Questions in English

LING 200B · Ethan Poole · 11 October 2021

1 Polar questions (yes–no questions)

1.1 Data

❶ ***Subject–auxiliary inversion***

– In polar questions, auxiliaries are fronted to the beginning of the clause, undergoing inversion with the subject:

(1) a. You { **will** / **should** / **can** / **must** } eat the natto. *declarative*

b. { **Will** / **should** / **can** / **must** } you eat the natto? *polar*

(2) a. You **have** eaten the natto. *declarative*

b. **Have** you eaten the natto? *polar*

(3) a. You **are** eating the natto. *declarative*

b. **Are** you eating the natto? *polar*

✎ How can we determine whether the auxiliary is *fronted to* or *base-generated in* the clause-initial position?

(4)

– Inverted auxiliaries in polar questions are in complementary distribution with complementizers:

(5) SPEAKER A: What were you going to ask me?
SPEAKER B: **If** you will try the natto
Will you try the natto?
*__If will__ you try the natto?

❷ ***Do-support***

– When there is no auxiliary in the clause, (i) Tns does not lower onto the verb, and (ii) *do* occurs in the fronted position, bearing the morphosyntactic features of Tns:

(6) a. **Do** you eat natto? *non-3sg, present*

b. **Does** she eat natto? *3sg, present*

c. **Did** she eat natto? *past*

✎ How can we determine whether this *do* is distinct from main verb *do*?

(7) a.

b.

c. *

⇒ This is the phenomenon of DO-SUPPORT.

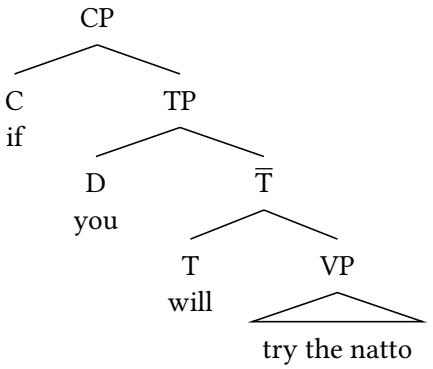
1.2 Analysis

- ***Key intuitions***
  - Polar questions cannot contain both a complementizer and an inverted auxiliary (5)
    ⇝ Inverted auxiliaries occupy C
  - An inverted auxiliary results in a gap (4)
    ⇝ Inverted auxiliaries move to C[1]

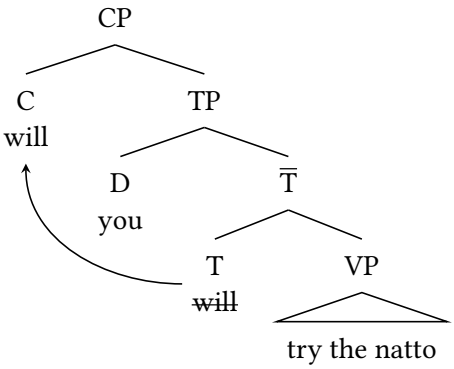
[1] Any serious account of (4) will arrive at something (essentially) equivalent to movement.

∗ Auxiliary inversion is therefore T-TO-C MOVEMENT (❶):

(8)



(9)

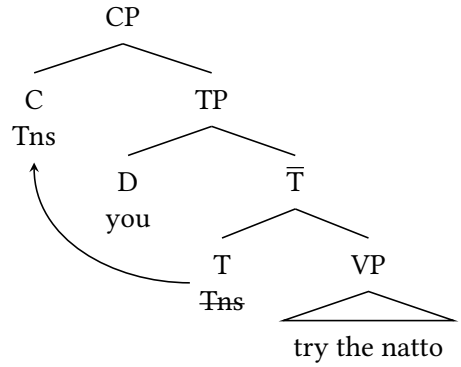


- ***Terminology***
  - LAUNCHING SITE: the position where movement starts from
  - LANDING SITE: the position where movement ends
  - BASE POSITION: the position where an element is first-merged into the structure[2]
  - PATH: all of the positions that an element moves through
  - CHAIN: all the copies of an element form a chain

[2] For movement chains that contain only one step, the base position and the launching site are the same.

- When T moves to C, it is then too far away from V to lower onto it, thereby triggering *do*-support to rescue Tns (❷):

(10)



1.3 Formalizing the analysis

- ***Why do elements move?***

  ⇒ **There is no functional or semantic reason why any element ever has to move.**

  - For example, there is nothing inherent about polar questions—neither their interpretation nor how they are used—that requires T to move to C.

– In testament to this fact, languages form polar questions in a variety of ways: verb movement (e.g. English, Spanish), question particle (e.g. Japanese, Korean, Finnish), intonation (e.g. Russian), and combinations thereof.

– We can run the same exercise for any case of movement. There will never be a "purpose" for the movement. Syntax is not teleological.[3]

⇒ Therefore, the motivation for movement must be something *syntactic*—something more abstract and distinct from the interfaces (i.e. externalization and meaning).

[3] It is possible though that *not moving* an element causes a "crash" at one of the interfaces (essentially Chomsky 2001). However, syntax cannot see the interfaces or their output, so these crashes cannot themselves be the motivation for movement.

• ***Motivating the movement***

– Movement is just as arbitrary as selection. Therefore, let us model it in essentially the same way, namely with features on lexical items.

✎ Why are bullet features (without tweaking them) not suitable for this task?

✳ ***Head-movement features***

– Let us add another type of feature into our system that encodes when one head must move to another head:[4]

(11) **Plus features**
Where H is a head bearing [+X+], [+X+] is satisfied by merging a head of category X to H.

[4] An alternative notation for this feature is [•X^0•], used in some of Gereon Müller's work. I find that this notation makes larger trees too crowded.

– The Minimalist literature disagrees on whether head movement is MERGE, AGREE, or something else. An upshot of using dedicated head-movement features is that it is somewhat agnostic to head movement's status.

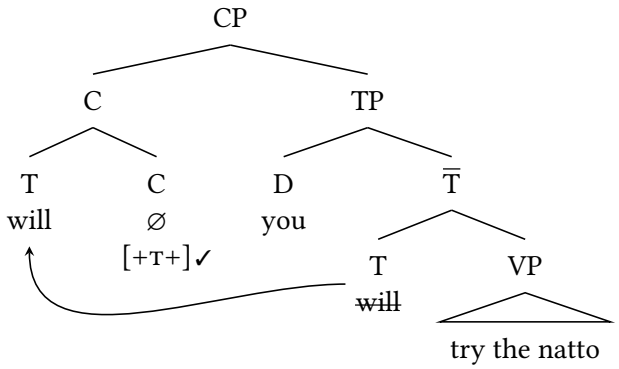
– Our updated inventory of features:[5]

* Plus features: Merge with minimal projections (i.e. heads)
* Bullet features: Merge with maximal projections (i.e. phrases)

[5] Remember that in BPS, a lexical item that does not project is both a minimal and a maximal projection.

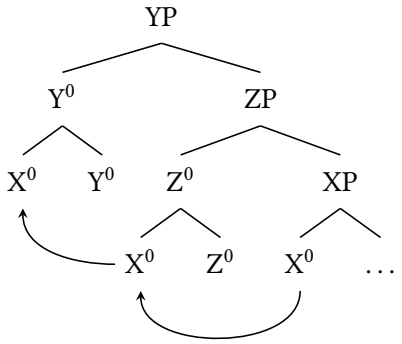
⇒ To implement our analysis of auxiliary inversion as T-to-C movement, let us posit that interrogative C bears a [+T+] feature (❶):

(12)



- ***Complex heads***
  - When T moves to C, it forms a COMPLEX HEAD that contains T and C.
  - A complex head is *not* a phrase because its constituent pieces cannot themselves be targeted by syntactic operations (see below).
  - Thus, we do *not* notate complex heads with phrasal-node markers, i.e. $\overline{\text{X}}$ and XP.
- ***No subextraction out of complex heads***
  - A head cannot be moved out of a complex head, a process usually referred to as EXCORPORATION:

(13) *



  - ***Example***
    In Breton (Celtic), V can be fronted to derive VSO word order:

(14) Lennet en deus Yann al levr
read 3SG.M has Yann the book
'Yann has read the book'

  - This process is blocked by negation though:

(15) *Lennet n'en deus ket Yann al levr
read NEG 3SG.M have Yann the book
'Yann hasn't read the book'

  - To block (15), a number of derivations must be ruled out, including one in which V incorporates into Neg and then excorporates from Neg, in order to move past it.

⇒ Our analysis of English verbal inflection already correctly predicts *do*-support in polar questions: Affix Hopping is blocked because T is too far from V (❷).

(16) **AFFIX ATTACHMENT** *(English particular)*
When PF processes a structure whose head H contains an (undeleted) tense affix which needs a verbal host and which is not already attached to an (auxiliary or main) verb:

a. if H c–commands an overt verb and there is no overt intervening material, the affix is lowered onto the relevant verb [=Affix Hopping]

b. otherwise, the affix is spelled out as an appropriately inflected form of *do* [=*do*-support]

1.4 Movement is merging a copy

⇒ What does it mean for T to "move" to C? In particular, what remains in T after the movement step has occurred?

- ***Leave behind nothing?***
  If nothing were left behind in the position of the T head, the resulting structure would violate Binarity and Headedness.

∗ ***Copy Theory of Movement***[6]
Chomsky (1993, 1995) proposed that movement is a composite operation involving two suboperations of copying and deletion, where 'deletion' means that the lower copy(ies) are unpronounced at PF:

(17) a. **Build up to TP:**
[$_{TP}$ you will try the natto]

b. **Merge in C:**
[$_{CP}$ C$_{[+T+]}$ [$_{TP}$ you will try the natto]]

c. **Merge copy of T in C:**
[$_{CP}$ will+C$_{[+T+]}$ [$_{TP}$ you will try the natto]]

d. **Unpronounce lower copy:**
[$_{CP}$ will+C$_{[+T+]}$ [$_{TP}$ you ~~will~~ try the natto]]

- ***Empirical support for movement-as-copying in polar questions***
  - ***Language acquisition***
    Children are known to pronounce both copies:[7]

    (18) a. **Can** its wheels **can** spin?
    b. **Did** the kitchen light **did** flash?
    c. **Was** that **was** Anna?

  - ***Cliticization***
    The auxiliary *have* cannot encliticize onto a pronoun when T-to-C movement has happened, which reveals that some silent material must intervene:

    (19) a. Should { **they have** / ***they've** } called the police?
    b. Would { **you have** / ***you've** } come with me?
    c. Could { **I have** / ***I've** } done something to help?

⇒ ***Structure preservation***

- Syntactic operations are largely STRUCTURE PRESERVING, unlike phonological operations. For example, in a polar question, C is not removed in any way.
- A syntactic structure is thus a record of what happened in the derivation.
- This leads to an interesting argument in OT Syntax that all syntactic faithfulness constraints can be reformulated as output constraints, and thus the notion of 'input' is unnecessary (Heck et al. 2002).

[6] Traces are discussed below.

[7] Data from Radford (2004).

2 Constituent questions (*wh*-questions)

2.1 Data

❶ ***Wh-fronting***

– In constituent questions, the *wh*-phrase is preposed to the front of the clause:

(20) a. [**What**] did she watch ___ ?

b. [**Which movie**] did she watch ___ ?

c. [**How many movies**] did she watch ___ ?

✎ How can we determine whether the *wh*-phrase is *fronted to* or *base-generated in* the clause-initial position?

(21)

❷ ***T-to-C movement***

Like in polar questions, there is subject–auxiliary inversion and *do*-support:

(22) a. What$_1$ **will**$_2$ she ___ $_2$ watch ___ $_1$?

b. What$_1$ **did**$_2$ she ___ $_2$ watch(*ed) ___ $_1$?

❸ ***Wh-fronting and T-to-C must cooccur***

Importantly, *wh*-fronting and T-to-C movement must *both* occur in constituent questions. Doing just one of them does not yield a constituent question:

(23) a. *What she watched ___ ? *+wh, −T-to-C*

b. *Did she watch what? *−wh, +T-to-C*

- ***Aside: In situ echo questions***

– The bolded *wh*-phrases in (20) appear to function as the *complement* of the main verb. These sentences do in fact have corresponding versions where the *wh*-phrase occupies [Comp, VP]:

(24) a. She watched [**what**]?

b. She watched [**which movie**]?

c. She watched [**how many movies**]?

– In (24), the *wh*-phrase does not get preposed, but remains IN SITU (i.e. in place).

– The sentences in (20) and (24) also have different prosodies.

– In English, *wh*-in-situ questions function primarily as ECHO QUESTIONS, which echo and question something previously said:

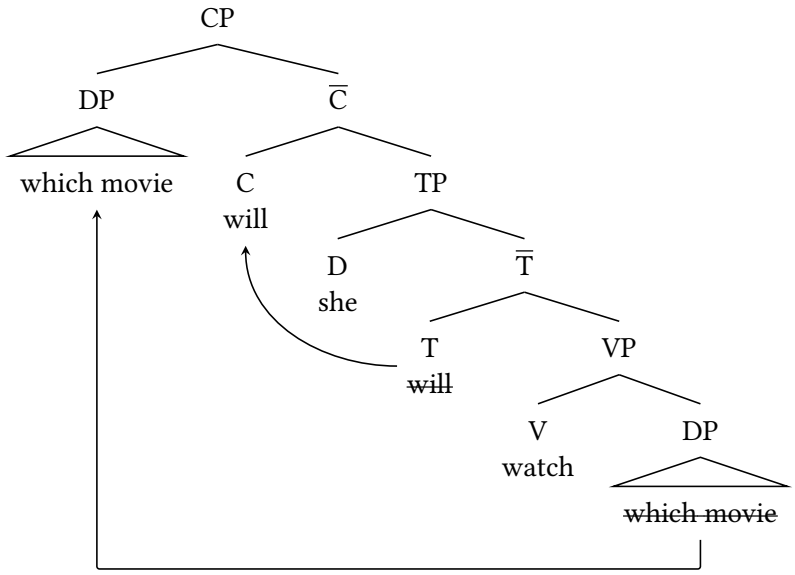
(25) SPEAKER A: I just met Lord Lancelot Humpalot
SPEAKER B: You just met **who**?

2.2 Analysis

- Let us assume that like in polar questions, T raises to C in constituent questions (❷).

∗ *Wh*-phrases move to some position above the inverted auxiliary. Since inverted auxiliaries occupy C, let us suppose that preposed *wh*-phrases move to [Spec, CP] (❶):

(26)



- By having the *wh*-phrase land in [Spec, CP], we also have a natural explanation for why *wh*-movement and T-to-C movement must cooccur in constituent questions: they are both triggered by the same element, namely C (❸).

- ***Independent evidence for wh-movement targeting [Spec, CP]***
  In some varieties of English, a preposed *wh*-phrase can precede a complementizer like *that*, as shown below in Belfast English (BE):[8]

  (27) a. [D] I wonder [**which dish** that they pickled].

  b. [D] They didn't know [**which model** that we had discussed]. *[BE]*

[8] I use [D] to indicate that an example is unacceptable in Common American English, but is acceptable in other varieties of English.

2.3 Formalizing the analysis

✎ How can we formally capture ❶, ❷, and ❸ within our system?

- ***Two kinds of movement***
  - Head movement: Moves only heads (minimal projections), creates complex heads
  - Phrasal movement: Moves only maximal projections, *re-merges* the targeted constituent into the structure

✎ What is our inventory of matrix C heads?

2.4 *Wh*-movement as copying

- As with T-to-C movement, we have been tacitly assuming that a moved *wh*-phrase leaves behind a copy in the launching site of movement.

- We could argue this on purely theoretical grounds, but there is also direct empirical motivation for an analysis of *wh*-movement also being a copy+deletion operation.

- ***Empirical support: Wanna contraction***
  - *Want* and *to* can contract to *wanna*. This contraction can happen across inherently null constituents, like PRO.[9]

    (28) a. I {**want to** / **wanna**} go home.
    b. I **want** [PRO **to** go home].

  - Now consider the following case where *wanna*-contraction is not possible:

    (29) a. Who don't you **want to** win the game?
    b. *Who don't you **wanna** win the game?

  - The ungrammaticality of *wanna*-contraction in (29b) follows if the moved *wh*-phrase leaves behind a full copy in the launching site, thereby intervening between *want* and *to* and preventing contraction

    (30) **Who** don't you want ~~**who**~~ to win the game?

- ***Empirical support: Binding Theory***
  - It appears that Binding Theory is evaluated as if *wh*-movement had not occurred:[10]

    (31) a. **Condition A**
    [Which picture of **herself**$_{1/*2}$] does **Blanche**$_1$ like?
    b. **Condition C**
    [Which picture of **Blanche**$_1$] does **she**$_{*1/2}$ like?

  - These data exemplify RECONSTRUCTION EFFECTS: behavior of a moved element that we would expect to see if the element had not undergone movement.
  - Let us assume that the binding conditions only have to hold for one of the copies of a constituent. The data in (31) then follow if *wh*-movement leaves behind a full copy in the launching site:[11]

    (32) a. **Condition A**
    [Which picture of **herself**$_{1/*2}$] does **Blanche**$_1$ like ~~[which picture of **herself**$_{1/*2}$]~~?
    b. **Condition C**
    [Which picture of **Blanche**$_1$] does **she**$_{*1/2}$ like ~~[which picture of **Blanche**$_1$]~~?

⇒ In the case of *wh*-movement, Binding Theory is evaluated on the lower copy.

- ***Empirical support: Semantics***
  - The LF (logical form) of a constituent question requires an operator–variable relationship between the launching and landing sites of movement:

    (33) a. **Who** did she see ___ ?
    b. Which *x*, where *x* is a person, she saw *x*

  - If *wh*-movement leaves behind a copy, then mapping the syntactic structure onto the required operator–variable structure is relatively straightforward.[12]

[9] Under some analyses of control, in (28), there would also be a null C *for*, which also does not block contraction.

[10] The judgement in (31b) has been the subject of debate in the recent literature. See Stockwell et al. (to appear) for experimental evidence that *wh*-movement indeed exhibits Condition C connectivity.

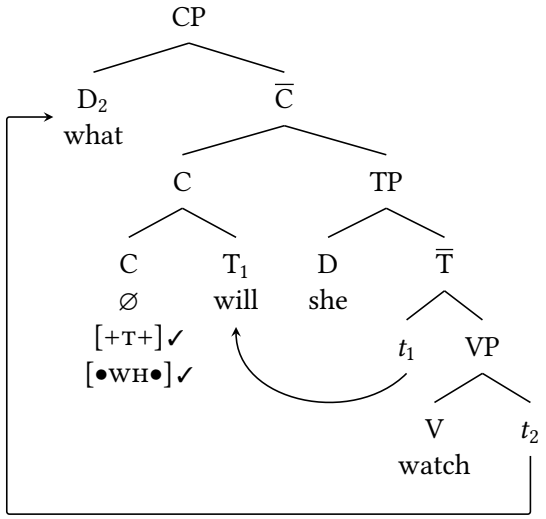
[11] Chomsky (1993, 1995)

[12] E.g. Sauerland (1998); Fox (2002)

3 Traces vs. copies

- One of the pivotal discoveries about movement is that when an expression moves, it leaves behind something in its launching site.
- Many of the arguments that we have seen for "copies" are really just arguments that *something* is in the launching site.
- In Chomsky (1973) and up through GB, what movement left behind was a TRACE. A trace is essentially an empty category specialized for movement:

(34)



∗ Traces were abandoned in Minimalism because they violate Inclusiveness:[13]

[13] Chomsky (1993, 1995)

(35) **INCLUSIVENESS CONDITION**
No new objects are added in the course of the computation.

- In practice, syntacticians often still use traces because (i) in many cases, the choice between traces and copies is irrelevant and (ii) traces are a simpler, more compact notation.

(36) **Ways of representing movement**

a. [Which book]$_1$ did you read ___$_1$? *Theory-neutral gap*

b. [Which book]$_1$ did you read t_1? *Trace*

c. [Which book] did you read ~~which book~~? *Copy*

What to read if you want to learn more?

- ***Head movement***
  - Matushansky (2006): Head movement is MERGE plus morphological merger
  - Roberts (2010): Head movement is AGREE
  - Baker (1988): Incorporation and others types of head movement
- Nunes (2004): Comprehensive theory of linearization under the Copy Theory of Movement
- ***Condition C connectivity***
  - Stockwell et al. (to appear): Experimental investigation of Condition C connectivity under *wh*-movement
  - I have uploaded a handout (from my Spring 2020 proseminar) about the experiments reported in Adger et al. (2017) and Bruening and Al Khalaf (2019).

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