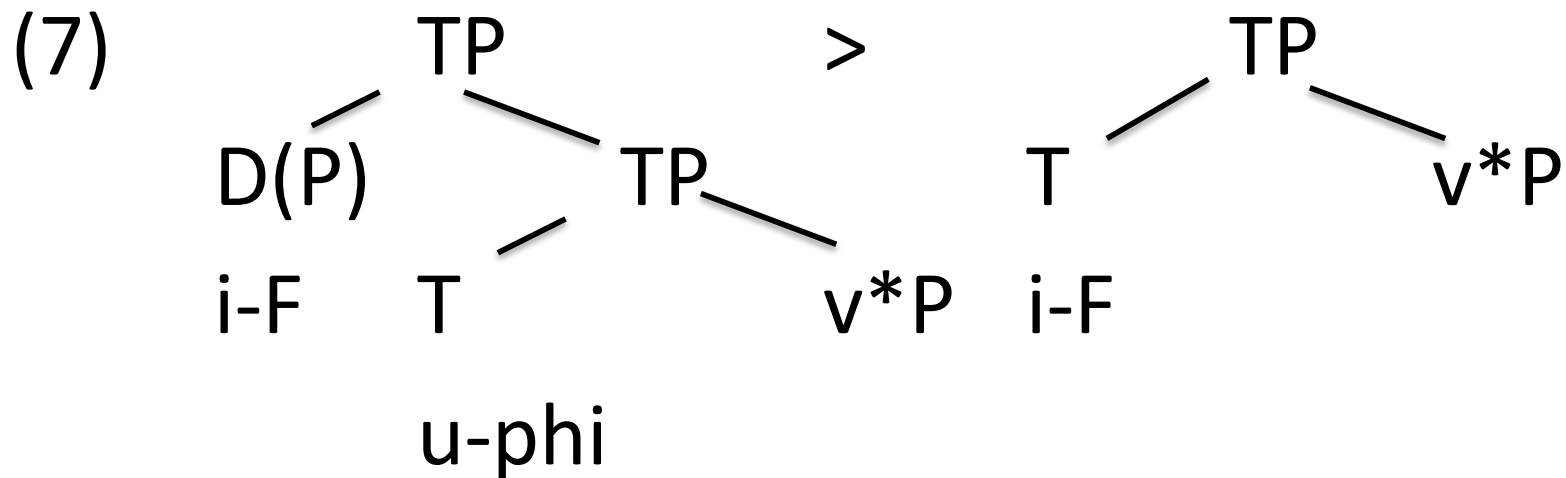"LA **selects H**" (Chomsky 2015: 7)

In the case of {XP, YP}, "the label is the **pair of agreeing elements**" (Chomsky 2015: 7)

Good about this approach is that:

"IM is driven by labeling failures" (Chomsky 2015: 7)

Spec to Head is labeling solution 3

The Spec could also be reanalyzed as Head:

(7)

```
              TP                    >                      TP
            /    \                                       /    \
        D(P)      TP                                   T        v*P
        /        /   \                               /
      i-F       T     v*P                           i-F
                |
              u-phi
```

So from feature-sharing in {XP, YP} to Minimal Search in {X, YP}

Eight instances of Phrase to Head= Labeling

Full (subject) pronoun to agreement on T

   and (object) pronoun to agreement on v*

Demonstrative pronoun to article

 and to complementizer

Wh-phrase to *Yes/No* head in C

PP in Spec CP > C

Negative adverb to negation marker

AP/PP to aspect marker

Case 1: Full pronoun to agreement in T, from Old to Modern French

(1) *Si con **tu** meismes le   preuves*

   If when you   self   it   prove

   `If you prove it yourself.'
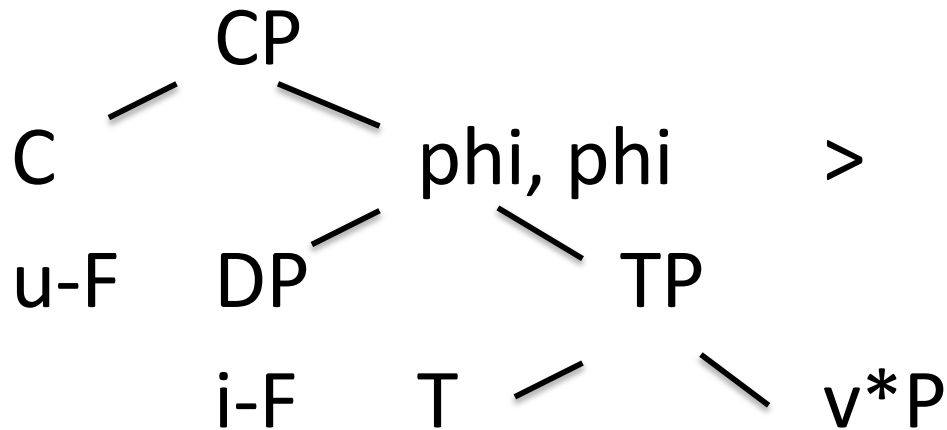(http://romandelarose.org, Selden Supra 57, 40v)

(2) *Renars respond: "**Jou, je** n'irai"*

   'R answers   "I,   I won't go".'

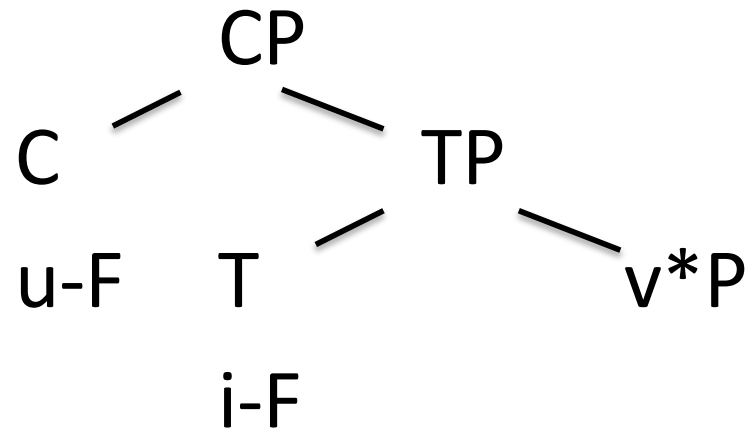   (Coronnement Renart, A. Foulet (ed.) 1929: 598, from Roberts 1993: 112)

(3)   *_Je heureusement ai vu ça_
       I probably have seen that
       `I've probably seen that.'
(4)   _Moi, je_ + V
(5)   **Eux, ils** _sont de_   _gauche._
       them3PM are   of   left
       'They are left-wing'. (Cd'ES)
(6)   **Les tomates, i** _sont encore vertes_
       'The tomatoes, they are still green.'
       (Lambrecht 1981 : 40)
(7)   **Tout chacun   il**   _avait_   _son_
       carnet
       all   everyone 3SM had   his   carnet
       `Everyone had his carnet.' (Cd'ES)

Spec-to-head under this scenario

```
        CP                                    CP
   C          phi, phi      >          C            TP
  u-F   DP          TP               u-F    T            v*P
       i-F    T         v*P                 i-F
```

valuation of u-F on C   just valuation

and transfer to T   >

labeling due to feature   labeling is minimal
       transfer and sharing   search

Just a few more examples

The Basque verbal prefixes *n-, g-, z-* are identical to the pronouns *ni* 'I', *gu* 'we', and *zu* 'you.' (Gavel & Henri-Lacombe 1929-37),

As early as the 19th century, Proto Indo-European verbal endings *-mi, si, -ti* are considered to arise from pronouns (e.g. Bopp 1816).

Hale (1973: 340): in Pama-Nyungan inflectional markers are derived from independent pronouns: "the source of pronominal clitics in Walbiri is in fact independent pronouns".

Mithun (1991): Iroquoian agreement markers derive from Proto-Iroquoian pronouns

Haugen (2004: 319): Nahuatl agreement markers derive from pronouns.

Ross (2004) chronicles the sources of agreement markers in Oceanic .

The stages

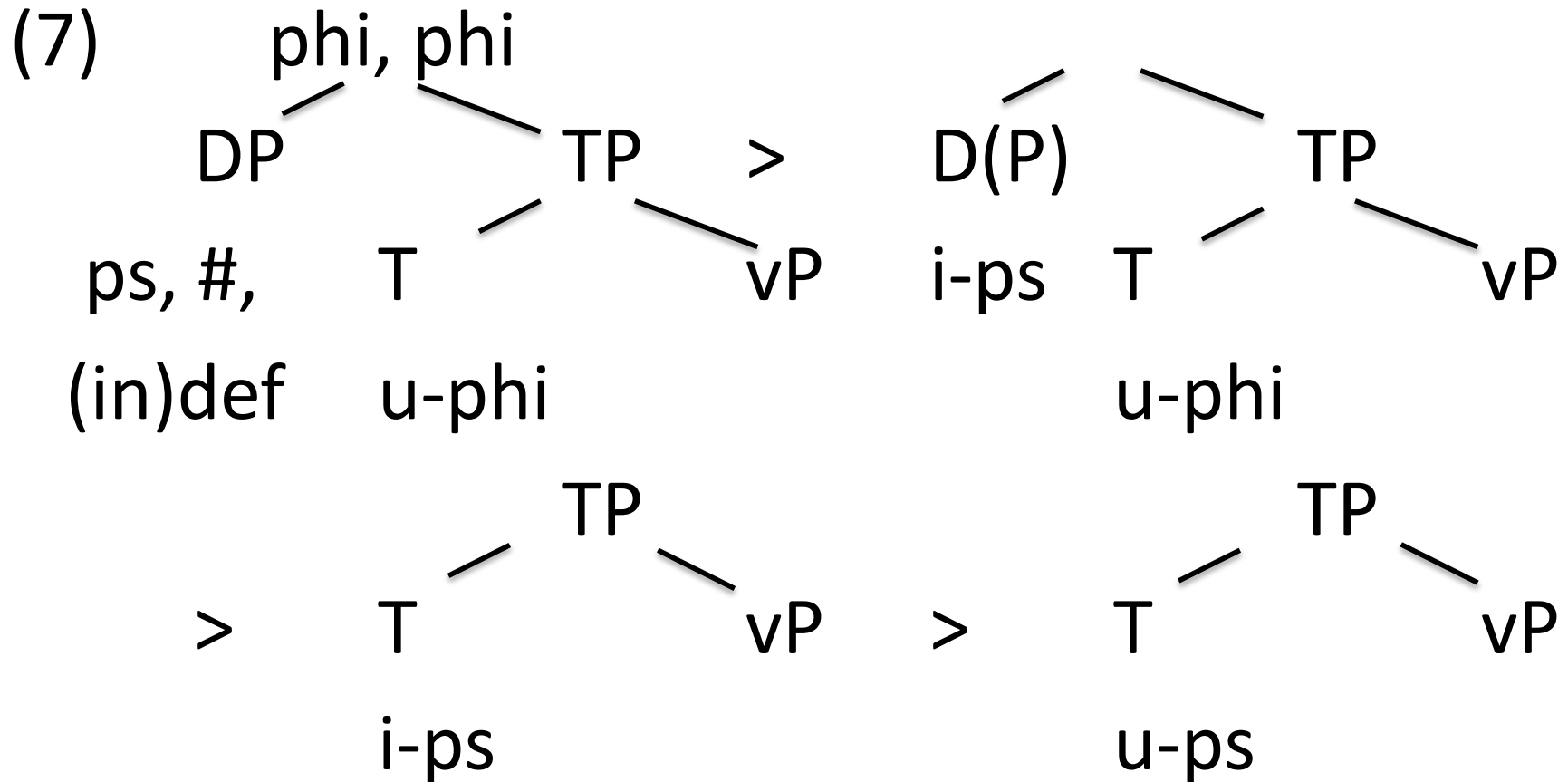Pronoun: They (often) eat lasagna.

Clitic/ambiguous: They'eat lasagna.

Emphatic and agreement: Them th'eat lasagna.

Pronoun: Them (often) eat lasagna.

Sharing versus {X, YP}

(7) phi, phi

```
        DP              TP      >        D(P)              TP
     ps, #,       T              vP      i-ps      T              vP
     (in)def    u-phi                            u-phi


                        TP                                  TP
      >       T              vP      >        T                    vP
              i-ps                            u-ps
```

Case 2: Full pronoun to v*/R

N. Athabaskan > S

Complementary distribution:

(1)   **me**_ganehtan_   Kaska

       me-ga-ne-0-h-tan

       3S-at-ASP-3S-CL-look

       `He looks at her'.

(2)   ***ayudeni***   _ganehtan_   Kaska

       girl   at-ASP-3S-CL-look

       He looks at the girl(s).

to Navajo object agreement

(3) ***'atoo'*** ***yí***-*ní-dlaa'-ísh*

     soup   3S-2S-eat-Q

     `Did you eat the soup?'

(4) ***yí***-*ní-dlaa'-ísh*

     3S-2S-eat-Q,

     `Did you eat it?' (Jelinek 2001: 23)

Latin > OSpa > ModSpa

Maddox (2019) and Fischer et al (2019):

(1)   *si*   **lo**   *non   fiziere,   non   erede.*if
            it   not   3S.do not   inherits

'If he does not do it, he does not inherit.' (*Fuero de Cuenca*, Maddox 2019: 71)

(2)   **lo**   *vimos*   ***a***   ***él***
            him   1P.saw   OM   him

            'We saw him.' (from Jaeggli 1982)

(3)   ***A***   ***quién le***   *viste* Argentinian Spanish
            to   who   3S   saw.2S

            'Who did you see?' (Franco 1993: 141)

Other object pronoun > agreement

(1)   *pursed-am-ash*   Persian still CD
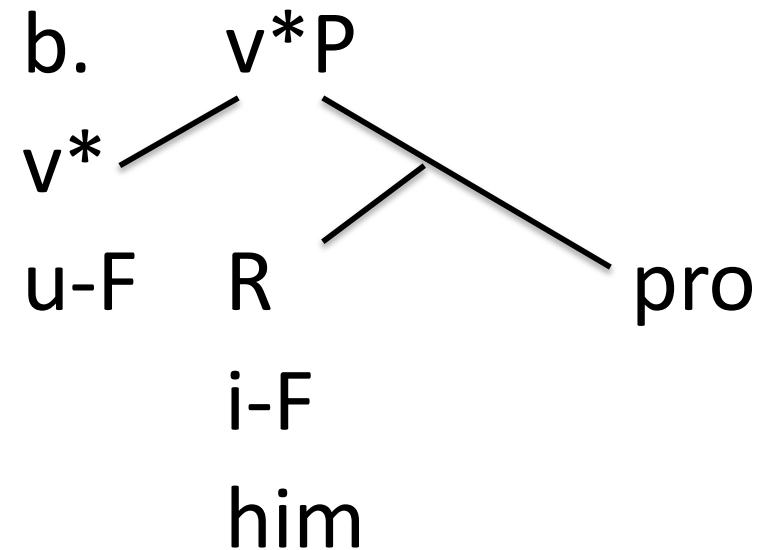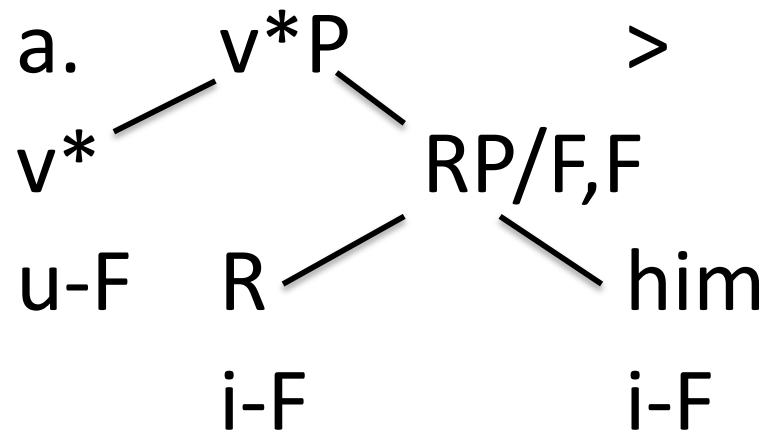
        asked-1S-3S `I asked him.'

And Haig (2018ab): reached a plateau..

(2)   *ʃuft-ik*   *ʔinti*   (some) Arabic

        saw.1S-2S you `I saw you.'

(3)   *Nga* *kihte-l*   *sah*   Kosraen

        I   feed-3S   him

        `I am feeding him' (Lee 1975: 61)

Reanalysis of objects is different

Unlike the subject, an object need not move
because either R can label or v* transfers
features to R:

a. v*P   >   b.   v*P

v*   RP/F,F   v*

u-F   R   him   u-F   R   pro

    i-F   i-F   i-F

                                              him

valuation and transfer to R just valuation

Interaction of two cycles in French

(1) *Je   ne   l'-ai   pas   vu*   Formal

      1S   not   3S.ACC-have   not   seen

      'I haven't seen it.'

Three ways out (Bahtchevanova & van Gelderen 2016):

Deletion, replacement, portmanteau

(2) *J'y   travaille > Je travaille   là*

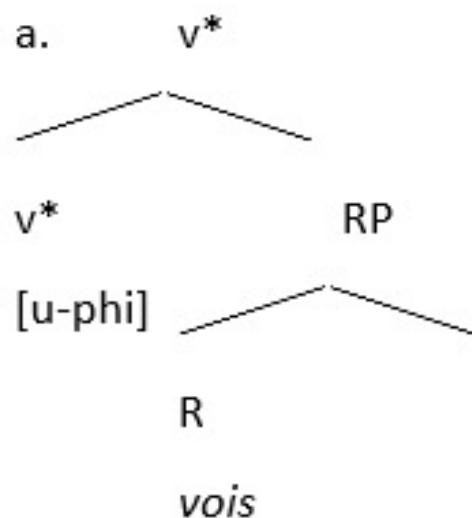   1S.there work   1S work there

      'I work there.'

	preverbal			postverbal	
locative	y	45	locative	là, etc	70
argument	le, l', la	196	argument	ça	106
Total		**241**	**Total**		**176**

Table 2:   Some pre- and post-verbal objects in the *Orléans corpus*

Portmanteau

1S subject je			2S subject tu	
and 1S object	je me	[ʒəm] or [ʒmə]	tu me	[tym]
and 2S	je te	[ʃtə]	tu te	[tyt]
and 3SM	je le	[ʒəl] or [ʒlə]	tu le	[tyl]
and 3SF	je la	[ʒəla] or [ʒla]	tu la	[tyla]
and 1P	je nous	[ʒnu]	tu nous	[tynu]
and 2P	je vous	[ʒvu]	tu vous	[tyvu]
and 3P	je les	[ʒəle] or [ʒle]	tu les	[tyle]
and 3SM.DAT	je lui	[ʒəlɥi]], [ʒlɥi], [ʒɥi], or [ʒi]	tu lui	[tylɥi]
and 3P.Dat	je leur	[ʒlœʁ]	tu leur	[tylœʁ]
and en	j'en	[ʒɑ̃]	tu en	[tɑ̃]
and y	j'y	[ʒi]	tu y	[tɥi] or[ti]

Reanalysis

a.　v*

v*　　　　　RP
[u-phi]
　　　　R　　　　　DP
　　　　vois　　　*le*

　　　　　　　　　[i-3MS]

Inheritance and sharing

b.　TP

T　　　　　v*P
[u-phi]
je-le　DP　　　　　v*
　　　pro
　　　　　　v*　　　　　RP
　　[i-1S]
　　　　　　　　R　　　　　DP
　　　　　　　　vois　　　pro

　　　　　　　　　　　　　　[i-3MS]
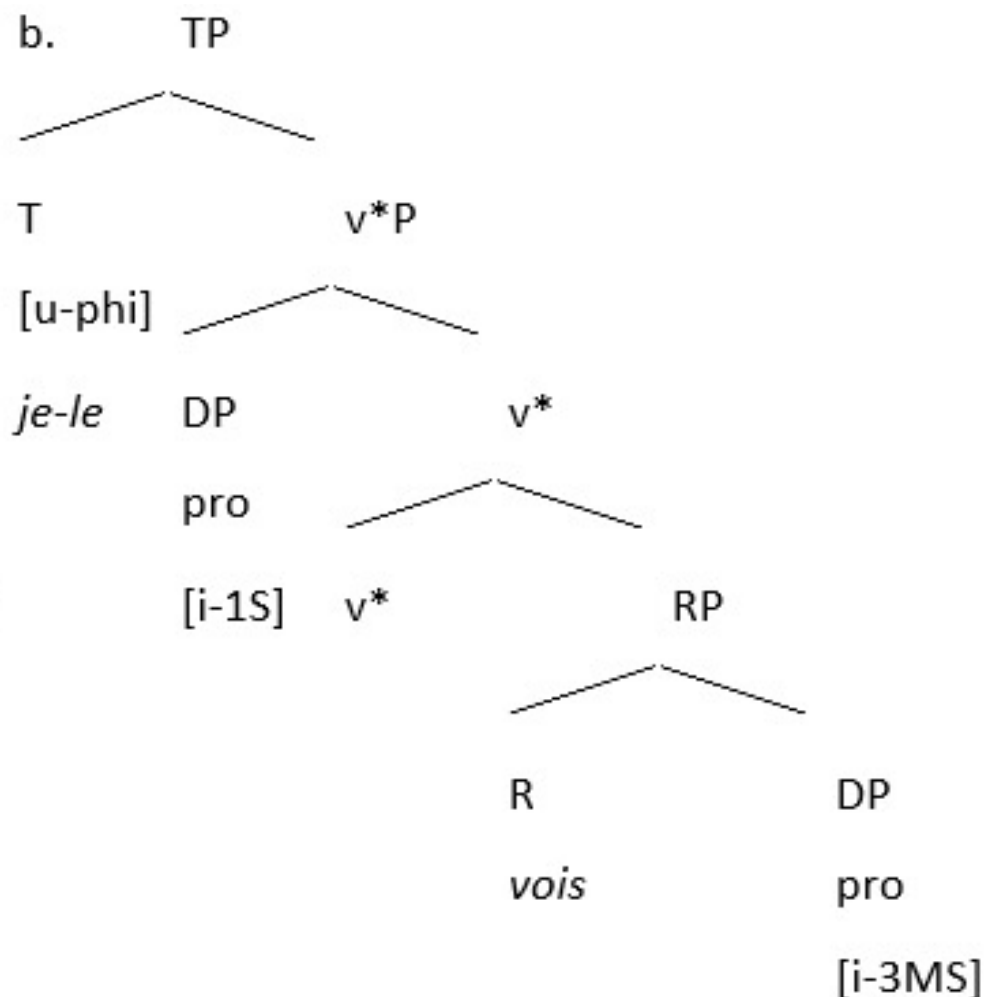
Minimal search

Case 3: Demonstrative to article

Old English-style in the Peterborough Chronicle.
(1) **Brittene igland** *is ehta hund mila lang. & twa hund brad. & her sind on* **þis iglande fif geþeode. Englisc. & Brittisc. & Wilsc. & Scyttisc. & Pyhtisc. & Boc Leden***.*
`The island Britain is 800 miles long and 200 miles broad. And there are in the island five nations; English, Welsh, Scottish, Pictish, and Latin'.
1130
(2) **Ðis** *geares wæs* **se** *mynstre of cantwarabyri halgod fram* **þone** *ærceb Willm* **þes** *dæies iiii No MAI*
`This year was the monastery of Canterbury consecrated by the Archbishop William, that fourth day before the nones of May.'

To article

1137

(3) *Ðis gære for **þe** k Steph ofer sæ to normandi 7 ther wes underfangen forþi ð hi uuenden ð he sculde ben alsuic alse **the** eom wes.*

`This year, (the) King Stephen crossed the sea to go to Normandy and was received there because they thought he was like the uncle .'

*se

but ok in Old English:

(4) ***se** wæs Wine haten & **se** wæs in Gallia rice gehalgod.*

he was wine called and he was in Gaul consecrated (from Bede)

The status of DP:
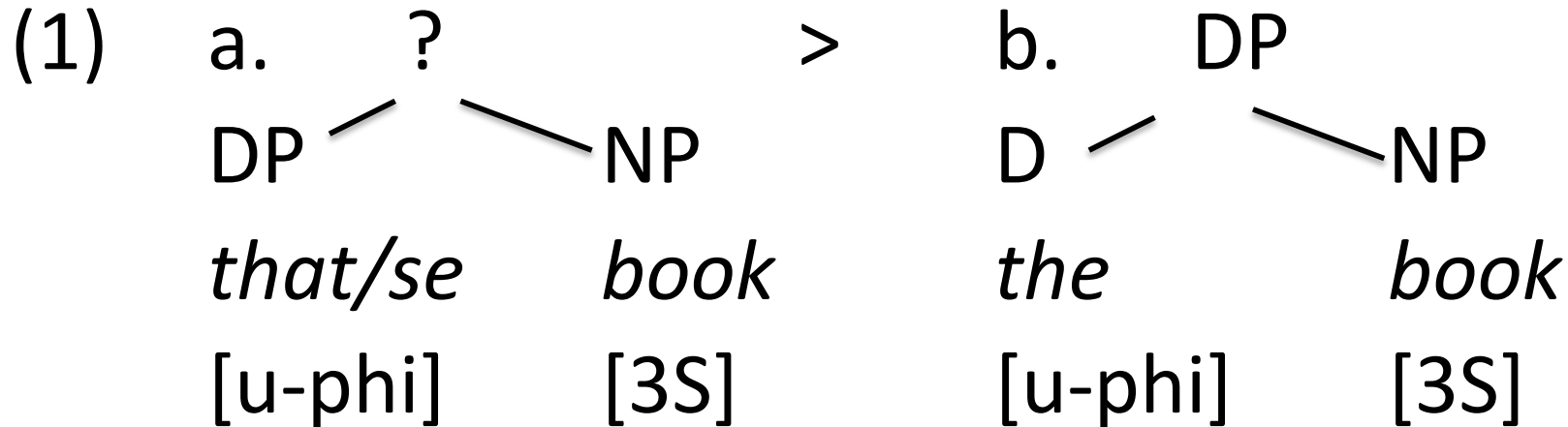
Is the DP a phase with a head D?
Chomsky has always been reluctant about the phasal status of the DP and currently sees D as an affix and the DP as headed by a noun.

What about demonstratives: concord as modifier?

Is Bošković right about the DP parameter?

Switch to D with u-phi?

Spec to head: some questions

(1)   a.   ?   >   b.   DP

        DP   NP   D   NP

        that/se   *book*   *the*   *book*

        [u-phi]   [3S]   [u-phi]   [3S]

"Concord"   >   "Agreement"

Labeling {DP, NP} can only | Regular search
happen if there is sharing. |

Case 4: Demonstrative to Spec to C

(1) *Ic wat wytodlice ðæt ge secað ðone haeland **ðone ðe** on rode ahangen waes.*

I know truly that you seek DEM-ACC savior DEM-ACC REL on cross hung was

`I know that you seek the savior who was crucified.'
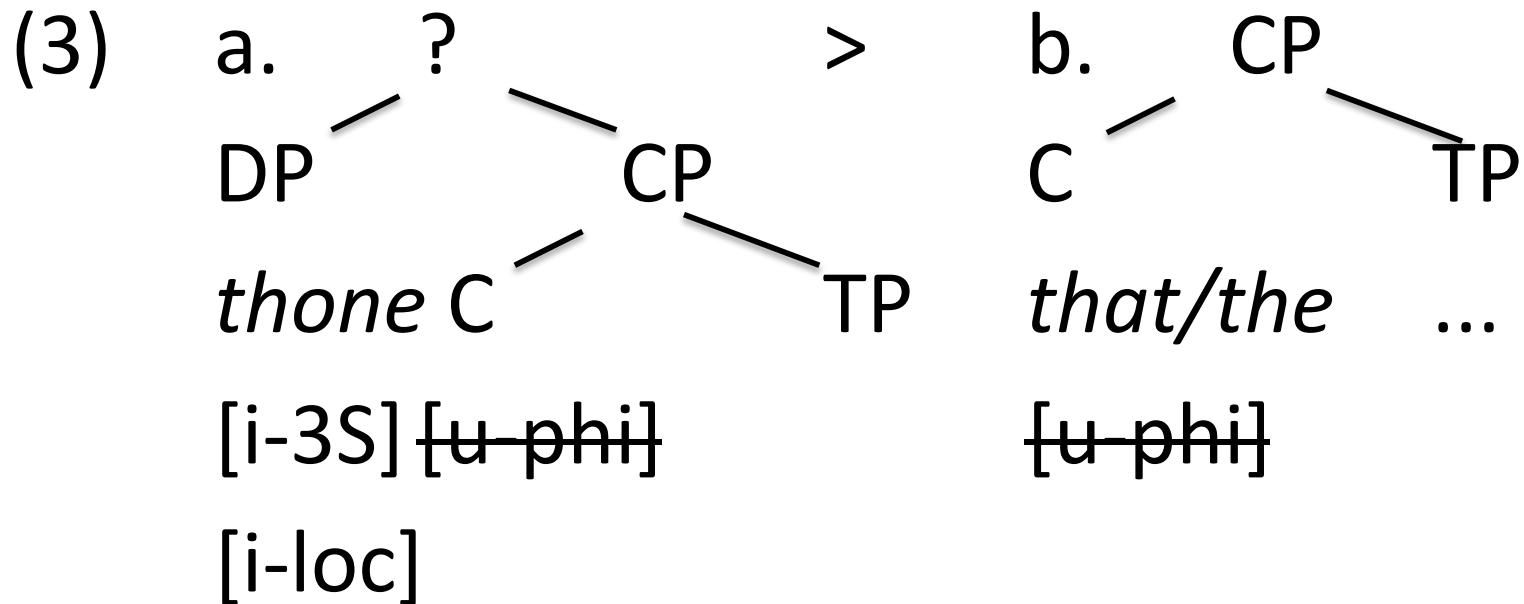(*Matthew* 28.5, from Allen 1977: 87)

(2) *and suggeð feole þinges … **þat** næuere nes i-wurðen*

and say many things REL never NEG.was happened

`and say many things that never happened.'
(Layamon, Caligula 11472-3, Brook & Leslie edition)
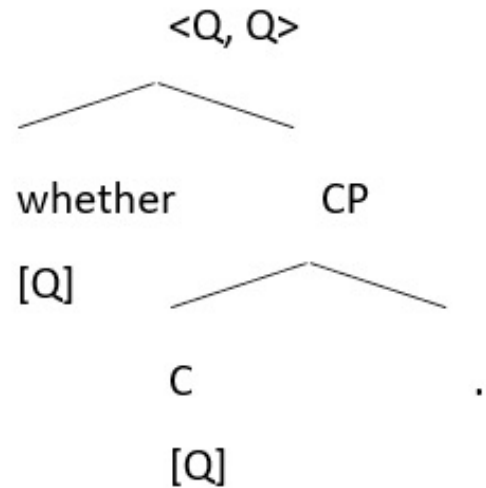
C's label: C or phi?

(3)   a.   ?   >   b.   CP

What is C sharing in (3a): REL? The incentive for reanalysis to (3b) is obvious...

Case 5: *Wh*-phrase to *Yes/No* head (and C)

How, whether

Label is <Q, Q>:

```
              <Q, Q>
             /      \
        whether      CP
         [Q]        /   \
                   C     ..
                  [Q]
```
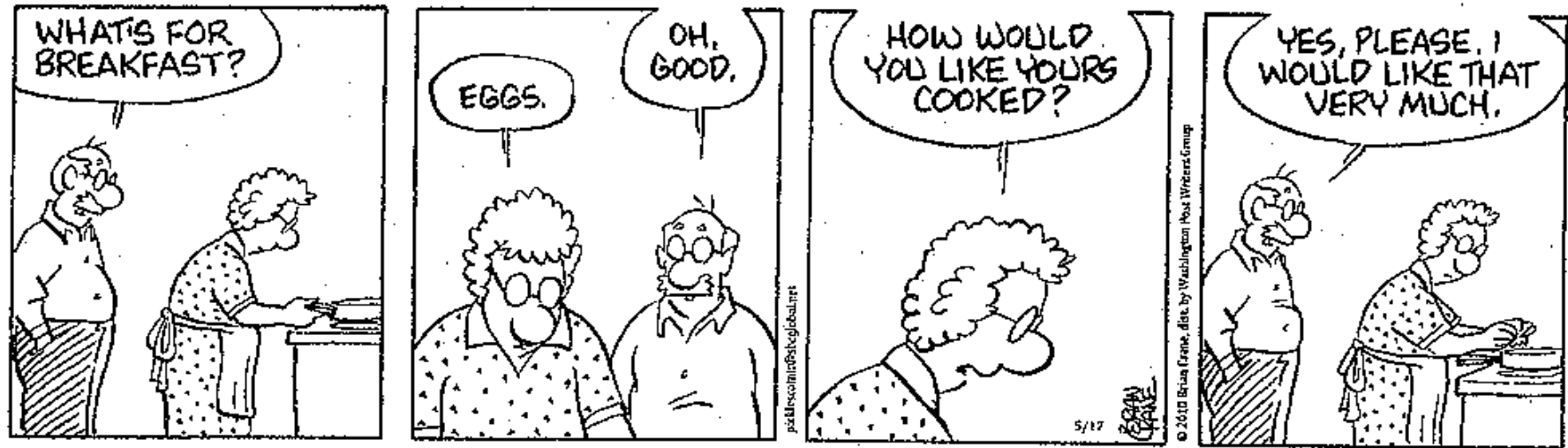
(1) I wonder [whether [C [he'll do it]]].
(2) the Congressmen who come in in January
and asking **whether if** one kind of affects the
other. (COCA Spoken 2010)
Doesn't change to head; same with *how*!

PICKLES

Panel 1: WHAT'S FOR BREAKFAST?

Panel 2: EGGS. / OH, GOOD.

Panel 3: HOW WOULD YOU LIKE YOURS COOKED?

Panel 4: YES, PLEASE. I WOULD LIKE THAT VERY MUCH.

(3) *Hym thoughte **how þt** the wynged god Mercurye Biforn hym stood.*
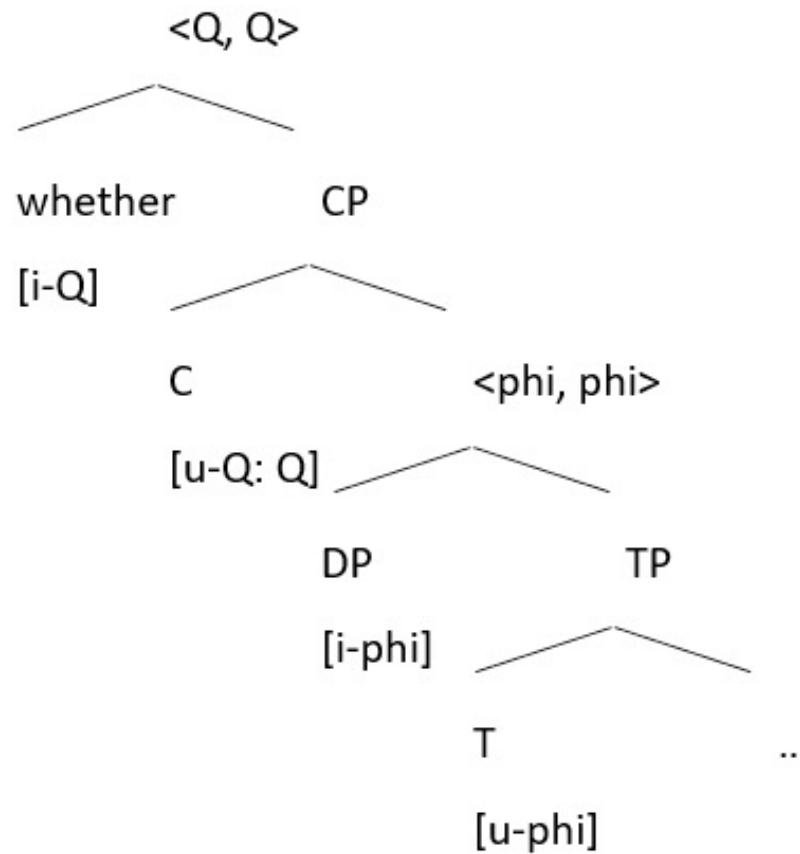
him thought how that the winged God Mercury before him stood

'It seemed to him that the winged god Mercury stood before him.'

(OED, c1385 Chaucer *Knight's Tale* 527)
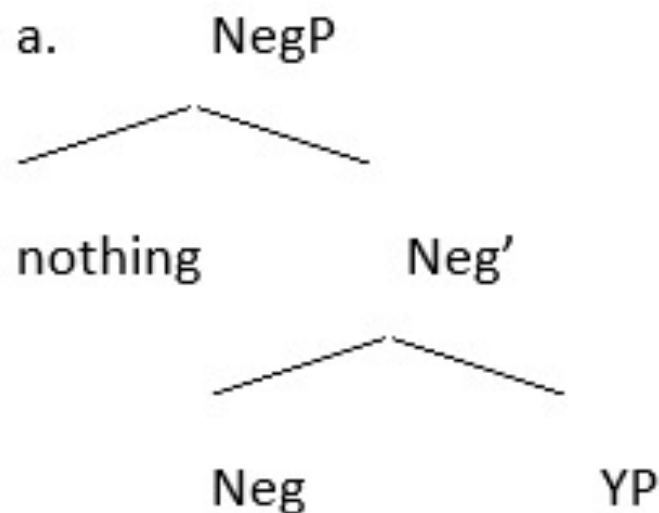
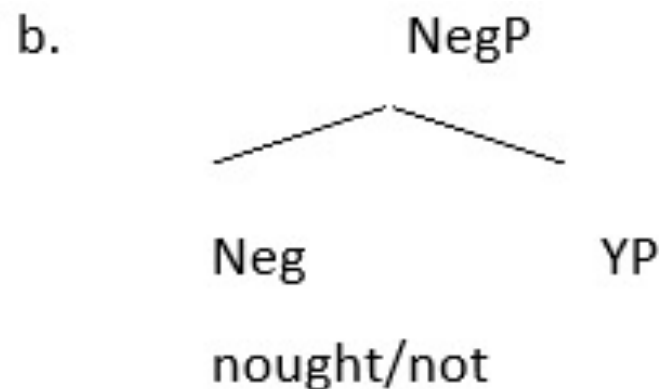# *How, whether:* remain Spec

Relevant to the CI?

<Q, Q>

whether   CP

[i-Q]

    C   <phi, phi>

   [u-Q: Q]

      DP   TP

     [i-phi]

       T   ...

    [u-phi]

Case 6: Negative adverb to head

(1) earlyOE > OE/ME > earlyModE > ColloqEnglish

  no/ne (ne) ... not   -n't   -n't ... nothing

(2)

a.
```
            NegP
          /      \
    nothing      Neg'
               /      \
            Neg        YP
```
Labeling via Sharing

b.
```
            NegP
          /      \
       Neg        YP
    nought/not
```
labeling is minimal search

Case 7: AdvP/PP to Aspect Head

(1)   They received the book right back >
(2)   They received (*right) back the book

This hasn't occurred a lot in English, the AP remains lexical/telic aspect, not grammatical perfective.

Preposition/adverb Incorporation

Cross-linguistically, perfective aspect goes through a cycle in which an aspectual prefix weakens and is first reinforced and later replaced by an adverb or adposition stressing the telicity of the event.

Miller (1993: 118-124): P-incorporation in Ancient Greek and Latin; Booij & van Marle (2003) bring together a number of studies on many languages that show a development from adverb to preverb.

Lehmann (1993: 97) and Diessel (1999: 142): aspectual preverbs <relational adverbs and adverbial demonstratives, e.g. *hin/her* in German *hinweisen* `point out', *hinfahren* `drive to', and *herbringen* `bring over'.

In the Amazonian language Nadëb (Weir 1986) and in Athabascan languages, such as Dëne Sųłiné/Chipewyan (Li 1967)

(1)   *þonne   mot   he   feohtan   **on   hine***
      then   can   he   fight   on   him
'then he can fight against him' (Laws of Ælfred 76 §42.4)

(2)   *gif   hine   mon   on   wōh   **onfeohteð***
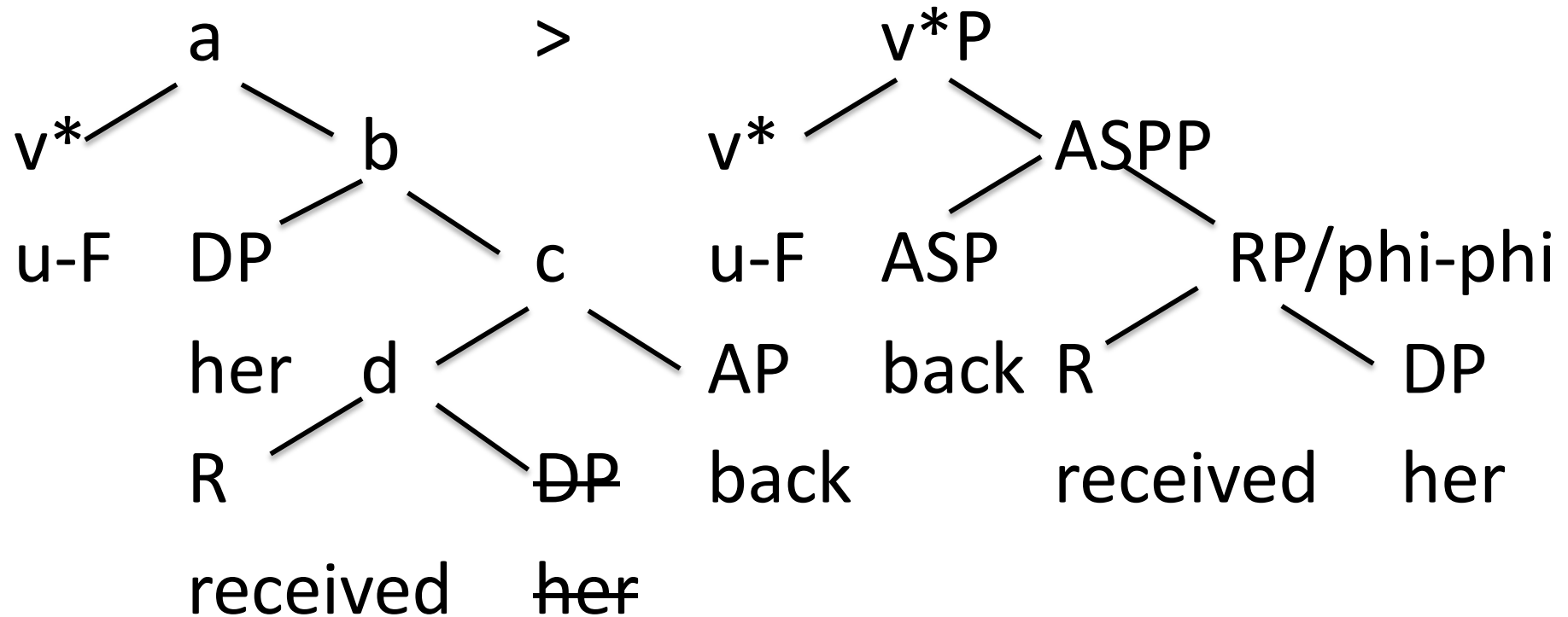   if   him   man   wrongly   on.fights
'if a man fights against him wrongly' (Laws of Ælfred 76 §42.6, Miller 2019: 270).

(3)   *jah   **miþinn**galaiþ **miþ**   Jesua   **in***
      rohsn   þis   gudjins
      and   with.in.go   with   Jesus   in   palace
      the   high.priest
'and (he) went with Jesus into the palace of the high priest' (John 18.15, Eythorsson 1995: 39)

Labeling should `want' the change

a = v*P; b = problematic because of c

labeling is minimal search

Case 8: PP in Spec CP > C

(1)   Ercenberht rixode **æfter his fæder**
                `E. ruled after/following his father.'
                        (Chron A, 640)

(2)   [**æfter him**] Stephanus feng to rice.
                `after him Stephanus became pope'.
                (*Chronicle A*, anno 814 [816])

(3)   [**æfter þissum gefeohte**] cuom micel sumorlida.
                `after this fight, there came a large summer-force'
                        (*Chronicle A*, anno 871)

(4) [**Æfter þysan**] com Thomas to Cantwarebyri
 \`After this, Thomas came to Canterbury'.
 (*Chronicle A*, anno 1070)

(5) [**æfter ðon**] uutedlice ic eftariso ic forlioro I
 iowih in galileam
 \`after that, surely I arise-again I come
 before you in Galilee'
 (*Lindisfarne Gospel, Matthew* 26. 32).

(6) **After that** the king hadde brent the volum
 (Wyclyf 1382 ,OED).

(7) **Aftir** he hadde take þe hooli Goost (c1360
 Wyclif *De Dot. Eccl.* 22).

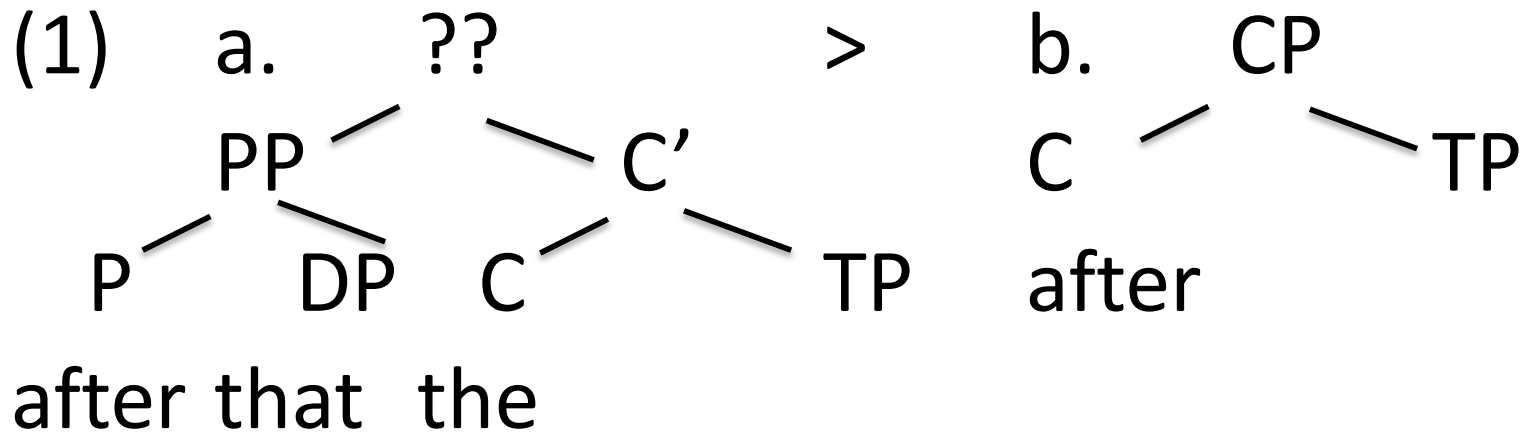# Increase in PP-fronting and demonstrative objects

Parker Chronicle

	Before the year 892	After 893
Fronting	7/26 = 27%	12/22 = 55%
Dem	2/26 = 8%	17/22 = 77%

Changes

a.	PP	~~PP~~	900 (Chronicle A) - present
b.	PP (*that*)		950 (Lindisfarne)–1600 (OED 1587)
c.	P *that*		1220 (Lambeth)–1600 (OED 1611)
d.	C		1360 (Wycliff)–present

Structurally

(1)   a.   ??   >   b.   CP

      PP   C'   C   TP

 P   DP C   TP   after

after that   the

Which features are shared: temporal features?
  Same with *for*, cause, purpose.

And also with adverbs!

Recap of the eight cases: search over agree

Subject and object cycles: reanalysis of the pronoun as i-F and u-F and labeling as search

Demonstrative to D and to C: labeling as search

Wh- to head: no labeling need

Neg AP > Neg: reanalysis as i-F/u-F and labeling as search

AP > ASP: should be more frequent

PP > C: reanalysis as i-F and labeling as search

Interim conclusions

A paradigm-shift: attribute as little as possible to UG, e.g. labels.

IM is forced by interface conditions of PoP.

Now what becomes important is: solutions to labeling paradoxes.

Spec to head is one such solution: reanalysis and search over agree.

Features still problematic but expletives give us insight: phi seems person.

What's good about Labeling + PoP(E)?

Principled reason behind movement
Solution to the Freezing problem
Provides the reason why uninterpretable features are in certain places of the structure: TP/CP and v*P/VP.

Challenges:
More precision about features, properties, …
Reassembly of the structure after transfer

Determinacy

(1)   **The Principle of Determinacy**
Determinacy rules out having more than one choice in the derivation (Chomsky, Ott, & Gallego 2019: 246) and is part of a broader principle, i.e. Restrict Resources (Chomsky 2019).

Resembles:
(2)   **Anti-Locality**
Movement must not be too local. (Grohmann 2003: 26)

Or: Chomsky (1964): "transformations must be unambiguous"

Extraction from subject = Indeterminacy

(3)   *Who did pictures of please you?

[CP who [C-did [TP [pictures of who] [T [vP [pictures of who] [v [please you]]]]]]].

(4)   Who is **there** a picture of on the wall?

[CP who [C-is [TP there [T [vP [a picture of who] [v …

Cf. Rizzi and Shlonsky 2007

As is topicalization

(5) a.   *John, likes berries. (Topic intonation on *John*)

b.   %CP[John TP[<John> vP[<John> likes berries]]].

(6) a.   Who likes berries?

b.   TP[who [T vP[<who> likes berries]]].

c.   %CP[who [C TP[<who> [T vP[<who> likes berries]]]]].

Determinacy in language change

Case 1: Topic > subject

Shibatani (1991: 94):"Philippine languages … show a transition from those languages in which a grammatical topic is not an obligatory clausal constituent … to those in which a topic has been grammaticalized to the extent that it has become an obligatory constituent of major clause types".

Lehmann (1976) argues that early Proto-Indo European introduces person markings on verbs which is "an important step towards the prominence of subjects" (p. 454). Real subjects are few in Vedic Sanskrit and topics are very loosely connected to predicates. This changes as subjects become obligatory in the later languages.

French

A: Alors   **vous** avez alargi?

so   2   has   enlarged

`So you have enlarged (them)?'

B: Alors,   **moi, j'ai**   agrandi   les   fenêtres

  so   me   1S.have   enlarged   the windows

`So, me, I have made the windows bigger.' (CdES)

Swiss Spoken French, Pied Noir French, and Acadian French

(1) ***Chacun*** ***il*** *a* *sa* *manière* *de*
Everyone 3S has his way of

`Everyone has their own way of …' (Fonseca-Greber 2000: 338)

(2) ***Chaque femme*** *elle* *parle*

Every woman 3SGF talks

`Every woman talks.' (Roberge 1990: 97)

(3) ***Un Cadien*** ***ça*** *travaillait pas.*
An Acadian 3 works not

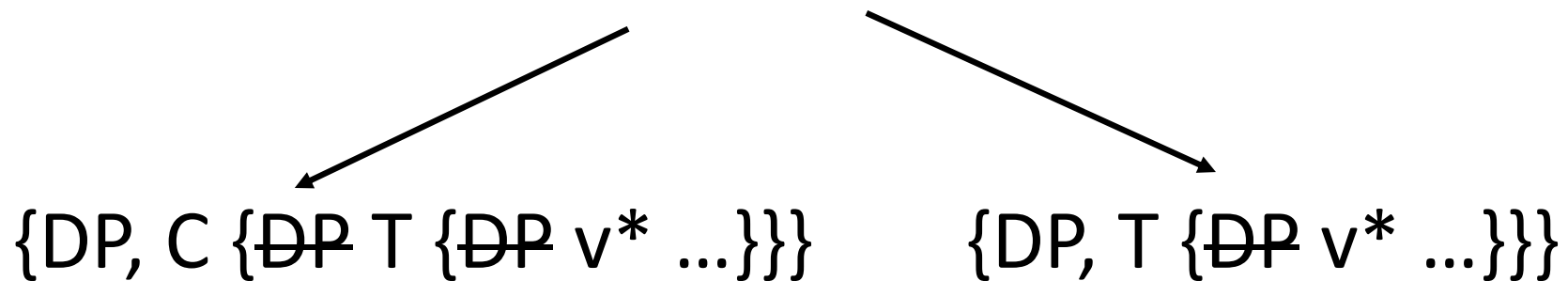`An Acadien doesn't work.' (Girard 2010: 2010)

Brazilian Portuguese

(4)   **Toda criança   elai** *aprende rápido a gostar de coca-cola.*

every child   she   learns   fast   the like of coke

'Every child learns to like coke fast.' (Costa, Duarte, and Silva 2006 from Quarezemin 2019)

Possibilities in French

topic/subject DP

{DP, C {D̶P̶ T {D̶P̶ v* …}}}   {DP, T {D̶P̶ v* …}}}

Once the erstwhile pronoun > agreement, it is not likely that the HT is interpreted that way. You lose evidence for a HT and then the moved topic is not good under determinacy.

Case 2: changes involving copulas are twofold

The elephant	that	happy
TOPIC	SU	AP
↓	↓	
SU	copula	AP

Su > copula: determinacy and labeling

Topic > subject: as before

Widely attested: Semitic, Egyptian, Creoles, Iranian, Slavic, Tibeto-Burman, Swahili, Indonesian, Zoque, Passamaquoddy, Maya, Chinese.

Old Egyptian (1) > Middle (2)

(1)   *rmt*   **pw**   Old Egyptian

         man   MSG.PROX

         `This man' or `this is a man'.

(2)   *tmj-t* **pw**   *jmn-t*   Middle Egyptian

         city-F be   west-F

         `The West is a city.' (Loprieno 1995: 68; 2001)

(3)   *p*   -*w*   >   *pw*

         [i-3MS]   [proximal]   copula (pst/pr)

Classical to Standard Arabic
(cf. Eid 1983)

Classical = pronoun

(1)   *allahu*   **huwa**   *'lhayyu*

       God   3MS   the.living

   'God is the living.' (Benveniste 1966 [1971: 165])

Standard = copula

(2)   *Anta*   **huwa**   *D-Dakii*

      2MS   COP   the-smart

   `You are the smart one'

   (Alsaeedi 31; newspaper 2012)

Hijazi Arabic (Alsaeedi 2015)

(3) *ahmad* *ma* ***hu(wa)*** *ad-duktoor*

Ahmad NEG MS the-doctor

`Ahmad is not the doctor.' (Alsaeedi 39)

ma + huwa/hiya, etc = mu/mi

(4) *ana* ***mu*** *ad-duktoor*

1S NEG-be the-doctor

`I am not the doctor.' (Alsaeedi 40)

(5) *huda* ***mi (ma hiya/mu)*** *ad-duktoorah*

Huda NEG.be.F the-doctor-FS

`Huda is not the (female) doctor.' (Alsaeedi 41)

Egyptian Arabic
(Edwards 2006: 51-3)

(6) a.   `ana **huwwa**   l-mas'u:l
        1S   3SM   the-responsible
        'I am the responsible.'

   b.   il-mushkila   **hiyya** T-Talaba
        the-problem(FS)   3SF   the-students
        `The problem is the students.'

(7)   faTma   ma-**hiyya**:-sh   il-mas'u:la
        Fatima   NEG-be.3SF-NEG   the-responsible
     `Fatima is not the one responsible.'

Derivation

a. {DP, AP}   EM: unlabelable result

b. {Pred, {DP, AP}}   Merge of copula

c. {DP, {Pred, {<DP>, AP}}}

       IM of DP: unlabelable result

d. {DP, {T, {**<DP>, {Pred, {<DP>,** AP}}}}}

     Merge of T and IM of DP: indeterminate

So reanalysis of phrase as head.
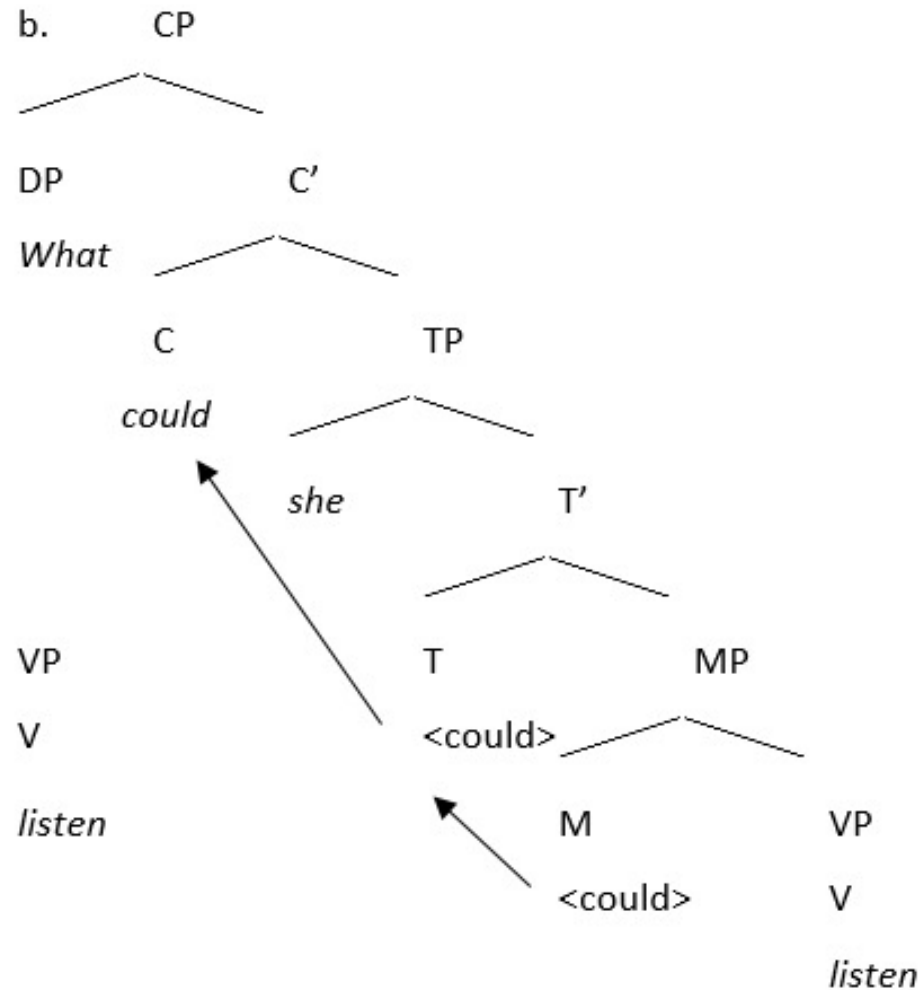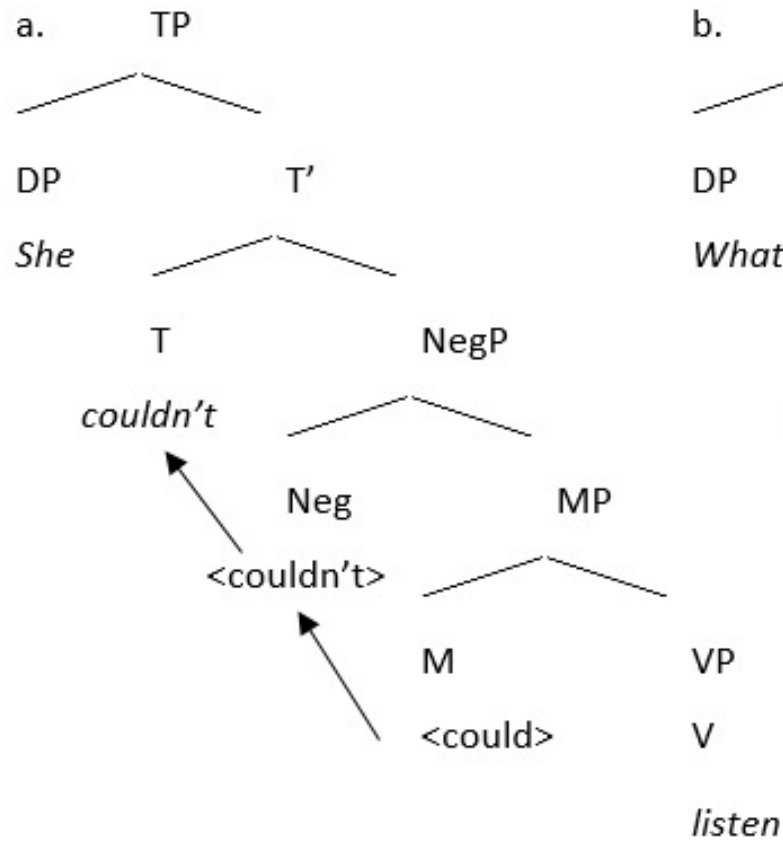
Case 3: Germanic TP/CP bottleneck

Three examples of variation/change in Germanic that are due to determinacy resolutions:

AUX movement

CP/TP `bottle neck', as shown through that-trace, C-deletion, and subject-less relatives

TP expletives and V2

If AUX to T, can it then move to C?

Skip T?

(1)   You **might could** go to the store for me.

(2)   **Could** you **might** go to the store for me.
(Hasty 2012: 124; see also Coleman 1975: 205

C and T conflated (Platzack 1983; van Gelderen 1993; Legate 2014): no T inheriting C's features but that C checks the features and sends its complement off to Transfer.

Loss of movement to T?

(3)   a.   I **could probably** help you market your app. (COCA 2017)

    b.   And a lot of young African-American kids **probably could** identify with that moment. (COCA 2017)

(4)   a.   the only way that he **could possibly** guarantee that his son avoided jail time (COCA 2017)

    b.   So we **possibly could** be looking at not guilty by reason of insanity (COCA 2017)

Rich Agreement?

Movement of various auxiliaries across the low adverb *possibly* in Spoken COCA.

No significant difference:

	movement	no movement
could	940 (77%)	277 (23%)
might	50 (81%)	12 (19%)
is	88 (85%)	16 (13%)

Extra evidence that modal skips T

No that-trace effect with modals because no TP?

(1)   they would get with the professionals and say, what do you suggest that ___ **would** be supporting her? (COCA – CNN 2007)

(2)   What is it that you suggest that ___ **would** change, slowly change the climate …

(COCA – CBS 1994)
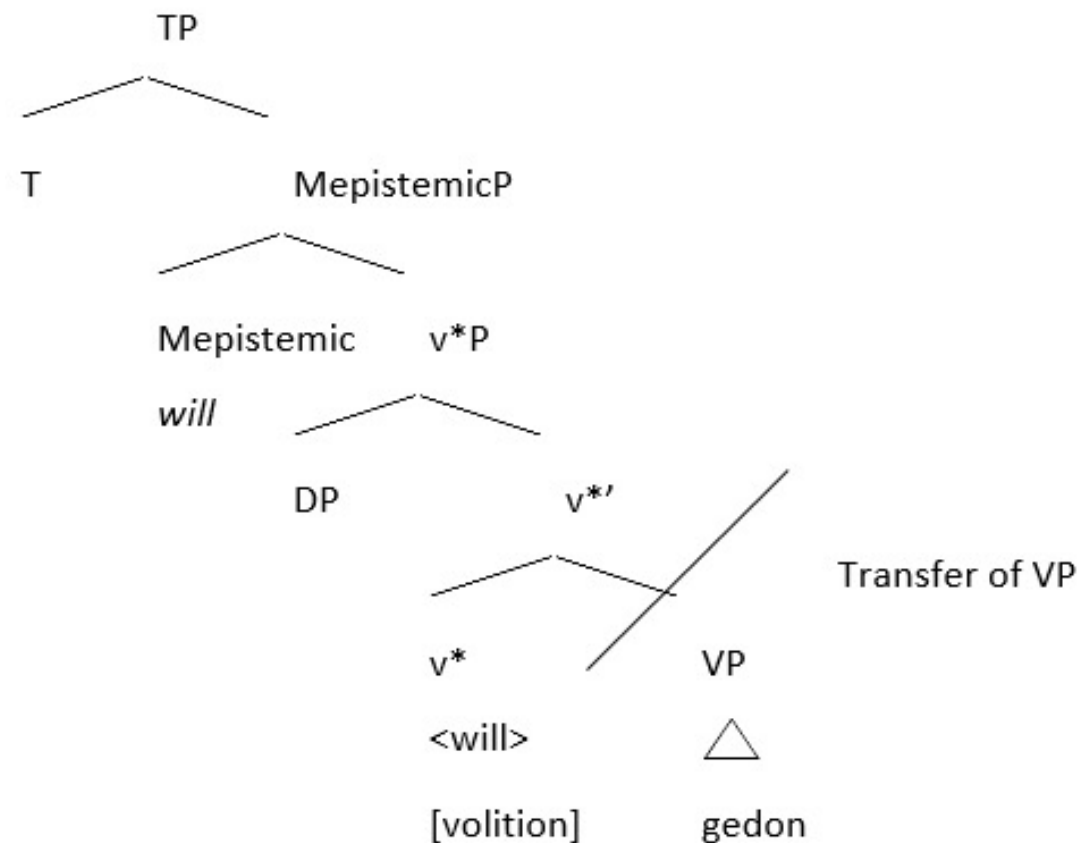
Other solution to indeterminacy:
Change v > AUX

(1) *Ic   sceal   hraðe   **cunnan***
     hwæt   ðu   us   to duguðum
     *gedon   **wille**.*

`I must know quickly what you want to do to benefit us.' (Andreas 341, Vercelli Book)

(2)   I **will** have done my best.

       (COCA 2016 spoken)

Change to one position in the TP `domain'

Determinacy so far

Topic to Subject: avoids anti-locality/determinacy

AUX to T to C: skip T

Possibly behind v > M as well.

Now a few more cases of variation in CP/TP due to determinacy avoidance.

Modern English: no CP in *that*-trace, subject-less RCs, complement clauses.

Earlier English (German and Dutch): no TP

That-trace

(1)   CP1[Who [do TP1[you [T v*P[<you> think
CP2[<who> [that TP2[<who> T v*P[<who> read the book]]]]]]]]].

Chomsky 2015: labeling issue, so who can't leave Spec TP

Determinacy: 2 copies of *who* in WS after transfer of VP

With CP2 gone and T becomes the phase head, the v*P will be transferred and there will only be one copy in the input.

Fixing *that*-trace in English

(1)   What do you think that **there** is in the box?

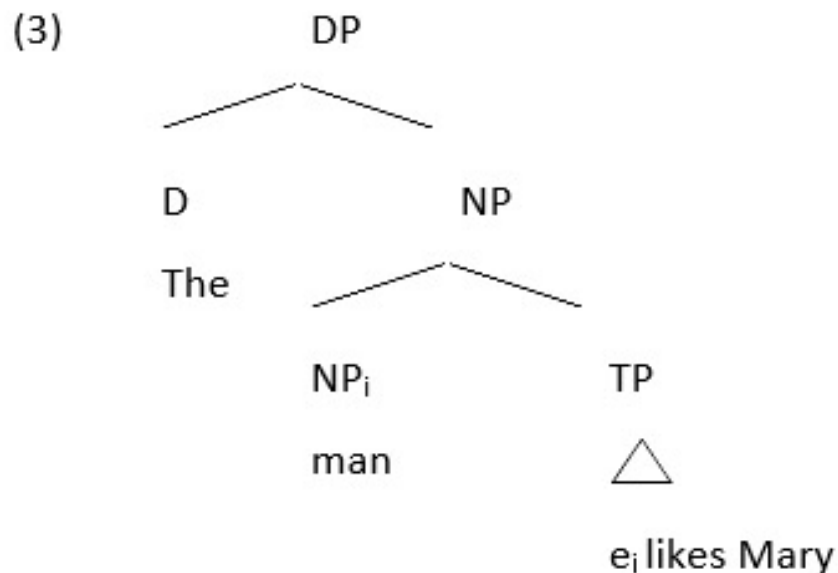(2)   *What do you think that is in the box?

(Rizzi and Shlonsky 2007: 126)

Subject-less RCs (and complement clauses)

(2)   *Anybody does that ought to be locked up.*
    `Anyone **who** does that ought to be locked up.' (from Quirk et al 1985: 1250)

Doherty (2000):

(3)
```
                    DP
                  /    \
                 D      NP
               The     /  \
                    NP_i    TP
                    man     △
                          e_i likes Mary
```
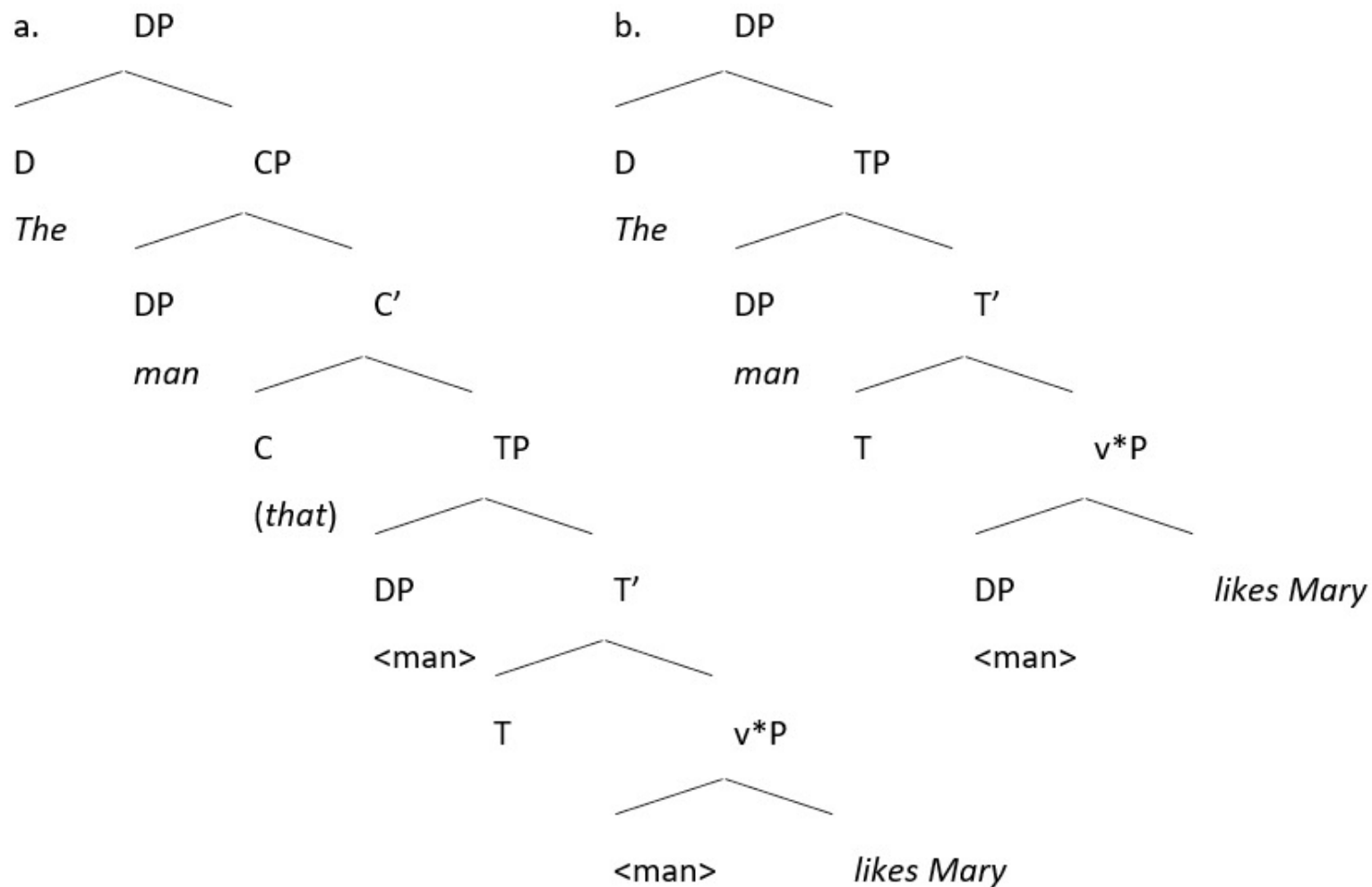
Null Su RCs only appear in late Middle English

(1)   *I fonde þere freris, alle þe foure ordres, Preched þe peple*

`I found there brothers, of all four orders, **who** preached to the people.'

(Piers Plowman, B, Prologue 59, from Mustanoja 1960: 205)

Indeterminate > determinate

a.
```
            DP
          /    \
         D      CP
        The    /  \
             DP     C'
            man    /  \
                  C     TP
               (that)  /  \
                     DP      T'
                   <man>    /  \
                          T     v*P
                               /   \
                            <man>  likes Mary
```

b.
```
            DP
          /    \
         D      TP
        The    /  \
             DP     T'
            man    /  \
                  T     v*P
                       /   \
                     DP    likes Mary
                   <man>
```

C-deletion in complement clauses

(1)   I certainly do **believe** it is going to balance the budget by the year 2002. (Spoken COCA 1995)

(2)   And they do **believe that** it is going to deliver the kind of economic growth that no nonpartisan analysis has (Spoken COCA 2017)

Evidence for deletion of the C:

(3)   I hope that [this book] you will read.

(4)   *I hope [this book] you will read.

(Doherty 2000: 13; Rizzi & Shlonsky 2007: 151 citing Grimshaw 1997).

Doing without T

No *that*-trace in Old English: indeterminacy is solved without T and no null Su RC.

(4) & of   þam   ilcan   bocum tyn   capitulas,   þa   ic   geond

and of those   same   books ten   chapters   those   I   throughout

stowe awrat   &   ic   wiste **þæt**   **swiðost**   **nedðearflecu**   **wæron**

place   wrote   and   I   knew   that   most   needful   were

'and ten chapters of the same books which I had transcribed and which I knew were most

necessary' (Bede 278.1-2)
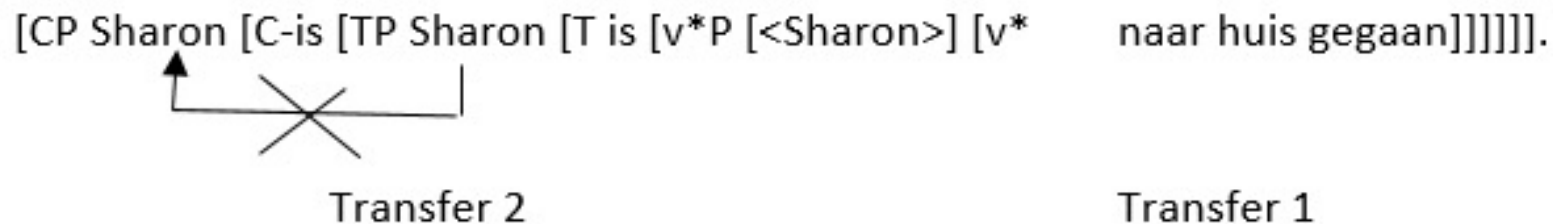
The other option: C, not T

Three effects:

No *that*-trace,
No C-deletion, and
no subjectless RCs

Old English, German, and Dutch show these.

V2 and Determinacy

V2: a problem if V > T > C and subject to CP:

[CP Sharon [C-is [TP Sharon [T is [v*P [<Sharon>] [v*   naar huis gegaan]]]]]].

Transfer 2   Transfer 1

Some evidence Dutch and German lack TP (Haider 1991; 2010, van Gelderen 1993; 1997, Platzack 1987)

History of English: from V2 > TP Expletives

Loss of V2 and Intro of TP in late C14

In Wyclif and Chaucer: TP expletives

(1)   *of the astrelabie þat I haue seyn,* **there** *ben some conclusions þat ...*
`of the astrolabe that I have seen, there are some goals that...' (Astrolabe, Preface 21-22)

(2) *so general ... þat* **ther** *nedith no more declaracion*
`so general that no more explanation is needed.' (Astrolabe, 2.2)

(3)   *how now, what* **do** *ye heer?*
`How now, what do you hear?' (Chaucer, *The Reeve's Tale,* I, 4025)

Conclusions

Labeling pressure: head over phrase, because

Minimal Search over feature-sharing

<phi, phi> features are different from <Q, Q>

Determinacy: avoids structures, e.g.

Certain topics, v > M > T, …

`Parameters' in how to avoid violations: no TP or no CP

Some references

-Bayer, Josef 1984. Comp in Bavarian Syntax. *The Linguistic Review* 3: 209-274.

- Chomsky, Noam 2019. https://linguistics.ucla.edu/noam-chomsky/

- Chomsky, Noam, Ángel J. Gallego, and Dennis Ott 2019. Generative Grammar and the Faculty of Language: Insights, Questions, and Challenges. *Catalan Journal of Linguistics* Special issue, 229-261.

- Gelderen, Elly van 1993 The Rise of Functional categories*.* Benjamins.

-Gelderen, Elly van 2011. *The Linguistic Cycle*. Oxford: OUP.

-Gelderen, Elly van 2019. Cyclical Change and Problems of Projection. In *Cycles in Language Change.* In Anne Breitbarth, et al (eds), 13-32. OUP.

-Gelderen, Elly van 2022. Third factors in variation and change. CUP

-Givón, Tom 2018. *On understanding Grammar; revised edition*. Amsterdam: John Benjamins.

-Goto, Nobu & Toru Ishii 2019. The Principle of Determinacy and Its Implications for MERGE. In Proceedings of the 12th GLOW in Asia & 21st SICOGG, 91-110. http://sicogg.or.kr/GLOW-Asia-12-2019/proceedings

-Haider, Hubert 1991. Null Subjects and Expletives in Romance and Germanic languages. *Issues in Germanic Syntax* ed. by Werner Abraham, Wim Kosmeijer and Eric Reuland, 49-66. Berlin, Mouton de Gruyter.

-Haider, Hubert 2010. *The Syntax of German*. Cambridge: Cambridge University Press.