

Movement from IF-clause Adjuncts

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Contrary to what is standardly reported in the literature, extraction from IF-clauses is allowed in some conditionals, constituting a CED violation. This paper explores the porosity of certain IF-clauses, explaining the distribution of acceptable and unacceptable extractions as the result of two distinct factors – the eventual adjunction site (i.e., base-generated position) of the IF-clause, and the immediate availability of a relevant functional projection. Since an IF-clause is inarguably an adjunct and subject to the CED, extraction out of an IF-clause is only permissible via sideward movement, and is therefore subject to the limitations of such interarboreal movement. These limitations predict the pattern of acceptability observed in English.

Introduction

It is standardly reported that IF-clauses are islands in English, and seen in (1):

- (1) * Which car₁ , will Michelle’s insurance premium increase if she buys t₁ ?
- (2) * Who will Michelle go home because Rich saw t₁ ?

The claim should not be conceptually controversial; IF-clauses are classified as adjuncts, and the Condition on Extraction Domains (CED) (Huang 1982) renders adjuncts islands to movement. Huang’s CED is the generalization “that extraction may take place only from properly governed domains” (Huang 1982:21). Within a theoretical framework that eliminates the need for a primitive such as government (i.e., minimalism), the CED stands as an explanation for why any adjunct (i.e., a constituent that neither dominates nor is contained in the maximal projection it modifies) is an island. The CED therefore correctly rules out examples like (2). Since IF-clauses are uncontroversially classified as adjuncts, it is unsurprising that (1) is unacceptable. The example in (1) is not representative of the complete set of IF-clauses though. Like the IF-clauses in most of the data cited in support of the claim that IF-clauses are islands, the IF-clause in (1) is sentence-final. If the IF-clause is sentence-initial, movement from this adjunct to another position is sometimes possible, as seen in (3). In (3), the IF-clause adjunct is in sentence-initial position and the conditional is embedded under a matrix verb *believe*. Both of these contrasts with the unacceptable (1) are important to the acceptability of (3).

- (3) √ [Which car]₁ does Michelle believe if she buys t₁ her insurance premium will increase?

In this paper, I will argue primarily that extraction from IF-clauses is allowed in some conditionals. This indicates that the islandhood of an IF-clause is not determined simply by its status as an adjunct at the end of the derivation. In order to explain this apparent violation of the CED, I appeal to sideward movement (Nunes 1995, 2004; Hornstein 2001), along with the limitations of this operation. Two of these limitations are key to the data presented here: 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.

Secondarily, I will investigate two factors which affect otherwise successful movement from an IF-clause – the eventual adjunction site (i.e., base-generated position) of the IF-clause, and the immediate availability of a relevant functional projection. As a consequent of the limitations on sideward movement, both of these factors directly affect the porosity of an IF-clause. Movement from a sentence-final IF-clause is disallowed due to its VP-internal adjunction site. Movement which immediately checks a +Topic or +Stance (Etxepare 2002) feature is the only type of extraction permitted – WH-movement for question formation, relative clause formation, and satisfaction of subcategorization frames (i.e. *wonder*) result in expressions ranging from marginal to unacceptable.

This paper is organized as follows: in §1, empirical data is presented, along with a brief presentation of Etxepare's (2002) data involving Stance predicates (Cattell, 1978) and Urigareka's (1995) functional projection F; in §2, I review the proposal for sideward movement presented in Nunes (1995; 2004) and Hornstein (2001); in §3, I give the proposed derivations for conditionals in which movement out of the IF-clause has taken place. Along with these successful derivations, I show how the unacceptability of other conditionals in which movement from the IF-clause is unsuccessful is explained. Lastly in this section, I present Etxepare's proposal for extracting from sentence-initial IF-clauses embedded under stance predicates in Spanish, and demonstrate how this proposal can be extended to cover the broader body of data of IF-clauses. In §4, I summarize the central findings and claims presented and conclude.

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 (4)-(8). (4) is the base sentence from which the object of the IF-clause, *Rich's sports car*, will be targeted for movement. (5) is an attempt to form a question by WH-movement of this constituent to the matrix Comp, (6) is WH-movement to an embedded Comp, (7) is movement via topicalization, and (8) is movement for the formation of a relative clause. All attempts fail.

- (4) ✓ Michelle's insurance premium will increase if she buys Rich's sports car
- (5) * Which car₁ , will Michelle's insurance premium increase if she buys t₁ ?
- (6) * I wonder which car₁ Michelle's insurance premium will increase if she buys t₁
- (7) * Rich's sports car₁ , Michelle's insurance premium will increase if she buys t₁
- (8) ?* This is [the kind of car]₁ that Michelle's insurance premium will increase if she buys t₁

However, when the IF-clause appears in sentence-initial position, some kinds of movement out of the IF-clause are improved. Movement for topicalization in (12) is acceptable, contrasting sharply with (7). Movement for relative clause formation (in (13)) and WH-movement to an embedded Comp (in (11)) are judged as marginally acceptable, and improved over the corresponding expressions with a sentence-final IF-clause, (8) and (6). Only WH-movement for question formation (in (10), compared to (5)) is unchanged in its (un)acceptability as a result of the position of the IF-clause.

- (9) ✓ If Michelle buys Rich's sports car, her insurance premium will increase
- (10) * Which car₁ , if Michelle buys t₁ , will her insurance premium increase?
- (11) ?* I wonder which car₁ if Michelle buys t₁ , her insurance premium will increase
- (12) ✓ Rich's sports car₁ , if Michelle buys t₁ , her insurance premium will increase
- (13) ?? This is [the kind of car]₁ that if Michelle buys t₁ , her insurance premium will increase

1.2 Conditionals Embedded Under Stance Predicates

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. Etxepare proposes the projection F is present in a derivation when a Stance predicate (Cattell 1978) is present. His jump to concluding 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.’”

Relevant to the discussion here, Etxepare notes that in Spanish, if a conditional is embedded under a Stance predicate, such as *say*, *believe*, *claim*, or *think*, movement from a sentence-initial IF-clause is readily permitted. His example (49) in Spanish is reproduced here as 0. Note that the corresponding expression with the IF-clause in sentence-final position in (14) is unacceptable.

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?’

(14) *Qué libro crees que Ricardo abandonará la Lingüística
which book believe you that R. give up the Linguistics
 de inmediato si lee t alguna vez
immediately if he reads some time
 ‘Which book do you believe that Ricardo will give up linguistics
 immediately if he ever reads?’

These same facts hold for English. In (15), WH-movement to the matrix Comp for question formation is disallowed, and when the same expression is embedded under a Non-stance predicate as in (16), WH-movement to the matrix Comp results in questionable grammaticality. But when this same expression is embedded under a Stance predicate as in (17), WH-movement from the IF-clause results in an acceptable expression. Regardless of whether the conditional is embedded under a Stance predicate, if the IF-clause is sentence-final, movement out of this IF-clause results in unacceptability, as seen in (18).

- (15) * Which play₁ if the coach sees t₁ then will the Lions will win the game?
 (16) ?? Which play₁ did you speculate/omit/interpret/comment that if the coach sees t₁ then the Lions will win the game ?
 (17) ✓ Which play₁ do you say/believe/claim/think that if the coach sees t₁ then the Lions will win the game ?
 (18) * Which play₁ do you say/believe/claim/think that the Lions will win the game if the coach sees t₁ ?

So the facts on extraction out of IF-clauses in English are as follows in (19):

- (19) Characteristics of Extraction from IF-clauses
- 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 or to an embedded Comp is marginally acceptable.
 - d. Movement out of an IF-clause embedded under a stance predicate is allowed.
 - e. Movement out of an IF-clause to check a Topic feature is allowed.

This set of facts is surprising for three reasons. First, extraction from an IF-clause is an apparent violation of the CED and should be disallowed under any circumstances. Secondly, the syntactic position of an IF-clause should have no bearing on its status as an adjunct. It is not clearly apparent why the position of an adjunct should render it more or less porous to extraction. Adjuncts and chains are classically defined (Chomsky 1977, 1981), and are still defined, in such a way that the binding of a WH-variable within an adjunct by a coindexed WH-phrase outside of that adjunct can never obtain. Lastly, 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. The pattern is not readily explained and requires investigation.

Suffice it to say, a principled explanation for the empirical facts in (19) is desired.

2 Sideward Movement

2.1 Getting Out of an Adjunct

The first and most obvious question to ask is, given the soundness of the CED, how is movement out of an adjunct possible? As established by Nunes (1995, 2004) and extended by Hornstein (2001), adjuncts are islands to movement only after they are adjoined. While an eventual adjunct is unadjoined, extraction from this tree is possible via sideward movement. Sideward movement does not throw out the CED; 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.

The operation takes place thusly: In (20)a, L is an eventual adjunct, M is the main clause, and N is a single item from the numeration. The item z can trigger the movement of y . Since L is not yet attached to another tree, this movement is licit and does not violate the CED. The result of the movement of y

to *z* is in (20)b. Next the adjunct *L* adjoins to the main clause *M* (20)c, and lastly the newly created constituent *N* merges with the main clause *M* in (20)d.

Another instantiation of sideward movement is in (21). In this case, we have only *L*, an eventual adjunct, and *M*, the main clause. The item *x* in *L* is sideward moved out and merged to *M* in (21)b. In (21)c, the adjunct *L* can now be adjoined to the main clause *M* without any violation of the CED ensuing.

(20)

- a. *L*: [...*y*...]
 M: [...*x*...]
 N: [*z*]
- b. *L*: [...(*y*)...]
 M: [...*x*...]
 N: [*y* [*z*]]
- c. *M*: [[...(*y*)...] [...*x*...]]
 N: [*y* [*z*]]
- d. *M*: [[[*y* [*z*]] [...(*y*)...] [...*x*...]]]

(21)

- a. *L*: [...*x*...]
 M: [...*y*...]
- b. *L*: [...(*x*)...]
 M: [*x* [...*y*...]]
- c. *L*: [[*x*[...*y*...]] [...(*x*)...]]

2.2 Limiting the Power of the Operation

This solves the original problem of how movement out of an adjunct can be made possible. But the operation of sideward movement as just defined encounters a new problem – overgeneration. Independent of sideward movement, the creation of an adjunct requires that at least two discrete trees may exist in a single derivational space at any time. Imagine a derivation in which a complex adjunct is adjoined to a matrix tree. At some point in the derivation, two trees exist – the first is the matrix tree, and the second is the complex adjunct. When the adjunct is built entirely, it is adjoined to the main tree at the appropriate position and only one tree exists in the derivational workspace.

If there is no sideward movement, movement is constrained by c-command relationships. By introducing an operation like sideward movement, c-command becomes irrelevant. As I have presented the operation of sideward movement so far, any constituent can move anywhere so long as that movement extends a tree. This freedom is undesirable because left unlimited in this way, the operation of sideward movement could render all islands violable. It is then

essential to the theory of sideward movement that appropriate and principled limitations are in place in order to restrict its power. Four such limitations are proposed by Nunes (2004) and enumerated in (22).

(22)

- 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 exactly the pattern of extraction seen in the IF-clauses data in §1.

3 Derivations and Explanations

3.1 Position of the IF-clause Matters Because Movement is *Sideward*

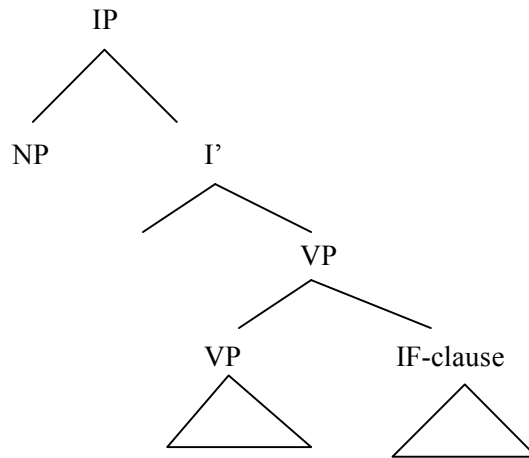
To delve deeper into the explanation for why the position of the IF-clause matters with respect to movement, we must determine the macrostructure of a conditional. The consequent of a conditional is taken to be the matrix clause, since its verb hosts tag questions (see (23)).

(23)

- 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?

Given this, we assume that the IF-clause is an adjunct and need to determine its structural position. Iatridou (1991) provides empirical evidence that a sentence-final IF-clause is contained within the matrix VP, as in (24).

(24)



In the current theoretical framework, this same evidence supports a sentence-final IF-clause being adjoined to VP of the main clause. Iatridou also provides evidence that IF-clauses are base-generated in this position and then A'-move to sentence-initial position, adjoined to IP. First, in (25)-(27), she demonstrates that IF-clauses undergo movement according to the standard tests for A'-movement given by Chomsky (1977). Under bridge verbs, the IF-clause can be construed inside the main VP (25), but, this movement can't violate islands, as seen in (26). Further, this movement must obey the CNPC and the WH-island constraint, as in (27). As a second test for movement, Iatridou gives the full paradigm necessary to determine whether reconstruction of a moved IF-clause occurs, reproduced here in (28)-(33). In each expression, the pronoun must be bound by the quantifier. In (29)b, (31)a, (31)b and (32)b this binding can only occur via QR after reconstruction at LF.

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

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

(27)

a. *If it rains Mary heard the rumor that Bill will come

b. * If it rains Mary wondered whether Bill will come

(28)

a. * His mother₁ gets upset if every boy₁ is late

b. * If every boy₁ is late, his mother₁ gets upset

(29)

a. Every boy₁ gets upset if his mother₁ is late

b. **If his mother₁ is late, every boy₁ gets upset**

- (30)
- a. * John scolds his₁ mother if every boy₁ is late
 - b. * If every boy₁ is late, John scolds his₁ mother
- (31)
- a. **John scolds every woman₁ if her₁ son is late**
 - b. **If her₁ son is late, John scolds every woman₁**
- (32)
- a. Every boy₁ gets upset if John scolds his₁ mother
 - b. **If John scolds his₁ mother, every boy₁ gets upset**
- (33)
- a. * His₁ mother gets upset if John scolds every boy₁
 - b. * If John scolds every boy₁, his₁ mother gets upset

From this evidence, we can conclude that IF-clauses are base-generated within the matrix VP, and then A'-move and adjoin to IP. But this evidence is troubling given the limitations on sideward movement. 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. To illustrate this, we will examine possible derivations of (12), repeated here as (34).

- (34) $\sqrt{\text{Rich's sports car}_1}$, if Michelle buys t_1 , her insurance premium will increase

During the derivation of (34), extraction of the constituent *Rich's sports car* could have happened before the IF-clause was adjoined to the VP, obeying the CED. But at that point in the derivation there would be no position available for *Rich's sports car* to be merged into. As such, the extraction would violate the limitation on sideward movement given in (22)d that no copied constituent can remain in the derivational workspace unused. Another possibility is that the IF-clause was adjoined to VP, and the matrix tree was extended. Eventually, a +Topic feature would be introduced into the derivation and *Rich's sports car* could merge into a position where it could check that feature. But sideward movement of *Rich's sports car* would violate the CED at this point in the derivation. The IF-clause would have already been adjoined within VP, thus making it an island for movement. Worse, by the time the +Topic feature was introduced into the derivation, the IF-clause would have A'-moved and adjoined to IP, a second adjunction. If the first adjunction didn't render the IF-clause an island, the second adjunction definitely would have. In principle, moving out of a constituent in a derived position is disallowed; at the very least moving out of a constituent in a

derived position is more difficult than moving out of a constituent in its base-generated position.

Fortunately, there is a solution. Perhaps the IF-clause in (34) is base-generated in sentence-initial position, and adjoined at IP only. If this were the case, the IF-clause would be built late in the derivation, and extraction of *Rich's sports car* could occur up until the point of adjunction to IP. If this derivation were possible, we would expect evidence of A'-movement to be absent with respect to expressions like (34). (35)-(37) demonstrates that this evidence is, indeed, absent.

- (35) $\sqrt{\text{Rich's sports car}_1}$, if Michelle buys t_1 , Bill believes/said/heard/assumed that her insurance premium will increase
- (36) $\sqrt{\text{Rich's sports car}_1}$, if Michelle buys t_1 , Bill regretted/forgot/resented/recognized that her insurance premium will increase
- (37)
- a. $\sqrt{\text{Rich's sports car}_1}$, if Michelle buys₁ , Bill heard the rumor that her insurance premium will increase
 - b. $\sqrt{\text{Rich's sports car}_1}$, if Michelle buys₁ , Bill wondered whether her insurance premium will increase

We will take this as evidence that when extraction from an IF-clause occurs, the IF-clause must be base-generated in sentence-initial position. This data and explanation does not yet explain why extraction from the sentence-final IF-clause is disallowed; all that has been explained thus far is how extraction from a sentence-initial IF-clause could be allowed. For an explanation of the former to fall out, we need to utilize more of the limitations in (22), as well as develop a more fleshed out derivation of (34).

3.2 Why Extraction From a Sentence-final IF-clause Crashes a Derivation

- (38) 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.
- (39) $K = \{ \text{if, Michelle, buys, Rich, 's, sports car} \}$ CP = IF-clause
 $L = \{ v, \text{ her, insurance premium, increase} \}$ vP
 $M = \{ \textit{Top}, \emptyset \}$ CP = matrix

Extraction from a sentence-final IF-clause as in (34) always results in unacceptability due to the limitation on sideward movement given in (22)a, repeated here as (38). The subnumerations for the derivation of (34) are in (39). The members of the subnumeration K create the IF-clause entirely. The IF-clause must be adjoined to another tree, so the derivation must access another subnumeration in order for another tree to be built. Since a sentence-final IF-clause is adjoined at VP, L is the appropriate subnumeration to access. After the VP is built, the IF-clause may be adjoined to it. But extraction of the constituent *Rich's sports car* must occur before IF-clause is adjoined. This extracted constituent must merge into the specifier position of the item *Top* in subnumeration M. But since *v* has not yet entered the derivation, the subnumeration L is not exhausted yet. The sentence-final IF-clause must be adjoined at VP, but to extract before adjunction at this site will violate limitation (22)a. Additionally, this violation of (22)a will eventually lead to a violation of the limitation in (22)b, which prohibits extending two trees simultaneously in a derivation. As a result, movement out of a sentence-final IF-clause should result in ungrammaticality in all cases. The data in (5)-(8) indicate that this is exactly the result we want.

We have explained why two-thirds of the 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. What remains to be explained is why certain types of movement – topicalization and movement from a sentence embedded under a Stance predicate – is freely permitted, and other kind of movement out of IF clauses is limited.

As we saw in §1, the presence of a Stance predicate is associated with a functional projection F. While Etxepare (2002) proposes that F is realized as a null complementizer in Spanish, the evidence for this is absent in English. We can assume, similar to Uriagereka (1995)'s original proposal, that in English F is a functional projection over IP. Given that this is true, the similarity between conditionals embedded under Stance predicates and conditionals with topicalization is a bit clearer: both include a functional projection above IP within the matrix CP. To better illustrate this similarity, I will walk through Etxepare's proposal step by step of the derivation of 0, a conditional embedded under a Stance predicate in which successful WH-extraction from the IF-clause has occurred. 0 is repeated here as (40) in English for ease of understanding; the only difference between the derivation Etxepare proposes for Spanish and the one here for English is that F⁰ is a null complementizer in Spanish, and simply a functional head in English.

- (40) Which book do you believe that if Ricardo ever reads he will give up linguistics immediately?

The subnumerations for the derivation are as in (41). The trees corresponding to subnumerations L and M are built, as in (42). At this point, *which book* is copied from tree J, and the copy merges into [SpecFP], checking the F feature. Once this operation is complete, the IF-clause can be adjoined to the FP, giving the structure in (43). Now *which book* can eventually move to the matrix [SpecCP] and check the +Q feature. This last movement is also necessary because Form Chain can now apply and the topmost copy will be phonetically realized.

- (41) L = { if, Ricardo, ever, reads, which, book } CP
M = { that, F, he, will, give, up, linguistics, immediately } CP
N = {v, you, do, believe } vP
O = {+Q} CP
- (42) J = [_{CP} if Ricardo ever reads [which book]]
K = [_{FP} F⁰ [_{IP} he will give up linguistics immediately]]
- (43) [_{FP}[_{CP} if Ricardo ever reads [~~which book~~]] [_{FP} [which book] F⁰ [_{IP} he will give up linguistics immediately]]

For a derivation of an expression involving movement by topicalization, such as (34), the same derivation seen above takes place, except that we replace the functional projection F with Topic. No +Q feature is in this derivation, so the final move of *Rich's sports car* will take place as a Last Resort to satisfy the conditions imposed by the operation Form Chain.

The presence of a functional head merging with IP is therefore critical to any movement out of an IF-clause. If no functional head enters the derivation at this point, the copy of the extracted constituent from the IF-clause will have no position to merge into, and the derivation will crash. It is precisely the presence of the functional head Topic or F that prevents this crash in expressions where extraction from an IF-clause is possible.

To remind ourselves, we saw in examples (10), (11) and (13), repeated here as (44)-(46), that movement from an IF-clause when moving to an embedded Comp, for relative clause formation, and for WH-question formation are not acceptable. This is explained by this data, because these derivations provide no functional head that can merge with IP and create a Spec that the extracted constituent can merge into. Whereas the C⁰ where the +Q feature will sit is available in the subnumeration to merge with IP, eventually in the derivation the IF-clause would have to adjoin to CP, a disallowed operation (Chomsky 1986). Thus, extraction from an IF-clause in expressions like (44)-(46) results in a crashing derivation.

- (44) * Which car₁ , if Michelle buys t₁ , will her insurance premium increase?
 (45) ?* I wonder which car₁ if Michelle buys t₁ , her insurance premium will increase
 (46) ?? This is [the kind of car]₁ that if Michelle buys t₁ , her insurance premium will increase

4 Conclusion

In this paper, I have demonstrated that movement out of IF-clauses is permitted, and that 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.

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