Islands and other constraints on movement

LING 200B · Ethan Poole · 25 October 2021

✳ ***Types of movement***

- HEAD MOVEMENT: Moves heads to create complex heads
- PHRASAL MOVEMENT: Moves maximal projections, re-merging the targeted constituent into the structure
  - A-MOVEMENT: Moves into an argument position
  - $\overline{\text{A}}$-MOVEMENT: Moves into a non-argument position

1 Islands

- ***Premise***
  Wh-movement is UNBOUNDED in that it can cross a potentially infinite number of clause boundaries:

(1) a. [**Who**] did Rose see ___ ?

b. [**Who**] did Dorothy think [that Rose saw ___]?

c. [**Who**] did Blanche say [that Dorothy thought [that Rose saw ___]]?

✳ ***Islands***
Ross (1967) famously discovered a variety of configurations that, despite *wh*-movement being unbounded, prohibit movement out of them, which he dubbed ISLANDS.

(2) **COMPLEX NP CONSTRAINT**

a. No element contained in a sentence dominated by a noun phrase with a lexical head noun may be moved out of that noun phrase by a transformation.
[Ross 1967:127]

b. **In modern terminology**
No element contained in a CP that is dominated by a DP may be moved out of that DP.

- There are two contexts in which a DP contains a CP:

(3) **Relative clauses**

a. [$_{\text{DP}}$ the woman [$_{\text{CP}}$ (who$_1$) [Blanche saw ___$_1$]]

b. [$_{\text{DP}}$ the woman [$_{\text{CP}}$ who$_1$ [___$_1$ saw Blanche]]

c. [$_{\text{DP}}$ the cat [$_{\text{CP}}$ (that) [Blanche saw ___]]

(4) **Complement/argument clauses**

a. [$_{\text{DP}}$ the rumor [$_{\text{CP}}$ that Rose ate a cheesecake]]

b. [$_{\text{DP}}$ the story [$_{\text{CP}}$ that Blanche had seen the cat]]

- ***Illustration of the Complex NP Constraint***

(5) a. Dorothy likes [$_{DP}$ the author [$_{CP}$ who wrote ***W&P***]].

b. *[**Which book**] does Dorothy like [$_{DP}$ the author [$_{CP}$ who wrote ___]]?

(6) a. Rose heard [$_{DP}$ the news [$_{CP}$ that Blanche is dating **someone**]].

b. *[**Who**] did Rose hear [$_{DP}$ the news [$_{CP}$ that Blanche is dating ___]]?

(7) **Sentential Subject Constraint**

a. No element dominated by an S may be moved out of that S if that node S is dominated by an NP which itself is immediately dominated by S.
[Ross 1967:243]

b. **In modern terminology**
No element dominated by a CP may be moved out of that CP if that CP is a subject.

- ***Illustration of the Sentential Subject Constraint***

(8) a. [$_{CP}$ That the principal would fire the teacher] was surprising.

b. *[**Who**] was [$_{CP}$ that the principal would fire ___] surprising?

(9) **Subject Condition**
No element may be moved out of a subject. [Chomsky 1973; Huang 1982]

- ***Illustration of the Subject Condition***[1]

(10) a. [$_{DP}$ A comment about **Sophia**] has annoyed Dorothy.

b. *[**Who**] has [$_{DP}$ a comment about ___] annoyed Dorothy?

[1] Chomsky (1964) initially captured these cases with the A-over-A principle, but Ross (1967) argued that the principle was too strong and went on to develop the theory of islands.

(11) **Coordinate Structure Constraint**
In a coordinate structure, no conjunct may be moved, nor may any element contained within a conjunct be moved out of that conjunct. [Ross 1967:161]

- ***Illustration of the Coordinate Structure Constraint***

(12) **No movement of conjunct**

a. I ate [[a sandwich] and [a piece of cake]].

b. *[**What**] did I eat [[a sandwich] and ___]?

(13) **No movement out of conjuncts**

a. Dorothy is [[proud of Rose] and [tired of Sophia]].

b. * [**Who**] is Dorothy [[proud of ___] and [tired of Sophia]]?

c. * [**Who**] is Dorothy [[proud of Rose] and [tired of ___]]?

- There are some well-known exceptions to the Coordinate Structure Constraint:

(14) a. **Across-the-board (ATB) movement**

[**Which book**] does [[Alex hate ___] and [Maria like ___]]?

[Ross 1967; Williams 1978; Gazdar 1981]

b. **Pseudo-coordination**

[**What**] did Alex [[go to the store] and [buy ___]]? [Lakoff 1986]

(15) **Left Branch Condition**

a. No NP which is the leftmost constituent of a larger NP can be reordered out of this NP by a transformational rule. [Ross 1967:207]

b. **In modern terminology**
The leftmost item of a DP cannot be moved out of that DP.

- ***Illustration of the Left Branch Condition***

(16) a. You bought [$_{DP}$ **the** book].

b. * [**Which**] did you buy [$_{DP}$ ___ book]?

(17) a. You bought [$_{DP}$ **Alex's** book].

b. * [**Alex's**], you bought [$_{DP}$ ___ book].[2]

- ***Left-branch extraction crosslinguistically***
Many languages in fact allow left branch extraction, so ultimately our theory needs to account for this variation:

(18) a. [**Čju knigu**] ty čitaeš ___?
whose book you read

b. **Čju** ty čitaeš [___ knigu]?
whose you read book [Russian]

[2] I have used topicalization here because *wh*-movement presents a potential confound: a *wh*-phrase can PIED-PIPE material along with it to [Spec, CP]. Pied-piping could in principle account for (16), but not (17).

(19) ***Wh*-Island Condition**
Movement must not cross a CP with a *wh*-element in [Spec, CP] or C.
[Chomsky 1964, 1973]

- ***Illustration of the Wh-Island Condition***[3]

(20) a. [**How**] did he say [$_{CP}$ that Maria solved the problem ___]?

b. *[**How**] did he say [$_{CP}$ **whether** Maria solved the problem ___]?

(21) a. [**What**] do you think [$_{CP}$ that Maria read ___]?

b. *[**What**] do you wonder [$_{CP}$ **who** [~~who~~ read ___]]?

[3] *Intended meanings:* For which method x did he say whether/that Maria solved the problem using x?

- Ross (1967) actually argued against the constraint in Chomsky (1964), which eventually became known as the *Wh*-Island Condition. He cited cases like the following where the embedded question is nonfinite:

(22) ?[**Which books**] did he tell you [$_{CP}$ when to read ___]?

- ***D-linking and wh-islands***
  - It is generally believed that D(ISCOURSE)-LINKED elements, like *which NP*, can amnesty a violation of the *Wh*-Island Constraint:[4]

(23) ?[**Which problem**] did he wonder [$_{CP}$ **whether** Maria had solved ___]?

  - But, the facts are more complicated still:

(24) a. ?[**Which glass of wine**] do you wonder [**whether** I poisoned ___]?

b. *[**How much wine**] do you wonder [**whether** I poisoned ___]?

[4] Pesetsky (1987, 2000)

- ***Scope reconstruction and wh-islands***
Wh-islands, to the extent that they allow extraction out of them, do not allow scope reconstruction into them:[5]

(25) [**How many books**]$_1$ do you wonder [whether Nina read ___$_1$]?

a. **Wide-scope reading** how many ≫ wonder
For what number n: There are n-many particular books x such that you wonder whether Nina read x.

b. **Narrow-scope reading** wonder ≫ how many
*For what number n: You wonder whether Nina read n-many books.

[5] Longobardi (1987); Kroch (1989); Cinque (1990); Rullmann (1995); Cresti (1995)

(26) **Adjunct Island Condition**
Nothing may be moved out of an adjunct. [Huang 1982]

- ***Illustration of the Adjunct Island Condition***

(27) a. Blanche had dinner [$_{ADJ}$ before Rose saw **the movie**]

b. *[**Which movie**] did Blanche have dinner [$_{ADJ}$ before Rose saw ___]?

(28) a. Alex bought a house [$_{ADJ}$ because she earned **a million dollars**].

b. *[**How much money**] did Alex buy a house [$_{ADJ}$ because she earned ___].

⁎ ***The nature of island effects***

- Island effects are perhaps the most important discovery of generative linguistics.
- Islands provide one of the strongest arguments that some aspects of grammar must be innate, as there is no conceivable way that islandhood could be learned from the input alone, i.e. poverty of the stimulus.
- However, **islands are just descriptions of facts**. They are not in and of themselves explanations of those facts.
- Some have suggested that island effects are the result of working memory capacity, e.g. some kind of processing constraint, but Sprouse et al. (2012) have shown that the experimental facts do not support such an analysis.
- Rather, island effects must be due to grammatical constraints, though what those constraints are is not agreed upon.

2 Minimality and superiority effects

- ***Multiple wh questions***
In constituent questions with multiple *wh*-phrases, only the highest *wh*-phrase may move to [Spec, CP]:[6]

[6] At least in English ...

(29) a. **Pre-movement structure**
She might think [**who**] has done [**what**]?

b. **Move the higher *wh*-expression**
[**Who**] might she think ___ has done [**what**]?

c. **Move the lower *wh*-expression**
*[**What**] might she think [**who**] has done ___ ?

d. **Move both *wh*-expressions**
*[**Who**] [**what**] might she think ___ has done ___ ?

- ***Superiority effects***
  - *Wh*-movement is said to exhibit a SUPERIORITY EFFECT.[7]
  - This means that even though either *wh*-phrase would in principle satisfy the [•WH•] feature on interrogative C, only the closest (i.e. highest) *wh*-expression may actually do so.

[7] Chomsky (1973)

✳ ***Minimal search***

- Superiority effects are (arguably) a specific instance of the more general constraint of RELATIVIZED MINIMALITY.[8]
- Essentially, syntactic operations make the *most minimal search* when they probe into the structure. The syntax prefers to do the easiest or most economical step whenever possible.
- In Minimalist syntax, this is formulated as the *Minimal Link Condition*:[9]

  (30) **MINIMAL LINK CONDITION (MLC)**
  K attracts α only if there is no β, β closer to K than α, such that K attracts β.
  [Chomsky 1995]

  (31) X is CLOSER to Y than to Z if X c–commands both Y and Z, and Z is contained within some maximal projection which does not contain Y.

[8] Rizzi (1990)

[9] The intuition behind the MLC is that derivations prefer shorter links over longer links, as a kind of *derivational economy*.

3 Some other constraints on movement

(32) ***THAT*-TRACE CONSTRAINT**
A subject cannot be moved over a local overt complementizer.

- ***Illustration of that-trace effects***

(33) a. Dorothy thought [(that) Rose saw Blanche].
  b. [**Who**] did Dorothy think [**(that)** Rose saw ___]?
  c. [**Who**] did Dorothy think [**(*that)** ___ saw Blanche]?

(34) a. Dorothy wanted [(for) Rose to see Blanche].
  b. [**Who**] did Dorothy want [**(for)** Rose to see ___]?
  c. [**Who**] did Dorothy want [**(*for)** ___ to see Blanche]?

- ***Functional heads***

The NP and TP complements of D and C respectively cannot move on their own:[10]

(35) a. Nobody had expected that the president would fire the arbitrator of the negotiations.
  b. *[$_{NP}$ **Arbitrator of the negotiations**], nobody had expected that the president would fire [$_{DP}$ the ___].
  c. [$_{DP}$ **The arbitrator of the negotiations**], nobody had expected that the president would fire ___ .

[10] As far as I know, this constraint does not have a specific name.

d. *[$_{TP}$ **The president would fire the arbitrator of the negotiations**], nobody had expected [$_{CP}$ that ___].[11]

e. [$_{CP}$ **That the president would fire the arbitrator of the negotiations**], nobody had expected ___ .

[11] Where *that* is phonologically reduced. Otherwise, it could be a left-dislocation structure.

- ***Maximal projections***
  Only maximal projections can undergo phrasal movement:[12]

[12] This may also explain (parts of) the Left Branch Condition.

(36) a. She smacked the dog right on the nose.

b. [$_{PP}$ **Right on the nose**], she smacked the dog ___ .

c. *[$_{\bar{P}}$ **On the nose**], she smacked the dog [$_{PP}$ **right** ___].

What to read if you want to learn more?

- Ross (1967): The original work on islands
- Sprouse et al. (2012): Experimental paper arguing that islands are grammatical in nature
- Starke (2001): Interesting proposal that islands reduce to Relativized Minimality

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