

# *The Coordinate Structure Constraint: not a constraint on movement\**

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## **Abstract**

The Coordinate Structure Constraint (CSC) is typically taken to be a constraint on movement prohibiting extraction of, or from, a single conjunct and is used as a movement diagnostic.

This note first mostly merely recapitulates existing work, [Ruys \(1993\)](#), [Fox \(2000\)](#), [Lin \(2001\)](#), [Lin \(2002\)](#), [Johnson \(2009\)](#) on extraction from a conjunct, adding some controls, and a short discussion of movement of a conjunct. These works demonstrate that both A and A-bar overt or covert movement can systematically violate the CSC under the right conditions and suggest instead that that part of the CSC should be viewed as a constraint on interpretation. This allows movement to violate the CSC, as long as the output (at LF) is interpretively well formed. It next adds a short discussion of movement of a conjunct - reported to be allowed in some languages displaying a first conjunct/other conjuncts asymmetry - concluding that covert movement cannot violate that portion of the CSC either.

It next briefly discusses some consequences regarding binding, control theory, clitic doubling and unification approaches.

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## Contents

|          |   |           |
|----------|---|-----------|
| <b>1</b> | <b>Introduction</b>   | <b>3</b>  |
| <b>2</b> | <b>Background</b>   | <b>4</b>  |
| 2.1      | Islandhood and Movement . . . . .                                     | 4         |
| 2.2      | The Coordinate Structure Constraint . . . . .                         | 5         |
| <b>3</b> | <b>Movement Violations of the CSC</b>                                 | <b>6</b>  |
| 3.1      | The A-bar movement case: Ruys (1993), Fox (2000) . . . . .            | 6         |
| 3.1.1    | Wh-movement violations of the CSC . . . . .                           | 6         |
| 3.1.2    | QR violations of the CSC . . . . .                                    | 8         |
| 3.1.3    | A short note about some other cases . . . . .                         | 9         |
| 3.2      | The A-movement case: Lin (2001), Lin (2002), Johnson (2017) . . . . . | 9         |
| <b>4</b> | <b>How to formulate the CSC</b>                                       | <b>10</b> |
| <b>5</b> | <b>The Conjunct Constraint</b>  | <b>14</b> |
| <b>6</b> | <b>Consequences</b>   | <b>16</b> |

## 1 Introduction

A still common assumption about the Coordinate Structure Constraint (CSC) much relied upon in the literature is exemplified by quotes various recent works. For example, [Bruening \(2021, p. 429, 430\)](#) discussing movement approaches to Condition A, here a case of *herself* in a coordination,<sup>1</sup> states:

In movement theories, then, (some part of) *herself* in such examples must move. However, coordinate structures constitute islands to movement. Movement should not be possible from just one conjunct of a coordinate structure.

...

However, the fact is that all movement processes that have been identified are unable to move a single conjunct out of a coordinated phrase.

The same argument could be leveled against the movement theory of control, given the following acceptable examples in English and French:

- (1) Mary (both) wants [[ PRO to win ] and [ John to lose ]]  
 Mary veut (à la fois) [[ PRO gagner ] et [ que Pierre perde ]]

Such reasoning is far from isolated. Other recent examples are illustrated e.g. in [Paparounas and Salzmann \(2023, p. 1\)](#):

We investigate the syntax of the hitherto understudied phenomenon of first conjunct clitic doubling, with reference to Modern Greek. We argue that it provides crucial evidence against movement-based approaches to clitic doubling, which would incorrectly rule out first conjunct clitic doubling as a violation of the Coordinate Structure Constraint.

Similarly, [Angelopoulos and Sportiche \(2021, p.1014\)](#) too appeals to the CSC as a constraint on clitic movement itself when discussing BigDP approaches to the distribution of clitics:

These Coordinate Structure Constraint violations thus raise a very serious challenge to the assumption that clitics move to their surface position from inside a big DP structure.

Or in [Messick and Raghotham \(2023, p.18\)](#):

The fact that we can have the case-copying reflexive inside a coordination without inducing a violation of the CSC suggests that movement is not involved in the dependency between the reflexive and its antecedent.

There is however a substantial body of work, [Ruys \(1993\)](#), [Fox \(2000\)](#), [Lin \(2001\)](#), [Lin \(2002\)](#), [Johnson \(2017\)](#), showing that the Coordinate Structure Constraint (CSC) is not a constraint on movement but a constraint on interpretation. But this work is scattered across several publications, different authors and many years, with different agenda (QR, wh-in situ

<sup>1</sup> [Bruening \(2021\)](#)'s example, *The queen invited the baron and herself to tea* is not controlled for the exempt status of the anaphor. [Bruening \(2021\)](#) asserts that because a pronoun in place of the reflexive triggers a Condition B effect, the anaphor must be (able to be) non exempt. But this assertion is not justified and is false under certain approaches to Condition A and B (e.g. [Reinhart and Reuland, 1993](#), and descendants). So this example is not telling. However, there are examples with inanimates circumventing this confound, to wit *The MOMA sells pictures of its collection and pictures of itself*.

interpretation, Gapping...), where there is no general discussions about movement and the CSC: some work concentrate on QR or wh-in-situ (to understand scope shifting operations or the interpretation of indefinites), others with instances of A-movement (to understand how Gapping functions). As a consequence, the general results are not visible, as evidenced by the quotes above.

I will summarize this work mostly dealing with extraction from inside a conjunct, outline a formulation of the CSC as a constraint on interpretation, provide a short additional discussion of extraction of a full conjunct also showing that the constraint is an interpretive constraint, and briefly return to the impact of this formulation as a constraint on interpretation on the analysis of Binding, Control or clitic doubling, showing that the above arguments have no force.

## 2 Background

### 2.1 Islandhood and Movement

There are two (relevant) kinds of XP/XP Dependencies between a structurally high  $\alpha$  and a structurally low  $\beta$ :

- (2) Binding of  $\beta$  by  $\alpha$ :  
Nobody $_{\alpha}$  thinks that (I believe that) you saw him $_{\beta}$
- (3) Movement from  $\beta$  to  $\alpha$  (e.g. question or relative clause formation, topicalization):
  - a. Who $_{\alpha}$  does nobody think that (I believe that) you saw $_{\beta}$
  - b. The woman who $_{\alpha}$  nobody thinks that (I believe that) you saw $_{\beta}$
  - c. This woman $_{\alpha}$ , nobody thinks that (I believe that) you saw $_{\beta}$

Binding and Movement are analyzed as having properties in common such as c-command of  $\beta$  by  $\alpha$ ) and properties not in common such as Island sensitivity. Movement only is assumed to be island sensitive: there cannot be any island boundary between  $\beta$  and  $\alpha$  (where the latter is the most local binder of the former):

- (4) Movement and Islandhood : \*  $\alpha \dots [_{islandboundary} \dots \beta$   
if  $\alpha$  locally binds  $\beta$  as its immediate trace (i.e. one step movement).

But how do we evaluate whether (4) is correct? To do so, we must have an independent characterization of movement dependencies and check whether such so characterized dependencies obey islands.

However movement is defined, say Rmerge,<sup>2</sup> to evaluate the truth of (4), we must find a reliable way to detect all and only Rmerge cases.

One property of movement is Displaced interpretation, aka Reconstruction / Connectivity, namely the possibility in an  $\alpha/\beta$  dependency for  $\alpha$  to semantically behave as if it was structurally located where  $\beta$  is. This property is reliable. Why?

Firstly it is natural: given how first Merge functions, when first merged, a contentive  $\alpha$  must enter into a function argument relation with some local element. It is not surprising therefore than when Rmerged, it should continue behaving as such semantically, that is as if it were in the position  $\beta$  (e.g. for binding and scope).

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<sup>2</sup> Movement is defined as Rmerge: an element first merged in some position Q is rmerged in some position P c-commanding Q. However, new questions arise in the context of Chomsky (2021), which separates Internal Merge from "Form Copy", which are beyond the scope of this note.

Secondly, reconstruction is reliable: in all the standard/agreed upon cases of movement and non movement, if movement has taken place, reconstruction is available (see Sportiche 2017). This can be used as a diagnostic.<sup>3</sup>

Thirdly, the precise properties of reconstruction and how it correlates with movement is predictable: it is possible to construct a theory of how movement functions that predicts this correlation: Sportiche (2016) shows it follows from:

- Movement being the case of a single syntactic object having more than one structural address (=more than one occurrence).
- The Full Interpretation Principle applying to syntactic objects (not occurrences), implying that as long as one occurrence is interpreted, this principle is satisfied (thus licensing ‘total reconstruction’).
- Semantic compositional rules only composing sisters.

There are other movement diagnostic tools briefly discussed e.g. in Sportiche (2020, appendix), the application of which would be compatible with using reconstructability. Using reconstructability, Sportiche (2020) shows that some movement - namely French Clitic Left Dislocation - can violate (strong) islands. This illustrates the general point that the \*kind\* of movement involved matters when evaluating the scope of (4). And therefore, this means that some care must be taken using islandhood as a test for movementhood. Licitly being an island violating dependency does not mean not being movement.

## 2.2 The Coordinate Structure Constraint

The CSC, like many other island constraints, is formulated as a constraint on movement, blocking movement dependencies between inside and outside of these islands. Following Ross (1967, Ch.4:(84))’s first formulation, this is typically interpreted as applying universally, to all movements. This formulation must be amended due to a known exception to the CSC: the case of Across-the-Board extraction (ATB, cf. Williams (1977), Williams (1978)). Here is an amended version adapted from Mayr and Schmitt (2017):

- (5) The Coordinate Structure Constraint: In a coordinate structure,
- a. CSCa: no element contained in a coordinate may be moved out of that coordinate unless it moves from all coordinates,
  - b. CSCb: nor may any coordinate be moved.

These two clauses noted here CSCa and CSCb are distinct and are sometimes named differently, for example: the Conjunct Constraint, a ban on movement of a conjunct for CSCb, and the Element Constraint, a ban on movement out of the conjuncts for CSCa (cf., Grosu 1973, Pollard and Sag 1994 which show they are independent from each other). We will begin with a discussion of CSCa (5a), the Element Constraint. We return to a brief discussion of CSCb (5b) in section 5. Clause CSCa (5a) yields the following, with the first sentence ill formed as a CSC violation and the second well formed by ATB extraction:

- (6) a. \*The people which<sub>i</sub> Henry [<sub>VP</sub> wanted to meet t<sub>i</sub> ] and [<sub>VP</sub> met friends of Bill] left

<sup>3</sup> Note that movement does entail the possibility of **total** reconstruction as movement may be an intrinsic scope shifting rule. Conversely, apart possibly from certain copular constructions which have special semantic properties (because of the verb *be*), cf. Sharvit, 1999, if reconstruction is available, movement is deemed to have taken place. This implication - if reconstruction then movement - is sometimes questioned, see e.g. Keine and Poole (2018), but, for reasons beyond the scope of this note, unconvincingly in my view.

- b. The people which<sub>i</sub> Henry [<sub>VP</sub> wanted to meet t<sub>i</sub> ] and [<sub>VP</sub> met friends of t<sub>i</sub> ] left

Given the conclusion of the previous section, one should be careful about generalizing from the typical constructions used to illustrate the CSC - typically relative clause or question formation - to other kinds of dependencies, e.g. other A-bar movement dependencies, A-movement dependencies.

And indeed, investigating what happens more systematically will lead to the conclusion that in fact, (non ATB) movement can licitly violate the CSC, as long as the CSC is not violated at LF, as Ruys (1993) concludes.

### 3 Movement Violations of the CSC

#### 3.1 The A-bar movement case: Ruys (1993), Fox (2000)

Ruys (1993) and Fox (2000) primarily discusses QR and provides arguments that it is best analyzed as a (covert) movement rule, and that the CSC is not a constraint on movement but a constraint holding at LF.

##### 3.1.1 Wh-movement violations of the CSC

The kind of QR examples Ruys discusses can be adapted to overt wh-movement. Consider the following contrasts (both in French reflecting my own and others's judgments, and English):

- (7) Which author<sub>m</sub> didn't you want to study t<sub>m</sub> nor read ...  
 Quel auteur<sub>m</sub> ne voulais tu pas étudier t<sub>m</sub> ni lire ...
- a. \*Montesquieu's essays  
    \*les essais de Montesquieu
  - b. his<sub>✓?m,\*p</sub> novels  
    ses<sub>✓?m,\*p</sub> romans
  - c. any of his<sub>✓?m,\*p</sub> novels  
    aucun de ses<sub>✓?m,\*p</sub> romans
  - d. anything that            was said about him<sub>✓?m,\*p</sub>  
    quoi que ce soi qu'on ait dit de lui<sub>✓?m,\*p</sub>
  - e. the other authors who knew him<sub>✓?m,\*p</sub>  
    les autres auteurs qui le connaissait<sub>✓?m,\*p</sub>

(a) is a straight CSC violation. All others are much better than (a), even perfectly acceptable for some, as long as the pronoun they contain is understood as bound by the wh-phrase (else they are ill formed).<sup>4</sup>

How are these facts compatible with the CSC as a constraint of movement? First all these sentences involve movement from one conjunct at least, namely the first one. The reason is that in each of these first conjuncts, there is a gap in a position that is only licensed via movement. Now, no CSC violation would occur if we could analyze the acceptable

<sup>4</sup> Note that these examples violate the 'Parallelism Constraint on Operator Binding' proposed in (Safir, 1984, p. 607, (6)). Safir does provide an example (p. 610, (15a)) of such a violation with coordination, but with the resumptive pronoun in the first conjunct and the gap in the second conjunct. These are degraded as compared to the good examples in (7) which needs to be understood. However, what matters to our purpose here is the acceptability of examples in (7).

cases as involving ATB. This would require moving from a position in the second conjunct disallowing a silent trace; and removing the violation, spelling the trace out as a pronoun. I will now discuss below why this is not the case.

Let now us try to assess the feasibility of an analysis of these sentences as involving ATB. We need an independent criterion to decide whether movement from the second conjunct is involved. We can use reconstructability, as discussed in section 2.1 and as did Aoun et al. (2001) for resumption in Lebanese: unsurprisingly, wh-movement does not reconstruct into islands, even in the presence of a resumptive pronoun. To illustrate, consider the putative movement structure involved from the second conjunct say in the (7d) example which would be out without the resumptive pronoun:

- (8) Which author<sub>m</sub> didn't you want to read whatever was said about him<sub>m</sub>  
 Quel auteur<sub>m</sub> ne voulais tu pas lire quoi que ce soit qu'on ait dit de lui<sub>m</sub>

And let us construct a parallel example where we attempt reconstruction (simplifying it somewhat. In (7d), we used negation and an NPI to guarantee that there was embedding. Here this is no longer necessary):

- (9) [Which description of himself<sub>k</sub> ]<sub>m</sub> did you want to read what nobody<sub>k</sub>  
 [Quelle description de lui<sub>k</sub> ]<sub>m</sub> voulais tu lire ce que personne<sub>k</sub>  
 said about it<sub>m</sub>  
 n'en<sub>m</sub> avait dit

Without the portion of *himself/ de lui*, the sentence has the intermediate status of a resumption into an island. With it and *himself/it* intended to be bound by *nobody*, the sentence is unacceptable. We conclude there is no movement originating from the second conjunct in (at least some of) the examples (7) and that they only involve movement from the first conjunct, hence CSC violations: the CSC cannot be constraint on movement.

We take as significant the sharp acceptability contrast between (7a) and (7)b-e. Still these latter examples are not perfect. We expect their status to mirror that found with wh-questions together with resumption in an island position.<sup>5</sup>

<sup>5</sup> We should control for one more, involved, confound. What this example shows is that there can't be movement from below *nobody*. But could there be movement from a position within the second conjunct outside of the island and resumed by the pronoun in the island, as argued in Sportiche (2020)? Sportiche (2020) argues that a preposed wh-phrase is always moved to its position, even in the presence of a resumptive pronoun bound by the wh-phrase, from an intermediate Topic position. If this is right, in the case of a conjoined structure, there must be at least one trace gap somewhere, either outside of the conjunction, or in some conjunct, e.g. the first conjunct (cf. footnote 4). Must there be a trace gap also in the second conjunct? Yes if the CSC is a constraint on movement. To prevent this, it suffices to make the conjuncts small enough so that there is no available Topic position in the second conjunct to extract from. Consider the following contrast:

- (i) \*Who<sub>m</sub> did you see pictures [[ of t<sub>m</sub> ] and [of John's mother]]  
 (ii) Who<sub>m</sub> did you see pictures [[ of t<sub>m</sub> ] and [of his<sub>✓?m,\*p</sub> mother]]

Here the conjuncts are too small to host an island external Topic position in the second conjunct. Yet we observe the contrast between a standard CSC violation in (i) and the milder resumptive case in (ii). If a trace gap is indeed required in resumption cases, that it is not required in the second conjunct suffices to reinforce the point under discussion, namely that the CSC is not a constraint on movement.

### 3.1.2 QR violations of the CSC

Ruys (1993) and Fox (2000) primarily<sup>6</sup> discuss QR, the mechanism for (some) scope assignment modeled as a movement rule.

First, QR is a type of A-bar movement. This is shown in Johnson and Tomioka (1998) which assimilates it to a kind of A-bar scrambling, and is supported by the analysis of Tiedeman’s puzzle in Fox (2002, p.77), showing that QR can, under the right circumstances, escape tensed clauses from object position.

Next, it can be shown that QR obeys the CSC.<sup>7</sup> However, since Ruys (1993), how inverse scope (object outscoping subject) is supposed to function has evolved (see e.g. Fox, 2000) in a way that many classic examples used to show that QR obeys the CSC are confounded. This is discussed in Spector and Sportiche (2013), which provides non confounded cases illustrating the sensitivity of QR to the CSC (see op. cit, for why). Consider:

- (10) If at least one witness heard every robber come in...

This clearly can have an inverse scope reading, namely: ‘if it is the case that for every robber, there is at least one witness (possibly different for each robber) who heard this robber come in, ...’. Now consider (11):

- (11) a. If at least one witness heard [[every robber come in] and [a guard snore]], ...  
 b. If at least one witness heard [[a guard snore] and [every robber come in]], ...

Here, in the absence of the CSC, an inverse-scope reading is predicted to be available, just as it is for (10). This reading would result from an LF in which the matrix subject *at least one witness* has been reconstructed to its VP-internal subject position and the subject of the first conjunct (*every robber*) has QR-ed to the edge of the matrix VP. This reading could be paraphrased as ‘If, for every robber, there is at least one witness (possibly a different one for each robber) and there is a guard (possibly a different one for each robber) such that this witness heard this robber come in and this guard snore, ...’. But this reading is clearly not available, which can thus be reasonably attributed to the CSC.

Now the the type of examples discussed by Ruys (1993) and Fox (2000) bearing on the CSC are as follows:

- (12) a. a different student admires every professor and hates the Dean  
 b. a different student<sub>m</sub> admires every professor<sub>k</sub> and wants him<sub>k</sub> to be on his<sub>m</sub> committee

In the first example, the object of the first conjunct cannot outscope the subject:<sup>8</sup> the choice of student cannot covary with the choice of professor. But in the second this is possible if this object binds a pronoun. In order for this binding to be allowed, this object must outscope the conjunction *and* so as to have the pronoun in its scope, and therefore violate the CSC.

Why is this allowed? It should be clear that the structure of such examples is parallel to the wh-movement cases discussed in the previous section. Intuitively, we return to this in section 4, violating the CSC in the first example would violate the ban on vacuous quantification in the second conjunct since the universal quantifier has nothing to bind in it. But not in

<sup>6</sup> Ruys (1993) also discusses wh-in situ, which shows the same behavior as QR.

<sup>7</sup> This is unexpected under a view such as Barker (2022), which suggests treating scope shifting via ‘continuations’, essentially an unbounded version of QR.

<sup>8</sup> This is not a CSC effect. See Spector and Sportiche (2013) as to why.



the second example, given the presence of the pronoun.

A covert ATB analysis of such cases is implausible. If QR is analyzed as covert movement, there is no option to leave a resumptive pronoun as trace. If QR is analyzed as covert overt movement, that is as overt movement with the trace being spelled out instead of the highest occurrence, a copy of the quantifier would be expected in the locus of the resumptive pronoun or, implausibly, that the quantifier is somehow spelled out as a pronoun at PF. This is made even more implausible by the existence of examples with a pronoun in the second conjunct deeply embedded inside an island (here a possessive inside a reduced relative), making a movement analysis unavailable given the locality constraints on QR-ing quantifiers like *every*.

- (13) a different student admires every professor<sub>k</sub> and tries to attend [all the lectures discussing his<sub>k</sub> work]

Lastly, it can be shown that there is no reconstruction of the QRed phrase into the second conjunct. Consider:

- (14) a. a different critic commented on [every portrait of Rothko<sub>k</sub>]<sub>m</sub> and wanted him<sub>k</sub> to comment on it<sub>m</sub>  
 b. a different critic commented on [every portrait of Rothko<sub>k</sub>]<sub>m</sub> and wanted **him<sub>k</sub>** to comment on [every portrait of **Rothko<sub>k</sub>**]<sub>m</sub>

We can understand the (a) example as meaning that for every portrait of Rothko, a different critic commented on it and wanted Rothko to comment on this painting. If there was ATB from the resumptive position, we would (given that QR is not A-movement, cf. e.g. [Johnson and Tomioka \(1998\)](#), [Fox \(2002\)](#)) erroneously it turns out, expect a condition C violation as shown in red in (b).

### 3.1.3 A short note about some other cases

Overt violations of the CSC are also reported in other configurations. For example, such violations are reported in German and discussed in [Johnson \(2002\)](#) (and analyzed in a way similar to some of the A-movement CSC violations discussed in section 3.2) and in [Mayr and Schmitt \(2017\)](#). Similarly, overt violations have long been reported in South Slavic (cf. [Arsenijević et al., 2020](#), and references therein) to some of which we briefly return below in section 5.

Additional work, possibly more radical in its implications that I do not discuss here, argues that (covert) QR violations of the CSC occur in cases of ‘telescoping’ in which certain quantifiers seem to bind across conjunctions, disjunction and even sentence boundaries, see [Keshet \(2008\)](#).

How to analyze these cases is still controversial. They seem consistent with what is concluded in section 4, but only further research can determine if they truly are.

## 3.2 The A-movement case: [Lin \(2001\)](#), [Lin \(2002\)](#), [Johnson \(2017\)](#)

Clear cases of A-movement violating the Coordinate Structure Constraint are found with Gapping constructions. This is discussed in various works of Kyle Johnson’s since the early 1990’s, see [Johnson \(2017\)](#) for a summary, as well as in [Lin \(2001\)](#), [Lin \(2002\)](#), which, adopting the view in [Ruys \(1993\)](#) and [Fox \(2000\)](#) concludes that the CSC is an interpretive

constraint. Here is one case illustrating these violations (and a couple more are discussed below in section 4).

Consider the following from [Johnson \(2017, \(88\)-\(90\)\)](#):

- (15) a. X can be true and Y be false  
       (i) because they are logically independent  
       (ii) #but X can't be true if Y is false.  
       b. It's possible for X to be true and Y to be false (because they are logically independent).  
       c. X can be true and Y can be false (but X can't be true if Y is false).  
           *compare*  
           # It's possible for X to be true and Y to be false but X can't be true if Y is false.

(15a) is unambiguous in a surprising way: it must mean that it is possible both for X to be true and Y to be false. More precisely, (15a) can express what (15b) does, and is therefore compatible with the continuation in (15a-i). This is the interpretation that arises if *can* outscopes *and*. But (15a) can't express what (15c) does, and is therefore, unlike (15c), incompatible with the continuation in (15a-ii). This means that the modal *can* must have scope over the conjunct in cases like (15a) (see [Johnson, 2017](#) for a discussion of when this arises).

What kind of syntax gives rise to this pattern? The syntax in (16a) below with clausal coordination would give the wrong result since it would allow the interpretation in (15c).

- (16) a. X can be true and Y ~~can~~ be false  
       b. X<sub>k</sub> can [ [ be t<sub>k</sub> true] and [ Y be false] ]

The syntax in (16b) - the small conjunct analysis - correctly yields only the right one and is thus widely adopted (e.g. by [Siegel, 1984](#) in essence, [Coppock, 2001](#), [Lin, 2002](#), [Johnson, 2017](#), [Potter et al., 2017](#), [Hirsch, 2017](#)). But this requires A-movement to be able to violate the CSC.

Before concluding this section, note that another conceivable derivation not violating the CSC is not available. This derivation for an analog of (15a), would take the following form:

- (17) This<sub>k</sub> can't be t<sub>k</sub> true and that<sub>m</sub> ~~can~~ be t<sub>m</sub> false

It would involve coordination of two full clauses, with raising to subject in both conjuncts and require mandatory total reconstruction in both. Of course why total reconstruction would be required would have to somehow be derived. But such an approach runs into problems because total reconstruction of a raised subject is in fact not required. This is discussed in the next section, see examples (25) and (27).

## 4 How to formulate the CSC

The CSC clearly does not block movement itself, neither in the A-bar movement case, not in the A movement case but seems instead to constrain the output of movement, as [Ruys \(1993\)](#) had concluded. How should it be formulated? The discussion in this section is limited to CSCa (5a): extraction from within a conjunct.

[Fox \(2000, chap 2, \(57\)\)](#) adopts the following which would be consistent with the observed

data on wh-movement and QR:

- (18) a. Extraction out of a coordinate structure is possible only when the structure consists of two independent substructures, each composed of one the coordinates together with material above it up to the landing site (henceforth, *component structures*).
- b. Grammatical constraints are checked independently in each of the component structures.

It would apply as follows. In a licit, ATB movement case, each component is well formed.

- (19) ATB WH-movement
- a. ✓ Which poet<sub>k</sub> did you [ [ read t<sub>k</sub>] and [ love t<sub>k</sub>] ]?  
Component Structures:
- b. ✓ Which poet<sub>k</sub> did you [ read t<sub>k</sub>]?  
c. ✓ Which poet<sub>k</sub> did you [ love t<sub>k</sub>]?

In an illicit non ATB movement case, one component is ill formed, ruled out by the independent general principle in (21):

- (20) Non-ATB WH-movement
- a. \*Which poet<sub>k</sub> did you [ [ read t<sub>k</sub>] and [ love William Blake] ]?  
Component Structures:
- b. ✓ Which poet<sub>k</sub> did you [ read t<sub>k</sub>]?  
c. \*Which poet<sub>k</sub> did you [ love William Blake]?

- (21) Vacuous quantification is banned

In a licit non ATB movement case, with a bound pronoun, there is no vacuous quantification.

- (22) Non-ATB WH-movement
- a. ✓ Which poet<sub>k</sub> did you [ [ read t<sub>k</sub>] and [ love all of his<sub>k</sub> poems ] ]?  
Component Structures:
- b. ✓ Which poet<sub>k</sub> did you [ read t<sub>k</sub>]?  
c. ✓ Which poet<sub>k</sub> did you [ love all of his<sub>k</sub> poems ]?

To derive the right result here, we must make a bit more precise what is meant by ‘grammatical constraints’ in (18). Indeed (22c) on its own is less acceptable than (22a). A natural idea is to restrict them to LF relevant constraints, that is interpretive constraints. This is in part independently warranted (see below example (41) showing that agreement mismatch does not matter). From this point of view, (22c) is well formed but degraded for other non interpretive reasons.<sup>9</sup> As Lin (2002), proposes, this applies to the A-movement case just discussed. Accordingly, an example like (16b) or (23) below would be well formed provided that the subject *Bill* totally reconstructs in its trace position as in (23a), yielding the two components (23a-i) and (23a-ii), each interpretively well formed:<sup>10</sup>

<sup>9</sup> That is whatever governs the availability of resumptive pronouns, for example, competition with alternatives lacking a resumptive, which would be responsible for why a pronoun in the trace position in the second conjunct of (19a) is perceived as somewhat deviant.

<sup>10</sup> As Lin (2002) notes, total reconstruction of *Bill* seems to contradict Fox’s 2000 Scope Economy condition barring vacuous scope shifting operation. This could be taken to mean that scope independent elements such as proper names do not fall under Scope Economy.

- (23) Bill<sub>k</sub> can't [ [ be t<sub>k</sub> right] and [ Tom be wrong] ]  
 a. can't [ [ be Bill<sub>k</sub> right] and [ Tom be wrong] ]  
   (i) can't [ be Bill<sub>k</sub> right]  
   (ii) can't [ Tom be wrong]  
 b. Bill<sub>k</sub> can't [ [ be t<sub>k</sub> right] and [ Tom be wrong] ]  
   (i) Bill<sub>k</sub> can't [ be t<sub>k</sub> right]  
   (ii) Bill<sub>k</sub> can't [ Y be wrong]

Failing to totally reconstruct the subject Bill in its trace position as in (23b) would yield the two components (23b-i) and (23b-ii), the former interpretively ill formed (Bill not being the argument of anything). As Lin (2002) remarks this makes two correct predictions. First, the following sentence is ambiguous, but its gapping counterpart is not:

- (24) a. Many drummers can't leave on Friday  
 b. Many drummers can't leave on Friday, and many guitarists arrive on Saturday

The ambiguity of (24a) arise because the subject may either scope over or under the negated modal. If the subject outscopes the modal, the sentence means that for many different individual drummers, it's the case that they are unable to leave on Friday. If the subject is interpreted below the negated modal, this yields: it is not possible that a large group of drummers leave on Friday.

The above account correctly predict that only this second reading is available in (24b), where *many drummers* reconstructs under the negated modal.

That non ATB movement from the first conjunct is allowed when there is a bound pronoun in the second, hence without vacuous quantification, takes care of examples inspired by McCawley (1993, p.248, (15a)) and his discussion, and also discussed in Lin (2002, p.73(23)). Note first that the well known well-formedness of *Noone<sub>k</sub>'s mother scolded him<sub>k</sub>*, shows that a possessor can scope like its DP container.

- (25) No one<sub>k</sub>'s duck will [ [t be moist enough] or [his<sub>k</sub> mussels be tender enough] ]  
 a. No one<sub>k</sub> will [t<sub>k</sub>'duck be moist enough]  
 b. No one<sub>k</sub> will [his<sub>k</sub> mussels be tender enough]

The remarkable fact here is that the QP *no one'* in the first conjunct is able to bind the pronoun *his* in the second conjunct. First, this means, again, that we cannot be dealing with two coordinated full clauses (with ellipsis), since, as McCawley notes, the following sentence is ill formed as the pronoun is not in the scope of the quantifier:

- (26) \*[No one<sub>k</sub>'s duck will be moist enough] or /and his<sub>i</sub> mussels ~~will~~ be tender enough.

Second, the subject outscopes the coordination as shown in (25): the sentence only means that there is nobody who is such that his duck will be moist enough and his mussels tender enough. This time, this option is predicted to be fine: the two components that such a sentence yields without reconstruction, namely (25a) and (25b), are both interpretively well formed, the QP in each of them binding a variable.<sup>11</sup> This also takes care of the following kind of contrast discussed in Lin (2002, p.74 (35)). Consider first:

<sup>11</sup> Combining the last two types of examples shows that the syntactic structure must be able to be a bit more complex than shown so far. Indeed, consider the French example (which apparently differs from comparable English examples reported in Lin (2002, p.81, (43b))):

- (27) a. No girl<sub>k</sub> will eat a green banana, or any of her<sub>✓<sub>k,\*m</sub></sub> friends drink a pureed one.  
 b. \*No girl will eat a green banana, or any boy drink a pureed one.

In the first example, just like in the case of CSC violations with wh-movement or QR, the possibility for the QP *no girl* to bind the pronoun *her* in the second conjunct allows a CSC violation. As a result, the QP *no girl* can outscope the disjunction and license the NPI *any of her friends* (only if *her* is bound by *no girl*). This yields the following logical form:

- (28) No girl<sub>k</sub> will [ [ t<sub>k</sub> eat a green banana] or [ any of her<sub>✓<sub>k,\*m</sub></sub> friends drink a pureed one]]

In the absence of a bound pronoun in the second disjunct as in (27b), the subject must totally reconstruct into the VP: as a result, the NPI *any boy* is no longer in its scope and is thus unlicensed, yielding deviance. Once again, this contrast is unexpected if we were dealing with a conjunction of clauses.

We may wonder why Fox’s generalization in (18) should hold? Why should each component independently be checked for LF well formedness, at least for the cases we have looked at? Recent work may suggest a natural answer. Schein (2017) and Hirsch (2017) defend in different ways an analysis of at least some cases of symmetric coordination (of the type discussed here) as involving conjunction reduction in the classical sense of taking arguments with (more or less) sentence meanings. As a result, each component must be checked for interpretability because these components are syntactically and semantically present (together with some ellipsis and its effects).

This said, Fox’s generalization is good enough for our purposes here but is too coarse to handle all cases of (even symmetric) coordination. Many more questions arise than can even be hinted at here, regarding coordinations, the relation with plurality, with distributivity, cumulativity and so on (see e.g. Schmitt 2019, Schmitt 2020<sup>12</sup>). A slightly more abstract characterization would take the following form suggested in Johnson (2009) fundamentally limiting it to (29):

(29) Coordinate Structure Constraint

In a string containing a coordination, if binding into one conjunct is required for

- (i) Beaucoup de musiciens ne peuvent pas partir le jeudi et leurs remplaçants n’arriver  
 Many musicians<sub>k</sub> can’t leave on Thursday, and their<sub>k</sub> replacements arrive  
 que le samedi  
 only on Saturday

Given the presence of the pronoun in the second conjunct, reconstruction of *many musicians* under the negated modal should not be required. But this contradicts at least my judgement: the subject must scope under the modal. This shows that the subject must reconstruct below the modal but not so low as not to take the coordinated structure in its scope. This can be resolved if the structure is as below, with an intermediate trace on the spine, outside of the coordinated structure:

- (ii) Many musicians<sub>k</sub> [can’t t<sub>k</sub> [[ t<sub>k</sub> leave on Friday] and [their<sub>k</sub> replacements arrive only on Saturday]]

<sup>12</sup> The relevance of these considerations is illustrated by such examples as: (i) John and Jean were admiring pictures of a black cat<sub>m</sub> and pictures of the dog next to it<sub>m</sub> (ii) Which cat<sub>m</sub> were John and Jean admiring pictures of t<sub>m</sub> and pictures of the dog next to it<sub>m</sub>?

Sentence (i) is true in a context in which John is only admiring pictures of a black cat and Jean is only admiring pictures of the next to the black cat. Sentence (ii) allows this kind of cumulative reading and is not a CSC violation. It is not clear how to get the components needed for Fox’s generalization, namely *Which cat<sub>m</sub> was John admiring pictures of t<sub>m</sub>?* and *Which cat<sub>m</sub> was Jean admiring pictures of the dog next to it<sub>m</sub>?* The formulation in (29) handles this type of sentence straightforwardly.

computing the interpretation, binding into to all conjuncts is required.

For example a moved wh-phrase cannot be interpreted without binding its trace. Then this phrase will have to bind something in each conjuncts. Similarly, since standardly A-moved DP will need to bind its trace to compute its  $\theta$ -role, this DP will have to bind something in each conjuncts. It should be clear that Fox’s formulation is a subcase of this constraint where each components is interpretable by itself, something that is not necessarily the case (and underlies the debates regarding how to treat say conjunction, as Boolean or not).

The idea that the CSC is a constraint on interpretation makes it also apt to handle apparent CSC violations involved in asymmetric coordination (regardless of what the coordinator is, be it *and*, *or*, *etc.*) of the following kind:

- (30) a. How much can you [drink \_ and still stay sober]? (Lakoff (1986, example 2))  
 b. How many lakes can we [destroy \_ and not arouse public antipathy]? (Pollard and Sag (1994, p. 201))  
 c. He regards the limitless abundance of language as its most important property, one that any theory of language [must account for \_ or be discarded]. (Campbell (1982, p. 183))

Indeed, characterizing such cases requires paying attention to the interpretive properties of the constructions. Thus a necessary condition for these type of violations to be allowed is failure of semantic symmetry defined as truth conditional invariance under conjunct permutation (cf. Mayr and Schmitt, 2017, for discussion).<sup>13</sup> Thus the formulation in (29) could be restricted to symmetric coordination, precisely because it’s very symmetry is at the core of the requirement of ‘equal treatment’ of the conjuncts.

Finally, note that we have not discussed head movement. How to model head movement is controversial. What matters here is whether it could have interpretive effects. If not, it is predicted to be able to always violate the (classical) CSC. If yes, as some authors (e.g. Lechner, 2006, Roberts, 2010, Harizanov and Gribanova, 2019) argue, the prediction of the present account, to be verified, is that these interpretive effects should not arise when head movement violates the (classical) CSC (see below for one possible case).

## 5 The Conjunct Constraint

We now briefly return to clause CSCb in (5b), the Conjunct constraint, prohibiting movement of one of the conjuncts, for example as in:

- (31) a. \*We know the people who<sub>i</sub> Henry wanted to meet [<sub>DP</sub> t<sub>i</sub> ] and [<sub>DP</sub> friends of t<sub>i</sub>/James ]  
 b. \*We know the people who<sub>i</sub> Henry wrote to [<sub>DP</sub> t<sub>i</sub> ] and [<sub>DP</sub> t<sub>i</sub>/James ]  
 c. \*We know the people who<sub>i</sub> Henry wrote to [<sub>DP</sub> t<sub>i</sub>/James ] and [<sub>DP</sub> t<sub>i</sub> ]

In languages like English (or French), this constraint cannot be overtly violated. As shown, extraction of either conjunct is ill formed, and remarkably, ATB extraction does not rescue such sentences from deviance, thus suggesting as previously argued that (5a) and (5b) are distinct constraints. Reportedly, overt violations are fine in some other languages, cf., Oda (2021), and references therein, but only involving extraction of the first conjunct.

<sup>13</sup> That a semantic property is a prerequisite casts doubts on pragmatic, rather than semantic, treatments of the CSC as in Kubota and Lee (2015).

This raises questions as to how CSCb in (5b) applies. First we may ask whether covert movement can violate the (5b) in English or French. The answer is negative. Consider:

- (32) a. Quelqu'un a emprunté au moins deux livres et au moins un magazine...  
 Someone borrowed at least two books and at least one magazines...

It is possible for the subject to outscope the whole conjunction yielding *there is someone who borrowed at least two books and a magazine*. It is also possible for the whole conjunction to outscope the subject yielding *if there are at least two books and at least one magazine such that each of them has been borrowed by someone possibly different for each item*. For example for each of War and Peace, Anna Karenina and Newsweek, there is a different borrower. What is not allowed however is split scope: the first conjunct cannot outscope the subject with the second conjunct remaining in the scope of the subject. If this were possible, it would yield the meaning: *there are two books, such that for each of them x, a different person borrowed x and at least one possibly different magazine*. That is, in a situation where Anna borrowed War and Peace and Newsweek, and Elsa borrowed Anna Karenina and The Economist, this sentence would be judged true if this reading was available. But it is not. This means that at least in English and French, clause CSCb must hold of covert movement, at LF, as well as of overt movement.

Interestingly the covert movement prohibition appears to hold in some Serbian varieties that allow overt violations of CSCb. Thus consider the following examples:

- (33) a. Neko je kupio makar tri knjige i makar sedam filmova  
 Somebody aux buy-past-part at-least 3 books and at-least 7 movies  
 b. ?Makar tri knjige je neko i makar sedam filmova kupio  
 at-least 3 books aux somebody and at least 7 movies buy-past-part  
 'Somebody bought at least three books and at least seven movies.'

We find that the same readings are permitted and excluded as in English and French: The following reading is fine for both example: *somebody > at least 3 books and at least 7 movies*.

And so is this one: *at least 3 books and at least 7 movies > somebody*.

But the 'split scope' reading is not available for either: \* *at least 3 books x are such that there is y who bought x and at least 7 movies*.

Similarly:

- (34) a. Ako Marko neki domaći ili neki ispit ne uradi, pašće godinu  
 if Marko some homework or some exam not does, fail-fut-3sg year  
 b. ?Ako neki domaći Marko ili neki ispit ne uradi, pašće godinu  
 if some homework Marko or some exam not does, fail-fut-3sg year  
 'If Marko doesn't do some of the homework assignments or some of the exams, he will fail the year'.

The following reading is fine for both: *if > some homework or some exam > not*, that is, he has to do all homework and all exams to not fail the year.

So is this one: *if > not > some homework or some exam*, that is, he has to do at least some homework or at least some exam to not fail the year.

But the following 'split scope' reading is not available for either: If there is a homework assignment x, such that Marko doesn't do x or some of the exams, he will fail the year. (i.e., Marko has to do all homework assignments or some of the exams to not fail the year).



Of course, these are preliminary data that would need to be more systematically investigated. But we can tentatively draw the following conclusions on their basis.

1. First, clause CSCb in (5b) holds at LF. This parallels what we concluded for clause CSCa in (5a).
2. Second, since QR of at least these quantifiers (such as *at least*) obey island constraints,<sup>14</sup> and in particular clause CSCa, the overt/covert difference between English and French on the one hand and Serbian (and possibly other South Slavic languages) on the other does not appear to be structural in nature. Rather it seems to be an overt/covert difference of the EPP type: English and French require an overt first conjunct, whereas Serbian tolerates a silent first conjunct.

The most general conclusion is that a first conjunct can always move, but only covertly in English and French. Furthermore, if it moves alone, it must mandatorily totally reconstruct.<sup>15</sup> In effect, South Slavic would exemplify a configuration similar to what is found in Gapping and discussed earlier: overt movement with mandatory total reconstruction. Note finally that no language is reported to allow violations of clause CSCb in (5b) by overtly extracting the second conjunct, a prohibition requiring a different explanation but puzzlingly similar to what is observed with respect to clause CSCa: in the latter, extraction from the second conjunct binding a pronoun inside the first conjunct is ill formed, even if it meets condition (29) and movement is of a kind not triggering Weak Crossover effects.

## 6 Consequences

**Binding:** Some authors (Kayne, 2002, Drummond et al., 2011, Charnavel and Sportiche, 2021, 2022, 2023) have argued that the relation between an anaphor and its antecedent is one of movement of, or from, inside the anaphor. Examine first the case of movement of a constituent smaller than a whole conjunct. If it is movement, it must be allowed to violate the CSC as a constraint on movement:

(35) The Orsay museum<sub>k</sub> sells replicas [ [of the Louvre] ] and [of itself t<sub>k</sub> ] ]

Would a derivation involving movement violate the CSC (5a) as a constraint on interpretation? The answer is negative.

The components given by the formulation of the CSC in (18) would be:

- (36) a. The Orsay museum<sub>k</sub> sells replicas of the Louvre  
 b. The Orsay museum<sub>k</sub> sells replicas of [ itself t<sub>k</sub> ]

Both are well formed. Precisely because such a derivation would involve movement of the DP *the Orsay museum* to a  $\theta$ -position, this DP is able, but, crucially, is not required, to bind anything (unlike in standard A-movement, where binding of a trace is needed to get a

<sup>14</sup> Not all do, or not all do in the same way. *each* is well known to be much freer than *every* or *at least*. As far as I know, why different quantifiers behave differently is not understood.

<sup>15</sup> A covert movement mandatorily reconstructing would differ from no movement at all in its ability to license e.g. agreement in a spec head configuration.



$\theta$ -role).

Consider next the case of movement of an anaphor being a whole conjunct:

- (37) The Orsay museum<sub>k</sub> sells replicas of [ [itself<sub>k</sub> ] and [ the Louvre ] ]  



Whether this violates the CSC, here CSCb, would depend on the particular of the analysis but if movement is required for ‘formal’ reasons only, we would be dealing with covert movement totally reconstructing, which would not violate (5b). This said, anaphors are not restricted to appear as the first conjunct. Inverting *the Louvre* and *itself* above preserves well formedness. If totally reconstructing covert movement of the second conjunct (or more generally of conjuncts that are not first) were prohibited (as it may well be), this would constitute an argument against the assumption that the whole anaphor moves in movement approaches to anaphor binding, but not to movement approaches in general.

Now, some analyses (Anagnostopoulou and Everaert, 1999, Spathas, 2010, Lechner, 2012, Patel-Grosz, 2013, Sauerland, 2013) invoke *self*-movement for reflexive binding, a potential case of head movement, as e.g. in:

- (38) a. John<sub>i</sub> hurt him<sub>i</sub>self →  
 b. John<sub>i</sub> self-hurt him<sub>i</sub>

which affects the meaning of the verb by turning it into a reflexive verb (roughly turning a dyadic  $\lambda x.\lambda y.P(x, y)$  into a monadic  $\lambda x.P(x, x)$ ). This meaning changing movement predicts, wrongly, that such sentences as *The hammer<sub>k</sub> damaged [ the nail and itself<sub>k</sub> ]* should be ill formed as LF violations of the CSC (that is of (5a), as this would be extraction from inside a conjunct). Some assumption must therefore be wrong: one possibility could be that such sentences do not have to involve *self* movement (although this undermines the appeal to such movement in the first place); the other is that *self* movement is simply not an option, as Angelopoulos and Sportiche, 2023 or Sportiche, 2022 conclude.

**Control:** It should be clear that exactly the same reasoning makes Hornstein’s 1999 analysis of Obligatory Control as movement immune to the CSC. Returning to example (1), its components are as given, and both well formed:<sup>16</sup>

- (39) Mary wants [ [ PRO to win ] and [ John to lose ] ]  
  
 a. Mary wants [ PRO to win ]  
 b. Mary wants [ John to lose ]

The CSC is thus not relevant to decide the feasibility of this approach to control.

**Clitic Doubling** Pappas and Salzmann (2023) references a situation in Greek in which a clitic here  $cl_k^1$  doubles the first conjunct of a coordination of direct objects, here DP<sub>1</sub> as below:

- (40) ...  $cl^1$  ... [DP [DP<sub>1</sub> X] and [DP<sub>2</sub> Y] ]

<sup>16</sup> Note incidentally that this is true even if movement completely vacates one of the conjuncts (see footnote ??). This would also hold in the binding case above if, as argue, the reflexive is the trace (as opposed to containing the trace of) of its antecedent.

Would a movement approach to cliticization violate the CSC?

Movement would either be of the clitic alone as in BigDP approaches (where the clitic forms a constituent [cl DP] with the DP it doubles prior to moving), or would involve covert movement of DP<sub>1</sub> to an independently generated cl<sub>k</sub><sup>1</sup> ( Sportiche 1996, Angelopoulos and Sportiche 2021) as in Angelopoulos, 2019. If the clitic has some an interpretive property and does not (or cannot) totally reconstruct, ill formedness would be predicted. If the clitic totally reconstructs at LF (as it could in a BigDP approach), no violation would ensue. Furthermore, Angelopoulos and Sportiche (2021) argues that such clitics in Greek (or in French) do not contribute any semantics: they are probes agreeing with their goals the way T agrees with its goal which means that they are from an interpretive point of view invisible, even with some  $\phi$  features or Case values specified. These would behave like the features on the verb *be* in the following French Gapping case, which translate the English examples (23) with the same interpretation (requiring total reconstruction of the subject). They are well formed despite the mismatch in  $\phi$  features:

- (41) Ces propositions ne peuvent pas être vraies et celle-ci être fausse  
 these propositions can't-3<sup>rd</sup>prs-plural be true and this one be false
- a. ne peuvent pas [ces propositions être vraies]  
 can't-3<sup>rd</sup>prs-plural [these propositions be true]
- b. ne peuvent pas [celle-ci être fausse]  
 can't-3<sup>rd</sup>prs-plural [this one be false]

In sum, under either of these options, there would be no CSC violation.

This means that an argument against movement being involved with Clitic Doubling based on putative CSC violations is not convincing, for now. Nor is the particular argument against big DP approach to the syntax of clitics in Angelopoulos and Sportiche (2021) referenced on page ???. In fact, the observation that such clitic doubling can only target the first conjunct parallels the behavior of overt conjunct movement in South Slavic, which can only target the first conjunct.

Interestingly, Angelopoulos and Sportiche (2021) leaves open the status of Dative clitics, mentioning that they may have interpretive import (e.g. possibly animacy, or inducing affectedness on their associate). If they do, the expectation would that one of the corresponding components in a situation like ?? would be ill-formed. Preliminary consultations with native speakers of Greek suggest this is a correct prediction. This would fall out under the approach in Sportiche (1996); it would also under a BigDP approach if it can be shown that the clitic cannot totally reconstruct.

Two final remarks. First, that movement can violate the CSC has implications for certain formalisms treating coordination, and the CSC in terms of unification of features. To preserve a unification approach, they will have to treat traces (or their equivalent) and bound pronouns in similar ways.

Second, if the CSC can be violated by A-bar or A-movement, deviance appearing to be tied to violations of the CSC by movement alone, if there are some, will raise challenging analytical questions.

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