Intro to Syntax, PART SIX

Omer Preminger, MIT

EGG 2009 / COST-A33, Poznań

wh-Movement

Why movement? ......................................................... 3
What moves? ........................................................... 7
Where to? ............................................................... 9

Constraints on wh-movement

What wh-movement can (and cannot) do. ......................... 16
Islands. ..................................................................... 20
A word about relative clauses ........................................... 24
Other constraints on wh-movement ................................. 27
Superiority .................................................................. 30
Summary ..................................................................... 36
More movement(?)..................................................... 38

References ................................................................. 42
Why movement?

- When discussing selection, we observed that for some verbs, the complement is optional:
  
  (1)  
  a. John has [VP eaten [DP the apple]]. 
  b. John has [VP eaten].

- We also observed, however, this is not true for all verbs:
  
  (2)  
  a. John has [VP devoured [DP the apple]]. 
  b. * John has [VP devoured].

  It seems that the verb devour — unlike eat, for example — demands that its complement (a DP) be present

Why movement?

- This is systematic — regardless of the tense of the sentence, the person/number features of the subject, etc.:

  The notation *(blah) means that the utterance is ungrammatical without blah, but grammatical if blah is present — hence the asterisk is outside the parentheses. Similarly, there exists the opposite notation, (*blah).

  (3)  
  a. John has devoured *(the apple). [=2]
  b. John is devouring *(the apple).
  c. John will devour *(the apple).
  d. John devoured *(the apple).
  e. We have devoured *(the apple).

  ➢ Given this, the felicity of (4) could be considered somewhat surprising:

  (4) What has John devoured?

- So what’s going on?

  It’s an age-old insight that this requirement — which is satisfied by the apple in examples like (3a–c) — is satisfied by what in (4)
**Why movement?**

- **BUT:** there is obviously an important difference between an example like (3a) and an example like (4)

(3) a. John has devoured the apple.

(4) What has John devoured?

○ In (4), the element satisfying the requirement — i.e., what — is in the “wrong place”, w.r.t. the element imposing the requirement (devour)

➢ In fact, we can put what arbitrarily far away from devour, and still somehow satisfy devour’s requirement to have a complement:

(5) a. What has John devoured ____?

b. What does Mary think that John devoured ____?

c. What did Bill notice that Mary thought that John devoured ____?

d. What did Susan mention that Bill noticed that Mary thought that John devoured ____?

... ... ...

**Why movement?**

- This is what we call **movement**

○ The phenomenon where a single syntactic element affects the utterance in more than once place

(5) a. What has John devoured ____?

b. What does Mary think that John devoured ____?

c. What did Bill notice that Mary thought that John devoured ____?

d. What did Susan mention that Bill noticed that Mary thought that John devoured ____?

... ... ...

- In examples like (5a–d):

  (i) what satisfies the verb devour’s requirement to have a complement

  (ii) but what is pronounced at the beginning of the sentence

- **TERMINOLOGY:** the “missing” complement of devour, in a sentence that is nonetheless grammatical, is called a **gap**
What moves?

➢ We’ve seen movement of what; what else can move?

(6) a. [Which apples] has John devoured ____?
   b. [Which apples from the farm] has John devoured ____?
   c. [Which delicious red apples from the farm] has John devoured ____?

⇒ It looks like what’s moving is a phrase (i.e., an XP)
   o This suggests that what itself is also a phrase
   o That’s not too surprising, for at least two reasons:
     I. If what can satisfy devour’s requirement to have a complement, it must be a phrase
        – REMEMBER: all complements are phrases, by definition
     II. RECALL: there are other instances where a single word can act as a phrase (e.g., DP), such as pronouns:

(7) John devoured it.

What moves?

• These moving phrases share another property with what:

(8) a. [What] has John devoured ____? [= (4)]
   b. [Who] has Mary seen ____?
   c. [Which apples from the farm] has John devoured ____? [= (6c)]
   d. [Where] has Bill gone ____?

➢ It seems that the moving element, in these questions, is a phrase headed by a word that bears a particular kind of morphology
   ⇒ these words are known as wh-words or wh-elements
      – even though some of them don’t even contain “wh” (e.g., how!)
   o and the phrases that they head are known as wh-phrases
Where to?

- What position does the moving phrase move to?
  - The *wh*-phrase moves **past the subject** — as in, e.g., (4), repeated here:

  (4) What has John devoured ____?

  There's also the issue of the auxiliary verb (*has*) showing up on the “wrong side” of the subject
  - We’ll get to that in another class, but note that:
    (i) There are many languages that have the same kind of movement (of a “*wh*-phrase”), without any verbs changing their position
    (ii) Even within English, this phenomenon only occurs in unembedded clauses; compare (4) with (9a–b):

  (9) a. * Mary forgot [what has John devoured ____].
    b. Mary forgot [what John has devoured ____].

Where to?

⇒ In the interest of not dealing with too many variables at once, let us concentrate on the movement of the *wh*-phrase, for the time being
  - Empirically, this amounts to only looking at embedded question (again, for the time being; we’ll get back to this soon)

  ➢ In embedded questions just like unembedded (a.k.a., “matrix”) ones, the *wh*-phrase moves past the subject:

  (10) Mary wondered [what John has devoured ____]?

- The “subject” of a sentence is located in [Spec,TP]:

  (11) \[
  \begin{array}{c}
  \text{DP} \\
  \text{John} \\
  \end{array}
  \begin{array}{c}
  \text{TP} \\
  \text{T} \\
  \end{array}
  \begin{array}{c}
  \text{VP} \\
  \text{T}^0 \\
  \end{array}
  \begin{array}{c}
  \text{has devoured} \\
  \end{array}
  \]

  (as argued in detail in an earlier class)
Where to?

- If the *wh*-phrase moves past the subject — what is there past TP?
  - We have already met the category *C(omplementizer)*
    - the head that *Merges* with (and “introduces”) embedded clauses
    - encodes the *illocutionary force* of a clause (“clause-typing”)  
      - e.g., whether the clause represents an assertion (*that* John left) or a question (*whether* John left)
  - In our current terms, $C^0$ selects TP as its *complement*
  - RECALL: the moving element is a *phrase*
    - given the *X*-schema, **complements** and **specifiers** are positions for phrases, while heads are positions for... well, heads
    ⇒ the moving phrase must move to a complement or specifier of some XP

Where to?

- **Possibilities:**
  - the specifier of TP is occupied (by the “subject”)
  - the complement of $C^0$ is occupied (by TP itself)
  - the specifier of CP is... vacant!
    - the *wh*-phrase can move to [Spec,CP]
- Moreover, we have already seen that CP is the projection responsible for encoding *illocutionary force* (“clause-typing”)
  ⇒ it makes a certain kind of sense for CP to be the projection relevant to the movement of *wh*-phrases

(12) $[CP \text{ What } [C^0 \text{ [TP John has devoured ] }] ]?$
To make it easier to track which element moved from which position, we will use a notation called traces:

- we mark each moving element with an index
- and leave a ‘t’ with the same index in the gap (the position from which the element moved)
What wh-movement can (and cannot) do

- We’ve already seen that movement can apply at great distances
  - i.e., the *gap* and the moving element can be arbitrarily far away from each other
    - as demonstrated in (5), repeated here as (16)

(16) a. What_1 has John devoured t_1?
   b. What_1 does Mary think that John devoured t_1?
   c. What_1 did Bill notice that Mary thought that John devoured t_1?
   d. What_1 did Susan mention that Bill noticed that Mary thought that John devoured t_1?
   ...

- This might lead to the expectation that movement — at least, movement of a *wh*-phrase in interrogatives — is unconstrained
  - i.e., that you can move a *wh*-phrase from anywhere in the sentence to [Spec,CP]

What wh-movement can (and cannot) do

- Interestingly, this expectation is not borne out:
  - Consider the declarative sentence in (17a–b) — embedded in (17b), and unembedded in (17a):

(17) a. John knows the guy who brought the pizza.
    b. Mary remembered [that John knows the guy who brought the pizza].
  - Suppose we want to build a question about *the pizza*
    - i.e., we want to know:
      “for which x is it the case that *John knows the guy who brought x*”
    - and we don’t know that *the pizza* is the x that would make that statement true

(18) a. * What_1 does John know the guy who brought t_1?
   b. * Mary wondered [what_1 John knows the guy who brought t_1]?
What wh-movement can (and cannot) do

- This is remarkable, given that — as shown earlier — the question we are trying to create is logically coherent:

  (19) for which \( x \) is it the case that John knows the guy who brought \( x \)

- Perhaps more strikingly, no language that forms its questions this way — by moving a wh-phrase to [Spec,CP] — can form the question in (18)

  (20) a. Dani makir \( \text{et} \) ha-baxur \( \text{še-hevi} \) \( \text{et} \) ha-pica
      (Hebrew)
      Dani knows ACC the-guy that-brought ACC the-pizza
      ‘Dani knows the guy who brought the pizza.’

     b. * (et) \( m_1 \) Dani makir \( \text{et} \) ha-baxur \( \text{še-hevi} \) \( t_1 \)?
      (ACC) what Dani knows ACC the-guy that-brought
      ‘What \( t_1 \) does Dani know the guy who brought \( t_1 \)?’

   ➢ **NOTE:** this is not to say, of course, that asking a question with the meaning in (19) is impossible
     o This can be done by means of a paraphrase

What wh-movement can (and cannot) do

(21) a. What \( t_1 \) did the guy who John knows bring \( t_1 \)?

    b. Mary wondered [what the guy who John knows brought \( t_1 \)]?

- The point is not that language has no way of asking a question with the logical representation in (19) (repeated here):

(19) for which \( x \) is it the case that John knows the guy who brought \( x \)

➢ The point is that — for some reason — language cannot do so on the basis of the declarative(s) in (17) (also repeated here):

(17) a. John knows the guy who brought the pizza.

    b. Mary remembered [that John knows the guy who brought the pizza].

Islands

- There are numerous examples of this sort
  o i.e., instances of wh-movement that are, for whatever reasons, robustly and cross-linguistically ruled out

➢ these are known as syntactic **islands**
  o imagine that wh-phrases can’t swim... (thanks, Norvin Richards!)

To help us try and make sense of this, we will classify these **islands** into several major “types”:

- **ADJUNCT ISLAND**

(22) a. [Which party]_1 did you go [to \( t_1 \)]?  \hspace{1cm} \text{(baseline)}

    b. * [Which party]_1 did you meet John [after \( t_1 \)]?  \hspace{1cm} \text{(island-effect)}

    o an adjunct cannot be extracted from — (22b)
      – cf. a complement, which can be extracted from — (22a)
Islands

- **SUBJECT ISLAND**

  (23) a. Who₁ did you buy [a picture of t₁]?
      \hspace{1cm} (baseline)
  
  b. * Who₁ did [a picture of t₁] fall on your head?
      \hspace{1cm} (island-effect)

  o a DP in “subject” position cannot be extracted from — (23b)

  - cf. a DP in “object” position (a complement to V₀) — (23a)

  ➢ actually, the same is true for CPs:

  (24) a. Who₁ did you think [that we should hire t₁]?
      \hspace{1cm} (baseline)
  
  b. * Who₁ did [that we hired t₁] surprise you?
      \hspace{1cm} (island-effect)

  o a CP in “subject” position cannot be extracted from — (24b)

  - cf. a CP in “object” position (a complement to V₀) — (24a)

  ◦ this sub-case is sometimes called the **SENTENTIAL SUBJECT ISLAND**

  - the reason why it deserves this “special treatment” is mostly historical; we have not yet seen any reason for this

- **COMPLEX-NP CONSTRAINT (CNPC)**

  (25) a. What₁ do you believe [CP that John bought t₁]?
      \hspace{1cm} (baseline)
  
  b. * What₁ do you believe [DP the [NP claim [CP that John bought t₁]]]?
      \hspace{1cm} (island-effect)

  o a CP dominated by an NP/DP node cannot be extracted from — (25b)

  - cf. a CP not dominated by an NP/DP node — (25a)

- **COORDINATE-STRUCTURE CONSTRAINT (CSC)**

  (26) a. What₁ did they [eat t₁]?
      \hspace{1cm} (baseline #1)
  
  b. What₁ did they [[eat t₁] and [drink t₁]]?
      \hspace{1cm} (baseline #2)
  
  c. * What₁ did they [[eat t₁] and [drink milk]]?
      \hspace{1cm} (island-effect)

  o extracting out of one of two coordinated XPs is impossible — (26c)

  - though extracting “simultaneously” out of both is okay — (26b)

  · the latter is known as **Across-the-Board (or ATB) movement**
Islands

- **WH-ISLAND**

(27) a. [Which shelf]$_1$ did Mary say [that she should put the book on t$_1$]?  
    (baseline)

    b. * [Which shelf]$_1$ did Mary ask [which book she should put on t$_1$]?  
    (island-effect)

  o an interrogative CP (i.e., a question) cannot be extracted from

  ➤ NOTICE: given what we know now, the representation of (27b) is missing something

(28) [Which shelf]$_2$ did Mary ask [[which book]$_1$ she should put t$_1$ on t$_2$]?

  – this could provide us some insight into what, exactly, goes wrong in (27b)/(28)

  ⇒ keep this in mind!

---

A word about relative clauses

- Another thing to notice is that examples like (18a) (repeated here) actually violate two or three(!) different island constraints:

(18) a. * What$_1$ does John know [DP the [NP [NP guy] who brought t$_1$] ]?  

  o The phrase who brought the pizza in a DP like [DP the guy who brought the pizza]  
  is called a relative clause

  o without going into the analysis of relative clauses — that could **easily** be a whole  
  course, unto itself — notice:

    – a relative clause can be added to (almost) any noun
      - i.e., relative clauses are not **selected** by the noun

    – relative clauses cannot be ordered closer-to-the-head than arguments:

(29) a. the student [of physics]$_{arg}$ [who I saw yesterday]$_{RC}$

b. * the student [who I saw yesterday]$_{RC}$ [of physics]$_{arg}$

---

A word about relative clauses

⇒ relative clauses are **adjuncts**

- in terms of their category, relative clauses look like they are (at least) CPs

  - in fact, within a relative clause we find a kind of movement that is very  
  similar to wh-movement in questions

(30) the student [CP who$_1$ [TP I saw yesterday t$_1$] ]

  (it looks like this movement targets [Spec,CP], as well)
A word about relative clauses

Looking again at (18a):

(18) a. *What₁ does John know [DP the [NP [NP guy] [who brought t₁]]]?  
  o the movement of what in (18a) violates:  
    (i) adjunct island  
    (ii) complex-NP constraint (CNPC)  
    (iii) wh-island(?)

• In general, overlapping causes like this are not a good sign (in terms of the “health” of the theory)  
  o they often suggest that there is some deeper generalization that we are currently missing

• BUT: if it is true that the ungrammaticality of (18a) feels “worse” than the ungrammaticality of cases where fewer islands are violated —  
  o then the multiplicity of violations is has some support

Other constraints on wh-movement

There are other constraints on wh-movement, which we may or may not want to list as part of our list of islands:

• **Left-Branch Condition (LBC)**

(31) a. [Whose book about linguistics]₁ did you read t₁?  
  (baseline #1)  
  b. What₁ did you read [a book about t₁]?  
  (baseline #2)  
  c. * [Whose]₁ did you read a [t₁ book]?
  (island-effect)

  o in English, extracting the specifier (“left branch”) out of a DP is impossible
  – as is, probably, extracting anything from within that specifier

  o the reason the LBC is not listed with the other islands is that it is rather English-specific:

(32) Jaki, Paweł kupił swojej żonie [ t₁ samochód ]?  
    what Paweł-NOM bought his wife-DAT car
    ‘What car did Paweł buy his wife?’  
    (Polish)

[Wiland 2008]
Other constraints on wh-movement

In contrast to the LBC — which is operative in English but inoperative in many other languages — here is a constraint that is operative in most languages, but not in English:

- **PIED-PIPING VS. PREPOSITION-STRANDING**
  - In English, when a wh-phrase is the complement of a $P^0$, there are two options for “what moves”

(33) a. What$_1$ did you place the cover [on t$_1$]? (preposition-stranding)
   b. [On what]$_1$ did you place the cover t$_1$? (pied-piping)

   - the name **pied-piping** is a reference to the fairy tale of the *Pied Piper of Hamelin*
   - the idea being that the wh-word, like the Pied Piper, is forcing other things to follow it

Superiority

- All of the examples that we’ve been looking at (except for the ungrammatical example demonstrating a **WH-ISLAND**) have contained a single wh-phrase
- There is another kind of question, however, involving more than one wh-phrase

(35) a. Who ate what?
   b. Who does Mary think ate what?
   c. Who did John convince to buy what?

- In questions like (35a–c), the speaker is asking for answers consisting of pairs — e.g.:

(36) a. Bill ate apples, Peter ate bananas, Bob ate oranges, …
   b. (Mary thinks that …)

   Bill ate apples, Peter ate bananas, Bob ate oranges, …
   c. (John convinced …)

   Bill to buy shoes, Peter to buy jewelry, Bob to buy a car, …
Superiority

⇒ these are sometimes known as Pair-List questions
  o because the answer is a list of pairs
• Actually, there is nothing that restricts them to pairs, per se:
(37) a. Who gave what to whom?
  b. John gave a ball to Bill, Mary gave a book to Sue, ...

Superiority

• These multiple-wh questions exhibit a curious property
  o consider, for example, (35b) — repeated here:
(35) b. Who does Mary think ate what?
➢ Only one of the wh-phrases moves
• Attempting to move both of them results in ungrammaticality, whichever way they are arranged:
(38) a. * Who what does Mary think ate?
  b. * What who does Mary think ate?
• NOTE: this is not true in every language — not even in every language that forms questions by moving wh-phrases to the beginning of the sentence
  o Bulgarian and Serbo-Croatian, for example, allow multiple wh-phrases to undergo movement in a Pair-List question (see Richards 2001)

Superiority

• Even more curiously, it’s not enough that exactly one wh-phrase moves; it seems to matter which one it is:
(39) a. Who does Mary think ate what? [= (35b)]
  b. * What does Mary think who ate?
➢ This is particularly puzzling, because it seems what is not trapped inside an island in (39b)
  o How do we know?
  o If we replace the (other) wh-element with another DP, what is able to move freely:
(40) What does Mary think Bill ate?
⇒ there is nothing about the position of what in (39b) that prevents it from moving
Superiority

➢ What is it, then, that causes (39b) (repeated here) to be ungrammatical?
(39) b. * What does Mary think who ate?

SUPERIORITY (subject to revision)

If $\alpha$ and $\beta$ are two candidates for movement into the same position, and $\alpha$ c-commands $\beta$, then $\alpha$ must be the one that moves.

Superiority

(41) \[
\begin{array}{c}
\text{CP} \\
\text{C'} \\
\text{(does Mary)} \\
\text{VP} \\
\text{think} \\
\text{C'} \\
\text{TP} \\
\text{DP} \\
\text{who} \\
\text{T'} \\
\text{V'} \\
\text{ate} \\
\end{array}
\]

➢ the base-position of who c-commands the base-position of what
$\Rightarrow$ who is be the one that must move to the top [Spec,CP]

Summary

• We’ve seen various constraints on wh-movement:
  ○ islands
    - adjunct island
    - subject island
      • sentential subject island
    - complex-NP constraint (CNPC)
    - coordinate-structure constraint (CSC)
    - wh-island
  ○ other constraints, subject to more cross-linguistic variation
    - Left-Branch Condition (LBC)
    - pied-piping vs. preposition-stranding (i.e., the islandhood of PPs)
    - that-trace effect
  ○ superiority
Summary

• These constraints may be just that — a list of different phenomena that all constraint
  the movement of wh--phrases
• However, it is certainly tempting to at least try to find ways to unify some (if not all) of
  these into more general principles
  o and these attempts have been one of the most lively areas of syntactic theory over
  the last 25 years

More movement(?)

• Consider relative clauses, once more:
  (42) a. The guy [that wrote the book].
     b. The guy [who wrote the book].
• The presence of a wh-element at the periphery of the relative clause in (42b) suggests
  that movement might be involved
  ➢ How might we further test this hypothesis?

More movement(?)

• First, of course, an English TP can’t just begin with wrote:
  (43) a. * [TP Wrote the book].
     b. * Mary knows that [TP wrote the book].
  ➢ Perhaps more interestingly, it turns out that this gap that exists in a relative clause,
    cannot itself be within an island:
  (44) a. * the book [which John [[read ____] and [drank coffee]]]
    ➢ [coordinate-structure constraint (CSC)]
  b. * the book [which [a review of ____] annoyed John]
    ➢ [subject island]
  c. * the book [which John read [the review [that criticized ____]]]
    ➢ [complex-NP constraint (CNPC)]
More movement (?)

• **NOTICE:** The same facts demonstrated in (44a–c) hold if the wh-element (which, in (44a–c)) is replaced with that

(45) a. * the book [that John [[read ____] and [drank coffee]]]
   [coordinate-structure constraint (CSC)]

   b. * the book [that [a review of ____] annoyed John]
   [subject island]

   c. * the book [that John read [the review [that criticized ____]]]
   [complex-NP constraint (CNPC)]

⇒ this suggests that regardless of whether the relative clause has that or a wh-element at its periphery, its derivation involves movement

➢ **CONSIDER:** if movement was not involved in (44–45), it would be a rather suspicious coincidence that they exhibit the same constraints on where the gap can/cannot appear, as wh-questions do

More movement (?)

More generally:

• We can think of these island-constraints as movement-detectors

• We’ve seen this for relative clauses; here’s another example:

(46) This book is tough to read ____.

(47) a. * This book is tough to read [an article [that criticizes ____]].
   [complex-NP constraint (CNPC)]

   b. * This book is tough to think [that [reading ____] would annoy you].
   [subject island]

References


This is svn-revision 1082.