

Conditionals and (the lack of) CED violations

Heather Lee Taylor
University of Maryland, College Park
HLTaylor@wam.umd.edu

0. Introduction

The CED (Huang 1982) renders adjuncts islands to movement.

- (1) a. * Who₁ will Michelle go home [because Rich saw e₁] ?
b. * What₁ will Michelle write the report [after Bill chooses e₁] ?
c. * Which car₁ will Michelle travel to New York [without driving e₁] ?¹

Accordingly, it is standardly reported that IF-clauses are islands in English

- (2) * Which book₁ , will Michelle understand linguistics better if she reads e₁ ?

But extraction from sentence-initial IF-clauses is acceptable.

- (3) ✓ [Which book]₁ does John believe if Michelle reads e₁ she will understand linguistics better?

This proposal:

- Movement out of IF-clauses is permitted in English, an apparent violation of the CED.²
- This is possible via sideward movement (Nunes 1995, 2004; Hornstein 2001). The explanation of the data using this operation critically rests on the limitations of this operation: 1) only one subnumeration may be accessed at any point in a derivation, and 2) an item may not be copied and left unmerged in the derivational workspace.
- IF-clauses are normally base-generated within the VP of the consequent (main clause) of a conditional. When movement out of the IF-clause is possible, the IF-clause is base-generated in sentence-initial position, adjoined to IP.
- At the point in the derivation of sideward movement out of an IF-clause, a functional head must be immediately available; if no functional head is present, the moved constituent will have no position to merge into.

¹ Notes that this is also an example of adjunct control, a phenomenon that is hypothesized to be an instance of movement (Hornstein 2001). Such movement also would constitute a CED violation. I will return to this in §3.2.

² Movement out of an IF-clause is also possible in other languages, such as Spanish (Etxepare, 2002) and Japanese (Yoshida, 2006).

(4) Outline of this talk

- §1 Empirical data is presented, along with Etxepare's (2002) data involving Stance predicates (Cattell, 1978) and Uriagereka's (1995) functional projection F.
- §2 The problem that the data present is clarified.
- §3 A review of the proposal for sideward movement as presented by Nunes (1995, 2004) and Hornstein (2001).
- §4 The proposed derivations for conditionals with movement out of the IF-clause
- §5 Some further ideas are explored in light of this analysis
- §6 Summary and conclusion

1. Empirical Data

1.1 Position of the IF-clause

- Extraction of any kind is strictly disallowed from sentence-final IF-clauses, as seen in examples (5)-(9).

(5) Michelle will understand linguistics better if she reads *Aspects*.

(6) *Which book₁ will Michelle understand linguistics better if she reads e₁ ?

(7) *I wonder which book₁ Michelle will understand linguistics better if she reads e₁

(8) **Aspects*, Michelle will understand linguistics better if she reads e₁

(9) ?* This is a book that Michelle will understand linguistics better if she reads e₁

- However, when the IF-clause appears in sentence-initial position, some kinds of movement out of the IF-clause are improved (10)-(14).

(10) If Michelle reads *Aspects*, she will understand linguistics better

(11) *Which book₁ if Michelle reads e₁ will she understand linguistics better?

(12) ?* I wonder which book₁ if Michelle reads e₁ she will understand linguistics better

(13) ✓ *Aspects*, if Michelle reads e₁ she will understand linguistics better

(14) ?? This is a book that if Michelle reads e₁ she will understand linguistics better

1.2 Embedded Conditionals

- As seen in (10)-(14), not all conditionals with sentence-initial IF-clauses are acceptable.
- Wh-movement for question formation (in (11)) is unacceptable. But...
- If a conditional is embedded under a predicate such as *say*, *believe*, *claim*, or *think*, wh-movement for question formation out of the IF-clause is allowed (originally observed for Spanish by Etxepare 2002). Important to Etxepare's analysis was that such predicates are theorized to be Stance predicates (Cattell 1978) defined as predicates that involve an assertion on the part of the speaker.

- (15) * Which book₁ if Michelle reads e₁ then she will understand linguistics better?
(16) ?? Which book₁ did you speculate/omit/interpret/comment that if Michelle reads e₁ (then) she will understand linguistics better?
(17) √ Which book₁ did you say/believe/claim/think that if Michelle reads e₁ then she will understand linguistics better ?
(18) * Which books₁ did you say/believe/claim/think that Michelle will understand linguistics better if she reads e₁ ?

- Etxepare (2002), Spanish.

- (19) √/? Qué libro₁ crees que si Ricardo lee t₁ alguna vez abandonará
which book believe you that if R. reads some time give up
la Lingüística de inmediato?
the Linguistics immediately
‘Which book do you believe that if Ricardo ever reads he will give up linguistics immediately?’

(Etxepare’s example (49))

- (20) * Qué libro₁ crees que Ricardo abandonará la Lingüística
which book believe you that R. give up the Linguistics
de inmediato si lee t₁ alguna vez
immediately if he reads some time
‘Which book do you believe that Ricardo will give up linguistics immediately if he ever reads?’

- (21) a. √ Qué libro₁ crees que si Ricardo lee t₁ alguna vez se deprimirá?
Which book believe you that if R. reads some time himself get-upset
“Which book do you believe that if Ricardo ever reads he will get depressed?”
b. * Qué libro₁ crees que Ricardo deprimirá si lee t₁ alguna vez ?
Which book believe-2P that R. get-upset if reads-3P some time
“Which book do you believe that Ricardo will get depressed if he ever reads?”

- Etxepare (2002) investigates null complementizers in Spanish and explains a number of empirical phenomena by postulating a null complementizer that is the realization of Uriagereka’s (1995) functional projection F.
- The projection F is present in a derivation when a Stance predicate is present.
- Etxepare’s conclusion that F must exist in the presence of Stance predicates is straightforward – Stance predicates involve an assertion on the part of the speaker, and Uriagereka’s F “hosts all those elements which in order to be interpreted require a ‘responsible judge.’”
- The relevance of the presence of a Stance predicate to this data is how this functional projection affects a derivation.

1.3 Summary of the data

(22) Characteristics of Extraction from IF-clauses (for English)

- a. All movement out of a sentence-final IF-clause is disallowed.
- b. Movement out of an IF-clause for Wh-question formation is disallowed.
- c. Movement out of an IF-clause to form a relative clause (i.e., clefting) or to an embedded Comp is marginally acceptable.
- d. Movement out of an IF-clause embedded under some kinds of predicates (i.e., Stance predicates) is allowed.
- e. Movement out of an IF-clause for topicalization is allowed.

3 reasons this set of facts is surprising:

- Extraction from an IF-clause is an apparent violation of the CED and should be disallowed in all situations.
- The syntactic position of an IF-clause should have no bearing on its status as an adjunct.
- Why movement for topicalization and movement of a constituent that is embedded under a Stance predicate are permissible, and other types of movement operations are not, is mysterious.

An explanation of these empirical facts is needed.

2. The paradoxical problem of movement out of adjuncts

- There is good evidence that adjuncts are islands, i.e., that movement out of an adjunct is disallowed. (examples in (1), repeated below as (23))

- (23)
- a. * Who_i will Michelle go home [because Rich saw t_i] ?
 - b. * What_i will Michelle write the report [after Bill chooses t_i] ?
 - c. * Which car_i will Michelle travel to New York [without driving t_i] ?

- But if an IF-clause is an adjunct, then it appears that all adjuncts are not islands.
- It appears we have a overgeneration/undergeneration problem. If we allow in movement from IF-clauses, we overgenerate the sentences in (23). If we disallow the sentences in (23), we undergenerate the IF-clauses from which movement has taken place.

The challenge:

to find an appropriate way to amend the CED so as to disallow the cases in (23) while also allowing in IF-clauses that are porous to extraction.

3. Sideward Movement

3.1 Getting out of an adjunct

Q: Given the soundness of the CED, how is movement out of an adjunct possible?

A: The possibility I will explore here is sideward movement (Nunes 1995, 2004; Hornstein 2001)

- Sideward movement: movement from one tree into another. In short, movement in the absence of a c-command relationship.
- How does this explain our CED paradox?
- Sideward movement clarifies what domains should be islands to movement according to the CED. The CED disallows extraction from adjuncts, and within the theory of sideward movement an adjunct is defined as that which is adjoined to another tree. If an adjunct is unattached, it is not an adjunct yet, and movement out of it is permitted.

3.2 Other evidence for movement out of adjuncts via sideward movement

- Parasitic gaps (Nunes 1995, 2004)

(24) Which book₁ did you review e₁ Adjunct₁[without reading pg₁]

- Adjunct control (Hornstein 2001)

(25) John₁ saw Mary Adjunct₁[before e₁ leaving the party]

3.3 Limiting the power of the operation

- There is a potential problem with sideward movement – overgeneration. The theory of sideward movement includes limitations in order to restrict its power. Four such limitations are proposed by Nunes (2004).

(25)

- a. A derivation may access only one subnumeration (Chomsky 2001) at any given point in the derivation. Only when the items of a subnumeration are exhausted can items from another subnumeration enter into the derivational workspace.
 - b. Only one tree may be extended during any given point in a derivation. If tree X exists in a derivation, and tree Y is created, tree Y must be built in its entirety before any other tree can be extended, and tree X may only be extended again if tree Y is adjoined to it.
 - c. Like traditional intra-arboreal movement, sideward movement may only target items positioned on the edge of a tree.
 - d. A sidewardly-moved constituent must always be copied and immediately merged with another constituent. Copied constituents may not exist in the derivational workspace unused.
- These limitations not only get the facts straight with respect to which different kinds of adjuncts are violable, but we will see that they also predict the pattern of extraction seen in the IF-clauses data in §1.

4. Derivations and explanations

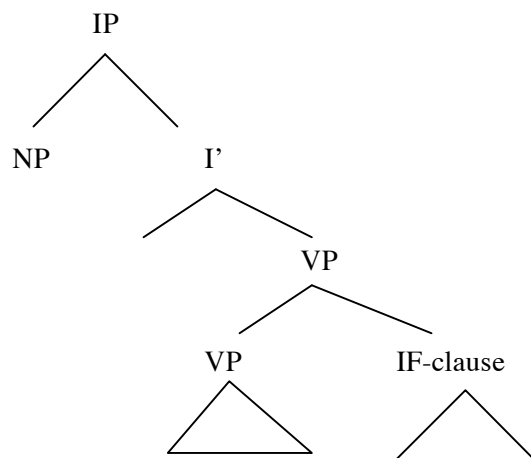
4.1 Position of the IF-clause matters because movement is *sideward*

- The consequent of a conditional is the matrix clause

(26)

- a. ✓ If Jane drives to Philadelphia tonight, then Bob will leave for New York tomorrow, won't he?
 - b. * If Jane drives to Philadelphia tonight, then Bob will leave for New York tomorrow, won't she?
- Sentence-final IF-clause are adjoined to VP of the main clause, as in (27) (Iatridou, 1991).

(27)



- Iatridou also demonstrates that IF-clauses are base-generated in this lower position and then A'-move to sentence-initial position, adjoined to IP.

Island tests

(28)√ If it rains Mary believes/said/heard/assumed that Bill will come.

(29)* If it rains Mary regretted/forgot/resented/recognized that Bill will come

(30)

- *If it rains Mary heard the rumor that Bill will come
- * If it rains Mary wondered whether Bill will come

Reconstruction and binding tests

(31)

- * His mother₁ gets upset if every boy₁ is late
- * If every boy₁ is late, his mother₁ gets upset

(32)

- Every boy₁ gets upset if his mother₁ is late
- If his mother₁ is late, every boy₁ gets upset**

(33)

- * John scolds his₁ mother if every boy₁ is late
- * If every boy₁ is late, John scolds his₁ mother

(34)

- John scolds every woman₁ if her₁ son is late**
- If her₁ son is late, John scolds every woman₁**

(35)

- Every boy₁ gets upset if John scolds his₁ mother
- If John scolds his₁ mother, every boy₁ gets upset**

(36)

- * His₁ mother gets upset if John scolds every boy₁
- * If John scolds every boy₁, his₁ mother gets upset

4.2 Why extraction from a sentence-final IF-clause crashes a derivation

A problem:

If an IF-clause is always base-generated within the VP in sentence-final position, the consequence should be that no extraction from a sentence-initial IF-clause should be possible, because a sentence-initial IF-clause must always have been previously adjoined within VP in its base-generated position.

- one limitation on sideward movement is critical, (25)a, repeated here as (37):

(37) A derivation may access only one subnumeration (Chomsky 2001) at any given point in the derivation. Only when the items of a subnumeration are exhausted can items from another subnumeration enter into the derivational workspace.

- A sentence-final IF-clause is adjoined to the VP contained in the consequent.

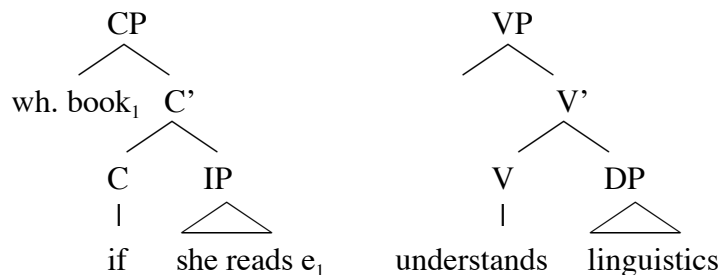
- The IF-clause must be built in its entirety before it is adjoined (in accordance with the Extension Condition).
- At the point the IF-clause is built, all the members of a subnumeration have been used (IF clause = CP), so another subnumeration may be accessed.
- The matrix tree is built up to the point of VP.
- **Any movement** out of the IF-clause must take place by this point in the derivation, because the following step in the derivation must be to adjoin the IF-clause to VP.
- The subnumeration accessed at this point corresponds to vP . The remaining members of this subnumeration do not provide a position for an A'-moved constituent to land.
- Accessing members of another subnumeration (for instance, the matrix CP subnumeration) is disallowed.

(38)* Which book₁ will Michelle understand linguistics better if she reads e₁ ?

(39) subnumerations:

- subn α = { *v*, reads, which book }
- subn β = { if, she }
- subn γ = { *v*, understand, linguistics, better }
- subn δ = { Michelle, will, \emptyset -C }

(40)



- If extraction happens *before* the IF-clause is adjoined, no position is available for it to merge into. A violation of sideward movement occurs because such copied constituents must be merged immediately.
- If extraction happens *after* the IF-clause is adjoined, a CED violation occurs.
- It should be noted here that even if the IF-clause adjoins and then A'-moves to sentence initial position, the derivation will still not converge.

A solution:

base-generate the IF-clause in sentence-initial position.

- **When movement out of a sentence-initial IF-clause occurs, the derivation above strongly suggests that the IF-clause must not have been base-generated lower in the structure.**

- Two of the three mysteries presented in §1 – why movement out of all IF-clauses is not prohibited and why movement out of sentence-final IF-clauses is prohibited – are explained
- This still leaves us with the last mystery: why is some type of movement better than others?
 - Topicalization
 - Wh-movement out of a sentence embedded under a Stance predicate

4.3 Functional heads

- As Etxepare argued, a Stance predicate is associated with a functional projection, Uriagereka's F
- Topicalization also involves a functional projection.
- Expressions within topicalization and expressions embedded under Stance predicates both include a functional projection above IP within the matrix CP.

The key to the solution:

If an appropriate functional head is a member of the subnumeration corresponding to the conditional's main clause (=CP), the projection of this head provides an open specifier position for a sidewardly-moving constituent to land.

(41) Which book do you believe that if Michelle reads e_1 she will understand linguistics better?

(42) subnumerations

- a. subn $\alpha = \{ \text{reads, which, book} \}$
- b. subn $\beta = \{ \text{if, Michelle, } \nu \}$
- c. subn $\gamma = \{ \text{understand, linguistics, better} \}$
- d. subn $\delta = \{ \mathbf{F}, \text{she, will, } \nu, \text{that} \}$
- e. subn $\epsilon = \{ \text{believe} \}$
- f. subn $\zeta = \{ \text{you, do, } \emptyset\text{-C} \}$

(47) $J = [_{CP} [\text{which book}]_C [\text{if Michelle reads } [\text{which book}]]]$

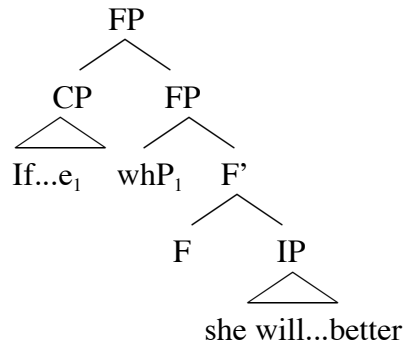
$K = [_{FP} F^0 [_{IP} \text{she will understand linguistics better}]]$

(43) $J = [_{CP} [\text{which book}]_C [\text{if Michelle reads } [\text{which book}]]]$

$K = [_{FP} [\text{which book}] F^0 [_{IP} \text{she will understand linguistics better}]]$

(44) $K = [_{FP} [_{CP} [\text{which book}]_C [\text{if Michelle reads } [\text{which book}]]] [_{FP} [\text{which book}] F^0 [_{IP} \text{she will understand linguistics better}]]]$

(45)



- Topicalization involves the same kind of derivation – a functional head available at the point in the derivation when the IF-clause CP must adjoin.
- The absence of a functional head results in the movement not being permitted (see (46)-(48)).

(46)* Which car₁ , if Michelle buys t₁ , will her insurance premium increase?

(47)?* I wonder which car₁ if Michelle buys t₁ , her insurance premium will increase

(48)?? This is [the kind of car]₁ that if Michelle buys t₁ , her insurance premium will increase

5. Some further ideas, consequences for this analysis

- It is not clear that the presence of a Stance predicate is the correct categorization of the predicates that do or don't work with respect to extraction from an IF-clause.

(49) Which book₁ is it certain that if I read t₁ I will understand physics better?

(50) Which book₁ is it likely that if I read t₁ I will understand physics better?

(51) Which book₁ is it doubtful that if I read t₁ I will understand physics better?

- The judgments for (49)-(51) are muddled, but the prediction this analysis makes is clear: they should progress from perfectly acceptable to clearly unacceptable. This judgment is not as robust as we would hope.
- Additionally, what is or is not a Stance predicate varies from language to language. And from speaker to speaker.
- It may be that this conceptualization put forth by Etxepare (2002) is on the right track, but doesn't capture the facts entirely.
- Further investigation is needed into the full range of predicates that allow movement of out IF-clauses, how these vary from language to language, and what other functional heads are proposed to exist in various languages and language families.

6. Conclusion

- Movement out of IF-clauses is permitted
- This movement is limited to those conditionals which include a base-generated sentence-initial position of the IF-clause and to those conditionals that include a relevant functional projection.
- The empirical data presented here are predicted if the extraction from the IF-clause adjunct takes place via sideward movement and if the limitations of sideward movement originally proposed by Nunes (2004) are adhered to.

7. Acknowledgements

Thanks goes to Norbert Hornstein, Juan Uriagereka, Sam Epstein and Daniel Seely

8. References

- Bobaljik, J. 1997.** “Interarboreal Operations: Head Movement and the Extension Requirement.” *Linguistic Inquiry* 28.2, 345-356.
- Cattell, R. 1978.** “On the Source of Interrogative Adverbs”. *Language*, 54.1, 61-78.
- Chomsky, Noam. 1977.** On Wh-Movement. In Peter Culicover, Thomas Wasow, and Adrian Akmajian (eds.), *Formal syntax*, 71-132. Academic Press: New York.
- Chomsky, Noam. 1981.** *Lectures on Government and Binding*.
- Chomsky, Noam. 1986.** *Barriers*.
- Chomsky, Noam. 1995.** *The Minimalist Program*. Cambridge, Mass, USA. MIT Press.
- Chomsky, Noam. 2001.** *Minimalist Inquiries*.
- Etxepare, Ricardo. 2002.** Null complementizers in Spanish. Revised version of a paper published in the *International Journal of Basque Linguistics and Philology XXX-2, 1996 [1999], 469-496*. Ms. CNRS, 2002.
- Hornstein, N. 2001.** *Move! A Minimalist Theory of Construal*. UK. Blackwell
- Huang, C. T. James. 1982.** *Logical relations in Chinese and the theory of grammar*. Ph.D. dissertation, MIT.
- Iatridou, Sabine. 1991.** *Topics on conditionals*. Ph.D. Dissertation, MIT.
- Nunes, Jairo. 1995.** *The Copy Theory of Movement and Linearization of Chains in the Minimalist Program*. Ph.D. dissertation, University of Maryland, College Park.
- Nunes, Jairo. 2004.** *Linearization of chains and sideward movement*. Cambridge, Mass. MIT Press Monograph.
- Uriagereka, Juan. 1995.** “An F position in Western Romance” In Kiss, K.E. (ed.) 1995, *Discourse Configurational Languages*. New York, Oxford University Press.

