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On The Coordinate Structure Constraint, Across-the-Board-Movement, Phases, and Labeling

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Abstract: The paper deduces a modified version of the traditional ban on extraction out of conjuncts (CSC) based on the claim that conjuncts are phases which also captures the across-the-board-movement (ATB) exception and a number of additional cases where extraction out of conjuncts is shown to be possible in violation of the CSC (in particular, left-branch extraction in Serbo-Croatian, *r*-pronoun movement in Dutch, V-2 movement in German, clitic doubling in Dutch and Romance, quantifier float in Japanese, article-incorporation in Galician, and object shift in English). Based on these cases the paper shows that the CSC holds only for successive-cyclic movement, as in **Who$_i$ did you see [t_i friends of t_i] and Sue*: elements that are base-generated at the edge of a conjunct, or move there independently of successive-cyclic movement, can extract. It is also shown that ATB can license an additional extraction out of a conjunct in violation of the CSC. The discussion in the paper also leads to establishment of a new type of ATB, where movement out of each conjunct takes place but it is not the same element that is extracted out of each conjunct but different elements. Additionally, the paper shows that unlabeled elements do not count as interveners, a rather natural generalization given the nature of intervention effects, where features of the intervener matter (projecting features requires projecting a label). The discussion in the paper also sheds light on the ban on local wh-movement from SpecTP to SpecCP which is argued to require a return to split IP: it is shown that subjects undergoing wh-movement cannot move to the highest projection in the split IP even when the next step of movement is not SpecCP.

Keywords: across-the-board movement, the Coordinate Structure Constraint, labels, phases, split IP, successive-cyclic movement

1. Introduction

Islandhood has been in the center of theorizing within generative grammar ever since Ross (1967). In spite of numerous works on various islands, one island in particular has resisted a satisfactory account, which holds for both the GB tradition and the Minimalist Program, namely the Coordinate Structure Constraint (CSC). The CSC was traditionally assumed to have two parts, one banning extraction of conjuncts, and the other extraction out of conjuncts. A number of works have, however, shown that the two parts of the CSC should be divorced (see Grosu 1973, Oda 2017, Postal 1998), the main argument being that there are languages which are sensitive to only one part of the CSC (see Oda 2017, Stjepanović 2014, and Bošković 2017). In light of this, I will also separate the two parts of the traditional CSC, focusing on the ban on extraction out of conjuncts, given in (1) and illustrated by (2)-(3). For ease of exposition I will refer to (1) as the CSC.

(1) Extraction out of conjuncts is disallowed.
(2) *Who$_i$ did you see [enemies of t_i] and John?
(3) *Who$_i$ do you think [that Mary likes t_i] and [that Jane hates Peter]?

The CSC in (1) is inextricably connected to the well-known exception involving across-the-board-movement (ATB): Extraction out of a conjunct is possible if it takes place out of each conjunct.

(4) Who$_i$ did you see [friends of t_i] and [enemies of t_i]?

The ATB exception is what makes accounting for the CSC particularly difficult. CSC was a rare island that was not accounted for in the Barriers system (Chomsky 1986). In principle, it appears that accounting for it within that system would have been easy. All that was needed was to assume that

conjuncts are barriers (which in fact they are) and that adjunction to conjuncts is prohibited. However, (4) would then raise a massive problem. Given the cumulative nature of crossing barriers, if (2) is unacceptable because it involves movement that crosses a barrier, (4) should be even worse since it involves two such movements. I suspect that this is the reason why Chomsky (1986) did not attempt to analyze the CSC within the Barriers system. In fact, it appears that the ATB exception is bound to raise its head in any attempt to extend existing accounts of islands to the CSC.[1]

The goal of this paper is to provide an account of the CSC that will also capture in a principled way the ATB exception. Importantly, the account will leave room for extraction out of conjuncts to take place even in the absence of ATB in well-defined contexts, which will be shown to indeed be possible with respect to a variety of constructions, in particular left-branch extraction in Serbo-Croatian (SC), *r*-pronoun movement in Dutch, V-2 movement in German, clitic doubling in Dutch and Romance, quantifier float in Japanese, article-incorporation in Galician, and object shift in English. The proposed analysis will also be shown to account for a semantically conditioned exception to the CSC discussed in Postal (1998). The predictions of the proposed account will also lead to a discovery of a new type of ATB, where movement out of each conjunct takes place but it is not the same element that is extracted out of the conjuncts, as in traditional ATB, but different elements. The account will also have a number of theoretical consequences. It crucially appeals to phases and the labeling approach of Chomsky (2013), which allows unlabeled elements during the derivation. To the extent that it is successful, it will thus provide evidence for the theoretical mechanisms in question. The analysis will also provide an argument for Nunes's (2004) sideward movement approach to ATB (a locality condition on sideward movement will also be established) and for a particular contextual approach to phases (based on the claim that conjuncts are phases). Perhaps the most important theoretical consequence of the analysis proposed in this paper concerns the notion of interveners. It's well-known that traces don't count as interveners (see e.g. Chomsky 1995, Bošković 2011): turning an intervener into a trace voids the intervention effect. This paper will show that it's not just traces that do not count as interveners, but also elements that have a trace at their edge; in other words, turning the edge of an intervener into a trace also voids intervention effects. The paper will show that this otherwise puzzling effect can be captured naturally in the labeling system, which will in turn provide evidence for the labeling system. The intervention-voiding effect in question, to be established below, is given in (5).

(5) Unlabeled elements do not count as interveners.

The labeling system does not merely allow for an easy statement of the effect in question, but also captures it in a very natural way. The notion of intervention is picky, it depends on the nature of the intervener.[2] For Rizzi (1990), this involved the A/A' distinction; recent work generally states it in

[1]A rare exception that analyzes both the CSC and ATB is Takahashi (1994), which can be considered to be a predecessor of the current work. (I am referring here to the spirit of Takahashi's analysis, since its implementation is quite different from the current work; it should be noted that under Takahashi's analysis the CSC is expected to hold only for A'-movement, which is not the case under the analysis presented here). The same holds for Sag's et al (1985) analysis, which, although implemented in a different framework, is even closer to the analysis argued for here in its spirit. We will, however, see that the current analysis predicts extraction out of conjuncts to be possible in violation of the traditional CSC in a number of environments. None of those exceptional extractions are predicted to be possible under Sag et al's (1985) analysis; the analysis argued for here and Sag et al (1985) thus significantly differ empirically.

Still, Sag et al (1985) and Takahashi (1994) are important predecessors of the current work in that, like the account proposed below, they rely on a version of Coordination-of-Likes in their accounts of the CSC. However, as will become obvious during the discussion below, the current work significantly differs from these two works both theoretically (in terms of implementation as well as theoretical consequences of the analysis) and empirically (in terms of the empirical predictions the accounts make and the resulting empirical coverage).

[2]I am putting aside here occasional exceptions noted in the literature, like wh-movement from Romance DPs, which is subject to the poss-agent-theme hierarchy (e.g. Torrego 1987, Ormazabal 1991, Sánchez 1996, Ticio 2003).

terms of featural properties of the interveners. Labeling plays a crucial role here. Consider a case where X and Y merge, and the resulting object ? functions as an intervener. For an intervention effect to occur, either X or Y must have the relevant feature that is involved in the intervention effect and pass this feature to ? by labeling ?. In other words, if X has the relevant feature, then X must project and label ?. What this boils down to is that labeling is necessary for ? to function as an intervener, which means that unlabeled elements should not function as interveners. In other words, since intervention is feature-sensitive, the intervener must have the relevant feature. This is trivially not possible with unlabeled elements (due to the lack of projection in general the relevant feature is not projected either).

Returning to the CSC/ATB, the proposed analysis of the CSC/ATB will also be shown to shed light on the proper analysis of *tough* constructions and the mysterious ban on local wh-movement from SpecTP to SpecCP, which has been attested in a number of languages, by enabling us to become more precise regarding the exact formulation and the nature of this ban.

The gist of the proposed analysis is the following: Conjuncts are phases (Bošković 2017, Oda 2017). As a result, any movement out of a conjunct must proceed via its edge. In Chomsky (2013), successive-cyclic movement via a conjunct edge delabels the conjunct, i.e. it changes its category. The intuition is then that if movement takes place only out of one conjunct, a violation of the Coordination-of-Likes requirement ensues, the violation being remedied if movement takes place out of each conjunct, as with ATB. While the basic idea is quite straightforward, we will see that it has important theoretical and empirical consequences for a number of phenomena and mechanisms. Significantly, we will see that it predicts that in a number of environments (which do not involve ATB) extraction out of conjuncts in violation of the traditional CSC should be possible, which will be shown to be borne out.

The following section will give the background relevant to the proposed account of the CSC. The account of the CSC, as well as the ATB exception and a number of previously unnoticed exceptions to the CSC, will be given in sections 3 and 4. Sections 5 and 6 discuss the phasehood of conjuncts and an intervening factor regarding subject questions, which concerns the ban on SpecTP-to-SpecCP movement. Section 7 discusses intervention effects with extraction out of conjuncts, which will also involve establishing a new type of ATB where ATB involves movement of different elements (it is also shown that this new type of ATB can interact with traditional ATB), as well as establishing the generalization that unlabeled elements do not count as interveners. Section 8 discusses the consequences of the proposed analysis of the CSC for the *tough*-construction. Section 9 establishes another new case where the traditional CSC can be violated, which involves ATB, and section 10 examines an exception to the CSC discussed in Postal (1998).

2. Phases, Labels, and Coordination of Likes

The first ingredient of the account of the CSC proposed below is the theory of phases (Chomsky 2000, 2001), the crucial mechanism here being the Phase-Impenetrability Condition (PIC), which forces movement out of phases to proceed via phasal edges.

The second ingredient is the well-known Coordination-of-Likes requirement (CL), which requires that conjuncts be parallel in their categorial status. (CL goes back to Chomsky 1957; see also Schachter 1977, Williams 1978, Sag et al 1985, Bowers 1993, Beavers and Sag 2004, Chaves 2006, among many others).[3]

The last ingredient ois Chomsky's (2013) approach to labeling, where labeling is not forced as part of Merge hence unlabeled objects are allowed during the derivation (but not in final representations, in

[3]The HPSG references given above are particularly important since they discuss a number of reported counterexamples to CL, showing that CL can be maintained in spite of them. A comprehensive discussion of CL is beyond the scope of this paper. I simply adopt CL and the theory of phases here. To the extent that the account proposed below, which relies on these mechanisms, is successful, it can in fact be interpreted as providing evidence for the mechanisms in question.

contrast to Collins 2002). Chomsky proposes a labeling algorithm where in a case when a head and a phrase merge, the head projects (providing the label for the resulting object). When two non-minimal projections (i.e. phrases) merge, there are two ways to implement projection/labeling: through prominent feature sharing or traces (i.e. movement), traces being ignored for labeling. The former is illustrated by (6): when *which book* merges with interrogative CP in (6), both the wh-phrase and the CP have the Q-feature; what is projected (i.e. determines the label of the resulting object) is the Q-feature. (This is reminiscent of Spec-Head agreement).[4]

(6) I wonder [$_{CP}$ which book$_i$ [$_{C'}$ C [John bought t$_i$]]]

As for phrase-phrase merger that does not involve feature-sharing, Chomsky (2013) crucially assumes that successive cyclic movement does not involve feature sharing (which essentially follows Bošković 1997a, 2002, 2007, 2008). Successive-cyclic movement cases like (7) are then relevant. There is no feature sharing between *that* and the wh-phrase which passes through its edge in (7). Since labeling via feature sharing is not an option the embedded clause cannot be labeled when *what* moves to its edge (as indicated by ? in (8)). When v is merged, *what* moves. The element merged with *that*-CP now being a trace, it is ignored for labeling, hence ? is labeled as CP only after *what* moves.

(7) What$_i$ do you think [$_{CP}$ t'$_i$ [$_{C'}$ that [John bought t$_i$]]]
(8) v [$_{VP}$ think [$_{?}$ what [$_{CP}$ that [John bought t$_i$]]]

The above is in fact the general treatment of successive-cyclic movement in the labeling framework.

3. Deducing the CSC

I will now show that the above mechanisms rather straightforwardly deduce the CSC. Consider (9).

(9) *Who$_i$ did you see [enemies of t$_i$] and John?

Movement out of the first conjunct must proceed successive-cyclically through the edge of the conjunct. As shown in (10), this movement, which involves merger of *who* and the conjunct DP, yields an unlabeled object, as is always the case with successive-cyclic movement. Importantly, as a result of this movement, the two conjuncts now differ in their categorial status: the second conjunct is a DP while the first conjunct is ? (i.e. it's unlabeled). This configuration is ruled out by the Coordination-of-Likes requirement (CL), which requires that conjuncts be parallel in their categorial status (I assume that the requirement applies derivationally, when ConjP is formed, so that it is not affected by later movement outside of ConjP).

(10) [$_{ConjP}$[$_{?}$ who$_i$ [$_{DP}$ enemies of t$_i$]] and [$_{DP}$ John]]

The crucial ingredient of the account is that successive-cyclic movement changes the category of the element it targets in the labeling framework, which leads to a violation of CL in (10).

I will argue below that conjuncts are phases, which naturally follows from the contextual approach to phases (section 5). As a result, the phasal/labeling account of (2) quite generally extends to other cases that have motivated positing (1) in the literature, as the reader can verify for (3). In other words, the analysis deduces the CSC.

[4] Like Chomsky (2013), I will continue using terms SpecCP and CP for cases of this sort for ease of exposition.

Not only does the phasal/labeling system deduce the CSC, it also captures the notorious ATB exception. Consider (11).

(11) Who$_i$ did you see [friends of t_i] and [enemies of t_i]?

Here, successive-cyclic movement takes place to the edge of both conjuncts, delabeling both conjuncts. Since both conjuncts are ? (i.e. unlabeled), the CL requirement is not violated here.[5]

(12) [$_{ConjP}$[$_?$ who$_i$ [$_{DP}$ friends of t_i]] and [$_?$ who$_i$ [$_{DP}$ enemies of t_i]]

The phasal/labeling system thus provides a rather straightforward deduction of the CSC, which also captures the ATB exception. In fact, no additional assumptions are needed in the deduction. Movement out of a conjunct must proceed via the conjunct edge. This delabels the conjunct, yielding a violation of CL unless movement also takes place out of the other conjunct. In that case both conjuncts are delabeled, so that there is no violation of CL.

I emphasize here an important feature of the above account. As noted above, in typical accounts of islands, like Chomsky's (1986) barriers, island violations are cumulative: the more islands are crossed the worse the sentence gets. Treating conjuncts as islands (e.g. as a barrier which cannot be adjoined to in Chomsky 1986) then has the effect that ATB examples like (11) should be twice as bad as CSC violations like (9) since (9) involves one extraction out of a conjunct island and (11) involves two such extractions. The phasal/labeling account, on the other hand, easily captures the ATB improvement.

4. Non-ATB exceptions to the CSC

Deductions of principles often have the effect that they don't fully overlap with the deduced principles in that they allow "violations" of the relevant principles in well-defined configurations. In such cases their success should be evaluated with respect to whether such "violations" are indeed attested.

The current deduction of the CSC in fact predicts that the CSC can be violated in well-defined configurations. Since the deduction is based on movement out of a conjunct delabeling the conjunct it predicts that movement out of a conjunct will be possible if the relevant element is base-generated at the conjunct edge, and is otherwise able to remain there, which indicates that it undergoes feature sharing at the conjunct edge. Movement in violation of the CSC turns out to indeed be possible in this context. One relevant case involves possessor extraction in Serbo-Croatian (SC), which I turn to next.

4.1. CSC-violating extraction of a base-generated Spec: SC possessors

SC possessors have been argued to be base-generated at the edge of the traditional NP (TNP) based on the fact that they can undergo extraction and bind out of their TNP, as shown by (13) (see Bošković 2012, 2014, Despić 2011, 2013, a.o; the binding facts were noted in the latter. Notice also that these possessors undergo agreement in Φ-features and case (i.e. they undergo feature-sharing)).[6]

(13) [Kusturicin$_{i/*j}$ najnoviji film]] ga$_{i/*j}$ je zaista razočarao.
Kusturica's$_{NOM.MASC.SG}$ latest movie$_{NOM.MASC.SG}$ him is really disappointed
'Kusturica's latest movie really disappointed him.' (Despić 2011,2013)

[5]I will return below to the precise implementation of ATB. The reader should bear in mind that CL applies derivationally, when ConjP is formed, which is the stage of the derivation shown in (12).

[6]The precise categorial status of the projection where the possessor is located is not important here. I simply use the neutral term traditional NP, which stands for whatever the highest projection in the nominal domain is here.

SC normally disallows extraction out of conjuncts, as in (14), where the genitive complement of N is extracted. Crucially, such extraction is allowed with possessors, which are base-generated at the TNP edge: they can undergo extraction in violation of (1), as in (15).[7]

(14) *Fizike$_i$ je on [studenta t_i] i [Ivanovu sestru] vidio.
physics$_{GEN}$ is he student$_{ACC}$ and Ivan's$_{ACC}$ sister$_{ACC}$ seen
'He saw a student of physics and Ivan's sister.'

(15) Markovog$_i$ je on [t_i prijatelja] i [Ivanovu sestru] vidio.
Marko's$_{ACC.MASC.SG}$ is he friend$_{ACC.MASC.SG}$ and Ivan's$_{ACC}$ sister$_{ACC}$ seen
'He saw Marko's friend and Ivan's sister.'

In (15), the possessor is base-generated at the conjunct edge, undergoing feature sharing at the conjunct edge, so that the conjunct is labeled (note that I assume that labeling takes place as soon as it is possible, as argued in Bošković 2015, Shlonsky 2015, Rizzi 2016, and Saito 2016).[8] In contrast, in (14) the moving element needs to undergo successive-cyclic movement to the edge of the first conjunct, which delabels the conjunct, yielding a violation of the CL requirement.

What is particularly important for our purposes is that (15) is a counterexample to the traditional CSC since it involves extraction out of a conjunct but its grammaticality is captured under the proposed account of the CSC.

4.2. CSC-violating head-movement: Galician article-incorporation

Under the proposed analysis, a base-generated phasal edge is expected to be able to undergo movement out of a conjunct, in violation of the traditional CSC ban. We have seen above a case which shows that this indeed holds for the Spec of a phase. In this section we will see that this also holds for the head of a phase, as expected given that both are located at the phasal edge. The relevant case concerns article-to-V incorporation in Galician, illustrated by (16), which Uriagereka (1988) shows occurs in the syntax.

(16) Vimo-lo$_j$ [$_{DP}$[$_{D'}$$t_j$ [$_{NP}$ Kremlin]]]
(we)saw-the Kremlin
'We saw the Kremlin.' (Uriagereka 1988)

Importantly, article incorporation is possible out of a conjunct, as in (17).

(17) Vistede-lo$_j$ [$_{DP}$[$_{D'}$ t_j [$_{NP}$ amigo de Xan]]] e-mais [a Diego] onte.
(you)saw-the friend of Xan and Diego yesterday

What is important for our purposes is that movement out of a conjunct does not create a labeling problem for CL here: the conjunct from which article incorporation takes place is labeled as DP before the incorporation, given that when a head and a phrase merge the head projects. As a result, there is no violation of CL here, hence the grammaticality of (17) is captured under the proposed analysis.

It should, however, be noted that Galician (17) differs with respect to the possibility of a CSC violation with head-movement from English (18), which involves T-to-C movement from a conjunct.

[7]In the following, what matters are the relevant contrasts, not the status of individual examples.
[8]Nothing would change if we assume labeling occurs at the phasal level, as in Chomsky (2013), given that the projection where the possessor is located, which is the highest projection in the nominal domain, is a phase (see Bošković 2014).

(18) *Should John buy a car and Peter might sell a house?

Given the above discussion, (18) should not involve a locality violation. In fact, under the proposed analysis, locality can always be satisfied with traditional CSC violations; however, satisfying locality leads to a CL violation. We have seen that there is no CL violation with head movement out of a conjunct in Galician (17), and the same reasoning should extend to (18). I therefore suggest that (18) is ruled out by independent factors.

This is in fact the case under Chomsky's (2008) C-T association analysis, where C and T share features. As noted in Bošković (2016a), this means that when there is a Q-feature in C, as in (18), there is also a Q-feature in T. In other words, we have both Cq and Tq in (18), in fact there has to be a Tq in both conjuncts of (18) since the T of each conjunct is associated with the same C (the assumption here is that finite T must be associated with a C; if the second conjunct is a declarative CP with a null C the problem with the construction would be that it involves coordination of a question and a declarative, which is disallowed, as shown in Schachter 1977). Now, English has a requirement that in matrix clauses Tq must move to Cq: in this context the association requires actual movement. The problem then is that the Tq of the second conjunct did not undergo this movement. In other words, the difference between Galician (17) and English (18) is that the CSC violating head-movement in (17) is in principle optional, which enables us to leave the relevant head in place in one conjunct, moving it only in the other conjunct, while in English (18) the relevant head movement is obligatory: this independently prohibits failing to do it in one conjunct which is in turn necessary to test the possibility of a CSC violation. The reader should therefore bear in mind that the CSC test discussed here with respect to head-movement is conductable only with head-movement that is in principle optional.[9]

4.3. CSC-violating extraction of Specs created by movement: A German puzzle, *r*-pronouns, clitic doubling, numeral constructions in Japanese, and English ECM

The account of the CSC proposed here, which allows extraction out of conjuncts under well-defined conditions, also enables us to explain some otherwise puzzling CSC violations in German. Notice first that the proposed account of (1) extends to Specs created by movement, but crucially only where the relevant element can stay in the Spec in question (i.e. if it moves there independently of successive-cyclic movement), which indicates that it undergoes feature-sharing in that Spec position. In other words, the proposed account of the CSC only blocks successive cyclic movement out of a conjunct, since such movement delabels the conjunct, changing its category (see here Bošković in press for a labeling account of the traditional ban on movement out of moved elements, which allows movement out of moved elements in the same context as the current account of the CSC). This enables us to explain some otherwise puzzling CSC violations in German (see Johnson 2002), in a way which also sheds light on the nature of the SOV order in German. One relevant example is (19).

(19) Die Suppe$_i$ wird der Hans [t_i essen] und [sich hinlegen]

[9] One case to check in this context is C-cliticization in Tagalog. As discussed in Richards (1999), there is optional C-to-V movement in Tagalog embedded clauses (i). If this is the right analysis of (i), we would expect C-to-V movement in (ia) to be able to violate the CSC (it is possible that we are dealing here with different Cs, where one C obligatorily moves to V; this should not interfere with the prediction noted in this footnote unless some kind of parallelism prevents coordination of CPs headed by these different Cs). I do not know whether such CSC violating extraction is indeed possible.

(i) a. Hindi niya sinabi **na** kinain niya ang tambakol.
not he(A) said (TT) C ate he(A) T mackerel
b. Hindi niya sinabi**ng** kinain niya ang tambakol.
not he(A) said (TT):C ate (TT) he(A) T mackerel
'He didn't say that he ate the mackerel.' (Richards 1999:298)

the soup will the Hans eat and self down-lie
'The soup, Hans will eat and lie down.' (Johnson 2002)

(19) is analyzed as in (20b) (only the relevant traces are shown)), with (20a) giving the structure of the first conjunct prior to movement out of ConjP.Assuming movement of the object to SpecvP in German is obligatory due to its SOV nature (Kayne 1994, Zwart 1993), the object does not move to the edge of the vP phase in (20b) for reasons of successive-cyclicity. We are dealing here with regular obligatory movement where the moving element can stay in the position in question, which means the movement in question involves feature-sharing in the moved position, which enables labeling (see (20a)).As a result, this movement doesn't create the labeling problem successive-cyclic movement out of conjuncts creates: while successive-cyclic movement through the edge of a conjunct delabels the conjunct, the movement under consideration does not do that, allowing further movement out of the conjunct.[10]

(20) a. wird der Hans [$_{ConjP}$[$_{vP}$ Die Suppe$_i$ essen [$_{VP}$ t$_i$]] und [$_{vP}$ sich hinlegen]]
will the Hans the soup eat and self down-lie
b. Die Suppe$_i$ wird der Hans [$_{ConjP}$ [$_{vP}$ t$_i$ [$_{v'}$ essen t$_i$]] und [$_{vP}$ sich hinlegen]]

It should be noted that to the extent that it is successful, the above analysis provides evidence for the movement account of the SOV order in German.

Another relevant case concerns PPs and *r*-pronouns in Dutch, which are exceptional in that they must precede the preposition (21), although Dutch adpositions are otherwise always prepositional (22).

(21) a. daar op/von b. *op daar/*von daar
there on/of
(22) a. op/von deze tafel b. *deze tafel op/von
on/of this table

This is standardly analyzed as involving movement of the *r*-pronoun to SpecPP (or a higher position in the extended projection of the preposition). Focusing on *daar op,* since *daar* can stay in that position, and is located in that position when the PP undergoes movement, as in (23), it must be the case that it undergoes feature-sharing with its sister, which makes labeling possible (see Bošković in press).

(23) a. [$_{PP}$ Daar op]$_i$ heb ik boeken t$_i$ gelegd. b. Ik heb boeken [$_{PP}$ daar op] gelegd.
there on have I books put

We are thus dealing here with obligatory movement to SpecPP: the fact that *daar* must move to SpecPP (cf. (21b) and stays in SpecPP (cf. (23)) provides evidence that movement of *da* to SpecPP does not take place for reasons of successive-cyclicity, i.e. it is independent of successive-cyclicity. We then seem to have here another testing case for the current account of the CSC. There is, however, a potential interfering factor. There are strong indepenedent restrictions on P-stranding in Dutch and German which in fact make it impossible to test the CSC with *r*-pronoun movement in German. Thus, den Besten and Webelhuth (1990) and Thiersch (2017) observe that P-stranding in German is possible only if the P is adjacent to the verb or its trace, as illustrated by (24). Since, as we will see in section 6, for independent reasons only extraction from the first conjunct is in principle allowed under the current analysis, this makes it impossible to test extraction of *r*-pronouns out of coordinated PPs in German since the stranded P would not be adjacent to the verb (or its trace).

[10]Since German allows subjects to remain in-situ the second conjunct is also labeled as vP at the point when ConjP is formed, before subject movement.

(24) a. Er hat da$_i$ noch nicht [das Vorwort [t_i von t_i]] gelesen.
he has it yet not the foreword of read
b. Er hat da$_i$ [das Vorwort t_j]$_k$ noch nicht [t_i von t_i]$_j$ t_k gelesen.
he has it the foreword yet not of read
c. *Da$_i$ hat er noch nicht [t_i von] das Vorwort gelesen
d. * Da$_i$ hat er [t_i von] noch nicht das Vorwort gelesen
e. [$_{VP}$ t_k t_j gelesen]$_m$ hat er da$_i$ [das Vorwort]$_k$ noch nicht [$_{PP}$ t_i von]$_j$ t_m (den Besten&Webelhuth 1990)

Den Besten & Webelhuth (1990) and Thiersch (2017) note that P-stranding is subject to the same constraint in Dutch as in German (without giving the data). It turns out, however, that at least for some speakers, P-stranding in Dutch is less restrictive than in German, allowing us to test the possibility of *r*-pronoun extraction from coordinated PPs (the Dutch data below were provided by Paula Fenger p.c.).

The initial paradigm is given in (25), where (25a) involves a regular PP, with a P DP order, and (25b) involves a PP with an *r*-pronoun, which undergoes movement.

(25) a. Ik heb boeken [op deze tafel] gelegd.
I have books on this table put
b. ik heb daar boeken op gelegd.
I have there books on put

I now turn to the coordination cases, where the PP from (25b) is coordinated. Importantly for our purposes, *r*-pronoun movement is possible from a coordinated structure, which provides strong evidence for the proposed deduction of the CSC.[11]

(26) a. Ik heb daar$_i$ boeken [$_{PP}$ t_i op t_i] en [$_{PP}$ op deze tafel] gelegd.
I have there books on and on this table put
b. ?Daar$_i$ heb ik boeken [$_{PP}$ t_i op t_i] en [$_{PP}$ op deze tafel] gelegd.
there have I books on and on this table put

Another relevant example is given in (27).

(27) a. Ik heb daar$_i$ brieven [$_{PP}$ t_i naartoe t_i] en [$_{PP}$ uit de VS] gelezen
I have there letters to and out the US read

[11]Such cases require a particular prosody. In (26a), there needs to be an intonational break after first *op* or *daar* should be stressed, and (26b) requires an intonational break after *op*. I assume this is necessary due to non V-adjacency of the stranded P. It is in fact possible that the correct generalization regarding P-stranding in Dutch and German is that a stranded P must be either adjacent to a verb or followed by an intonational phrase boundary, which is reflected in the presence of a pause noted in this footnote (notice that (24e), where the stranded P is not V-adjacent, also fits this generalization). Any differences between Dutch and German regarding P-stranding may then be due to differences in intonational phrasing/the requirement in question (in work in preparation I in fact argue for a prosodically-based account, where the Dutch/German data in question are examined within a broader crosslinguistic context regarding the possibility of dropping the host of phonologically weak elements, and unify them from this perspective with a number of superficially different constructions from other languages). At any rate, what is particularly interesting here is that extraction is unacceptable from the second conjunct, although in that case the stranded P is V-adjacent ((ic) is the counterpart of (27) with extraction from the second conjunct). As we will see in section 7, this is exactly what is predicted under the current analysis of CSC effects, and in fact should be interpreted as an argument in favor of the proposed analysis.
(i) a. *Ik heb daar boeken op deze tafel en op gelegd. b. *Daar heb ik boeken op deze tafel en op gelegd.
I have there books on this table and on put
c. *Ik heb daar brieven uit de VS en naartoe gelezen.
I have there letters out the US and to read

'I read letters to there and from the US.'

The current approach to the CSC straightforwardly captures the violations of the traditional CSC in (26)-(27). Prior to extraction out of coordinated PPs, the *r*-pronoun in (26)-(27) undergoes regular obligatory movement to SpecPP. The fact that the *r*-pronoun can stay in that position indicates that the movement in question involves feature-sharing in the moved position, which enables labeling. Extraction of the *r*-pronoun from the coordination in (26)-(27) then doesn't result in a labeling problem of the kind successive-cyclic movement out of conjuncts creates: while successive-cyclic movement through the edge of a conjunct delabels the conjunct, *r*-pronoun movement to SpecPP does not do it.

To complete the paradigm, ATB movement is also possible in this context, as expected:

(28) (?)Waar heb ik brieven naartoe en uit gelezen
where have I letters to and out read

Additional evidence for the current approach is provided by clitic doubling. Van Craenenbroeck and van Koppen (2008) observe that in Wambeek Dutch, clitic doubling is possible not only with the full coordinated DP (29), but also with a conjunct, in violation of the CSC (30). Note that we are not dealing here with a quirk of Wambeek Dutch. Thus, conjunct clitic doubling is also possible in Spanish (the Peruvian Spanish data in (31) were provided by Gabriel Martínez Vera) and Brazilian Portuguese (Minas Gerais dialect, which allows clitic doubling), as in (32).

(29) Ik paus da **me** [**gou en ik**] dui suimen wel kunn oitgeruiken.
I think that weCLITIC youSTRONG and ISTRONG there together PRT can out.come
'I think that you and I can solve that together.'

(30) Ik paus da **se** [**zaailn** en waailn] dui suimen wel oitgeruiken.
I think that theyCLITIC theySTRONG and weSTRONG there together PRT out.come
'I think that they and we will solve that together.' (Van Craenenbroeck and van Koppen 2008:208)

(31) Yo la vi **a María** y a Juan.
I herCL saw María and Juan
'I saw Mary and Juan.' (Peruvian Spanish)

(32) Que Deus **te** ilumine **você** e sua família.
that God 2SG.ACC illuminate you and your family
'May God illuminate you and your family.' (Machado-Rocha 2016:88)

Many have argued for the big DP approach to clitic doubling, where the clitic and the double are base-generated together, with the clitic moving away (e.g. Uriagereka 1995, Cecchetto 2000, Kayne 2002, Boeckx 2003, Belletti 2005, Runić 2014). A particularly strong argument for this approach is provided by Runić (2014). Runić shows that the big DP is preserved in Prizren-Timok Serbian and Nova Gorica Slovenian, where the clitic and the double cannot be split. These languages then minimally differ from those in (30)-(32) in that the clitic does not move out of the big DP; more importantly, they provide evidence that the clitic and the double indeed form a constituent at one point in the derivation.

(33) a. *Je l' **me** čekaš **mene**? (Prizren-Timok Serbian)
AUX Q me.CL.ACC wait. 2SG me.ACC
b. Je l' **me** **mene** čekaš?
'Are you waiting for me?'

From this perspective, (30)-(32) are not at all surprising: since the clitic and the doubled conjunct are base-generated as a single DP we are dealing here with violations of the traditional CSC which,

however, can be rather straightforwardly captured under the current account. In fact, the account can help us determine more precisely the structure of the base-generated big DP constituent, which is otherwise not easy to determine given that we are dealing with a pre-movement structure. To be able to extract, the clitic has to be located at the edge of the big DP, either as its Spec or its head (in the former case, the CSC violations in (30)-(32) would parallel CSC violations with SC possessors, like (15), and in the latter case they would parallel CSC violations with Galician article incorporation, like (17)).

The clitic doubling data in (30)-(32) thus constitute another case of exceptional extraction that violates the traditional CSC which is, however, readily captured under the current deduction of the CSC.

Also relevant are Japanese numeral constructions. Consider (34).

(34) a. John-wa [hon-o san satsu] kata
John-$_{TOP}$ book-$_{ACC}$ 3 CL bought
'John bought three books.'
b. Hon-o John-wa san-satsu kata

Following Watanabe (2006), I assume *hon-o* 'book' undergoes movement to the edge of the bracketed TNP in (34a) (since the exact category of the projection in question is not important here, I will simply refer to it as ClasP). The NP can move outside of ClasP, as in (34b), which is often treated in terms of quantifier float. What is important here is that, as noted by Hiroaki Tada and Satoshi Oku (p.c.), the floating movement is also possible out of coordinations, as shown by (35b).[12]

(35) a. Taro-wa [ringo-o san ko] to [banana-o ni hon] tabeta
Taro-$_{TOP}$ apples-$_{ACC}$ 3 CL and banana-$_{ACC}$ 2 CL ate
'Taro ate 3 apples and two bananas.'
b. Ringo-o$_i$ Taro-wa [t$_i$ san ko] to [banana-o ni hon] tabeta
apple-$_{ACC}$ Taro-$_{TOP}$ 3 CL and banana-$_{ACC}$ 2 CL ate

(35) represents another case of movement out of a coordination in violation of the traditional CSC, which can be quite straightforwardly captured under the current approach to the CSC.

Consider now extraction out of conjuncts in the context of English ECM constructions.

(36) ?I've believed John$_i$ for a long time now [t$_i$ to be a liar] and [Peter to be trustworthy].

Example (36) is somewhat degraded, though clearly better than typical CSC violations, like (2)-(3). I interpret this as indicating that the CSC is not violated here, putting aside the reason for the residual awkwardness of the example (it may have to do with the presence of the adverbial in only one conjunct though see Bošković 2017 for an alternative account where the CSC effect is only partially voided in (36)).[13] Lasnik (1999) argues that object shift is optional in English, accusative DPs may undergo it or not. The subject of the first infinitival conjunct in (36a) must have undergone object shift, given that it precedes a matrix adverbial. We then seem to have here another case of movement out of a conjunct.[14]

[12]The examples were provided by Satoshi Oku (p.c.). The islandhood effect in (i), where the moved NP and ClasP are separated by an adjunct boundary, indicates we are dealing with a movement relationship here.
(i)*Ringo-o$_i$ John-wa, [Mary-ga [t$_i$ san ko] to [banana-o ni hon] tabeta] atode, deteitta
apple-$_{ACC}$ John-$_{TOP}$ Mary-$_{NOM}$ 3 CL and banana-$_{ACC}$ 2 CL ate after left
'John left after Mary ate three apples and two bananas'

[13]Johnson (2002) in fact observes that the CSC can be violated under ECM movement in English based on *I made Sally$_1$ out [[t$_1$ to be honest] and [Mark to be trustworthy]]*.

[14] I assume that we are dealing here with coordination of two infinitives (but see Bošković 1997).

As noted above, Lasnik (1999) argues that object shift is optional here. This means that the infinitival subject can remain in the Spec of the infinitive, i.e. the infinitive can have the traditional EPP property, which means that the movement to the Spec of ECM infinitives is independent of successive-cyclicity. In the labeling framework this means that the subject of the infinitive can undergo feature-sharing, which results in labeling. Both infinitival conjuncts are then labeled here, enabling extraction of the infinitival subject in violation of the traditional CSC.

Examples in (15), (17), (19), (26)-(27), (30)-(32), (35), and (36) all involve acceptable extractions out of a conjunct, in violation of the traditional CSC ban in (1). They are, however, captured under the proposed account of (1), which also captures the ATB exception in (11). The proposed account then doesn't actually deduce the CSC ban in (1), but a modified version of it which allows extraction out of conjuncts under well-defined conditions. In particular, the proposed analysis confines the CSC effect to successive-cyclic movement out of conjuncts. We have seen that the labeling framework enable us to make a principled distinction between successive-cyclic movement on one hand, and obligatory movement (i.e. movement that can be the final landing site) and base-generation on the other hand, since they have a different effect on labeling. What we have seen above is that we find exactly this cut with respect to extraction out of conjuncts, which enables the labeling system to account for the ban on extraction out of conjuncts in a way that also captures exceptions to this ban.[15]

5. Conjuncts as phases

As noted above, conjuncts are traditionally assumed to be islands. In the phasal system, it is natural to assume that they are phases, given that phases have a potential for inducing a locality violation (I do not mean to suggest here that phases in general are islands, just that phases have the potential to induce a locality violation (in various ways), which can then capture islandhood).

Bošković (2017) and Oda (2017) in fact explicitly argue that conjuncts are islands (they actually argue that both conjuncts and ConjP are islands in order to capture both parts of the traditional CSC; since this paper focuses on one part, i.e. (1), I will put aside the issue of islandhood/phasehood of ConjP). More precisely, they argue that each conjunct is an island even if the relevant phrase otherwise would not be an island. Under the islandhood-phasehood connection noted above, this would mean that each conjunct is a phase even when the relevant phrase would not be a phase otherwise. The assumption is also needed in the current deduction of the CSC, though we will see below that there is no reason to adopt a stipulation to this effect; in a particular contextual approach to phases discussed below each conjunct will anyway be a phase.

What is relevant here is examples like (37), which appears to involve coordination of IPs, which is not a phase in Chomsky's (2000, 2001) approach. Notice first that in the current system, wh-movement needs to proceed via the edge of the first conjunct in (37), which means that the conjunct needs to be a phase. As discussed above, successive-cyclic movement to the edge of a conjunct will delabel the conjunct, which will in turn induce a violation of CL.[16]

[15]Johnson (2009) gives an account of gapping where gapping involves ATB VP-fronting with movement of the subject out of only one conjunct, in violation of the traditional CSC. If subjects in their base position can be involved in labeling in English (a possibility in Chomsky 2015, though not in Chomsky 2013, see also fn 20), Johnson's analysis can be accommodated in the current system and would then represent another case of an acceptable CSC "violation".

[16]Under the natural assumption that A'-Specs are higher than A-Specs (when a phrase has both types of Specs, see Abels 2007, Bošković in press), wh-movement will have to proceed via the outmost edge of the first conjunct in (37) (this is necessary to delabel it). There is actually no need to assume that. Under Bošković's (2016b) approach to the PIC, where only the outmost Spec of a phase is accessible from the outside, *who* would anyway be inaccessible outside of the conjunct phase unless it moves through the outmost Spec (above *Betsy*). (Note also that there is no issue regarding the possibility of multiple Specs for the relevant IP in (37) given the standard assumption that phasal heads in general can have multiple Specs (see Bošković 2007) if the IP in question is a phase by virtue of being a conjunct, as argued here).

(37) *I wonder what$_i$ Betsy purchased t_i and Sally talked about it.

In the current approach, if phrases that are not phases when they are not coordinated are also not phases when they are coordinated it would in principle be possible to extract from such non-phasal conjuncts. However, it turns out that under Bošković's (2014) approach to phases, the coordinated IPs in (37) would anyway be phases; there is no need to assume that conjuncts are always phases, independently of whether the coordinated phrases are phases on their own. In fact, the window for non-phasal coordination (in the absence of a stipulation that conjuncts are always phases) is extremely narrow in that phasal system, to the point that it is not clear that such coordination even exists (i.e. it may even be that only phases can be coordinated (where phasehood is determined after coordination, see below).

While Chomsky (2000,2001) adopts a rigid approach to phasehood where a particular phrase is a phase or not regardless of the context in which it occurs (e.g. for Chomsky CP is always a phase and IP is never a phase), a number of authors have argued for various contextual approaches to phases where the phasal status of a phrase depends on the syntactic context in which it occurs (as noted in Bošković 2014, this follows the spirit of *Barriers* where, e.g., we cannot determine whether CP is a barrier or not without knowing the syntactic context in which it occurs—CP is sometimes a barrier, and sometimes not, depending on its structural position). Focusing on the status of IP, Bošković (2014, 2015, 2016a) and Wurmbrand (2013) argue that the highest clausal projection is a phase, which makes IP a phase when it is not dominated by CP. However, it appears that the relevant IP would still not be a phase in (37), since it is dominated by CP. This is actually not the case in Bošković's (2014) phasal system.

Bošković (2014) argues that the highest projection in the extended domain of a lexical head and the highest clausal projection function as phases, the idea here being that the highest phrase in a phasal domain functions as a phase (phasal domains being the domains of lexical heads and the clause). This makes vP (as the highest projection in the V domain) and CP (as the highest projection in the clausal domain) phases in (38), just as in Chomsky (2000,2001). However, while this phasal system and Chomsky (2000,2001) have the same effect in (38) they do differ in other cases. Thus, if the verb takes an IP complement in (38) (i.e. if the lower CP is missing) this IP will be a phase as the highest projection in the clausal domain.

(38) [$_{CP}$[$_{IP}$[$_{vP}$[$_{VP}$[$_{CP}$[$_{IP}$

Consider now how this system would apply to coordinations, i.e. how the presence of ConjP affects it. The issue here is that the presence of ConjP disrupts the extended domain projection for the clausal phasal domain. In contrast to (38), CP does not immediately dominate IP in (39). ConjP in fact separates CP and IP into separate phasal domains, making IP the highest phrase in its phasal domain, just as in cases where a verb takes a bare IP complement.

(39) [$_{CP}$[$_{IP}$[$_{vP}$[$_{VP}$[$_{CP}$[$_{ConjP}$[$_{IP}$

ConjP thus disrupts the extended domain projection, so that IP is the highest phrase in the relevant phasal domain. The presence of ConjP then affects the phasal status of IP in the phasal system of Bošković (2014), making IP a phase. In other words, coordination makes coordinated IPs phases (even if those IPs would not be phases otherwise), which is exactly the effect that we saw at work in (37). The gist of the discussion here is that IP is a phase if it is not immediately dominated by CP, as argued independently in Bošković (2014, 2015, 2016a) and Wurmbrand (2013). Though the cases discussed in these works do not involve coordination, ConjP has the same effect in that the relevant IP is not immediately dominated by CP, which makes it a phase.

We may in fact be in a position to also capture the intuition argued for in Bošković (2017), Oda (2017) that both conjuncts and ConjP are islands. As discussed above, in Bošković (2014) the clausal

domain and the domains of lexical heads are phasal domains, with the highest phrase in each of these domains being a phase. ConjP does not naturally belong to either of these domains. Now, Epstein and Seely (2002) argue that each phrase is a phase (see also Bošković 2002, Boeckx 2007, Fox and Lasnik 2003, Lahne 2008, Müller 2010). Suppose we combine that view and Bošković (2014) in a way that each phrase has the potential to be a phase; however, the phasehood is voided if the phrase belongs to a phasal domain and is not the highest projection within the domain. Under this view, ConjP, which, as noted above, does not belong to Bošković's (2014) phasal domains, would then be a phase (since its potential phasehood would not be voided by virtue of not being the highest phrase in a phasal domain). Both ConjP and the conjuncts would then be phases. Since this paper focuses on extraction from conjuncts I will, however, put the phasehood of ConjP aside below.[17]

6. An interfering factor with subject questions

In this section I will discuss an interfering factor which arises with CSC violating extraction of subjects in IP&IP coordinations, where the CSC violating movement is wh-movement (in contrast to (36), where the relevant movement is object shift; note that I use the term IP neutrally, similar to TNP).

Consider (40).

(40) *I wonder who$_i$ [t$_i$ left] and [Mary fell asleep].

There are several derivations to be ruled out here. I will put aside those that are not relevant for us (on one such derivation (40) involves CP&CP coordination, where the first CP is a question and the second CP is not; this violates the semantic requirement on coordination discussed in Schachter 1977[18]), focusing on the derivation which is relevant for our purposes, where (40) involves IP&IP coordination. It appears that on this derivation (40) involves extraction of a conjunct edge that is created by obligatory movement, which should not cause any labeling problems. Why is then (40) unacceptable?

This question brings us to the puzzle of *who left*, where apparently there is no movement to SpecIP although such movement is otherwise required in English (for a summary of issues that arise with this construction, see Bošković 2016a, Messick 2016). There are a number of accounts of *who left* in the literature. Under some accounts, *who* stays in SpecIP. There are strong arguments against such an analysis. E.g., (41a-c) indicate that *wh-the-hell* phrases are only possible with wh-movement, not with wh-in-situ. (41d) then provides evidence that the wh-phrase here is not located in SpecIP.

(41) a. Who bought what?
b. What the hell did John buy?
c. *Who bought what the hell?
d. Who the hell arrested Mary?

Furthermore, in contrast to (42b), (42a) is not ambiguous. Since (42b) indicates that an object quantifier can scope over a quantifier in SpecIP, as noted by Mizuguchi (2014) *who* in (42a) should not be located in SpecIP (even as an option).

(42) a. Who loves everyone? (who>everyone; *everyone>who)
b. Someone loves everyone. (someone >everyone; everyone>someone)

[17]Phasehood doesn't necessarily equate with islandhood. However, Bošković (2016c) argues that a double phase configuration, where a phase dominates a phase, creates islandhood. Given that both ConjP and conjuncts are phases, coordination would then always bring in islandhood, resulting in a locality effect (unless the locality effect is voided in one of the ways discussed here and Bošković 2016c, 2017).

[18] Schachter argues that CL has both a syntactic and a semantic side, which both need to be satisfied.

If sluicing involves ellipsis of the IP complement of C, (43) also indicates that subject questions do involve wh-movement (as noted in Messick 2016).

(43) Someone will leave. Who?

Particularly important in the context of the current discussion are the West Ulster English (WUE) quantifier (Q) float data in (44), discussed in McCloskey (2000), which indicate not only that subject questions involve movement to SpecCP but also that the movement does not proceed via SpecIP.

(44) a.Who$_i$ was arrested all t_i in Duke Street?
b. *They$_i$ were arrested all t_i last night.

In contrast to standard English, WUE allows Q-float under wh-movement. Still, in spite of allowing (44a), like standard English WUE disallows (44b), where the Q is floated in the object position. McCloskey (2000) notes that given that Q-float is disallowed from SpecIP in (44b), it must be the case that Q is not floated under movement to SpecIP in (44a). He then concludes that the wh-phrase moves here directly to SpecCP, without moving via SpecIP (recall WUE allows Q-float under wh-movement).

What we are dealing with here is an issue which has been widely discussed for a number of languages, e.g. Italian, Kaqchikuel, and Kinande (see Bošković 2016a for relevant references). There are well-known arguments from these languages that movement to SpecIP cannot feed movement to SpecCP, of the kind assumed under the previously standard treatment of *who left* (what makes *who left* puzzling is that in contrast to other languages noted above, movement to SpecIP is otherwise obligatory in English, which means that the traditional EPP requirement is voided here).

This is exactly what the problem with (40) is. Movement of *who* to SpecIP is needed due to the coordination structure independently of whatever is going on in *who left*. Given that conjuncts are phases (including IP conjuncts), this movement is required by the PIC. Consequently, even if the way of voiding the traditional EPP requirement in *who left* is available in (40);[19] movement of *who* to SpecIP is independently needed in (40) because of the coordination structure. Whatever is responsible for the impossibility of local SpecIP-to-SpecCP movement will then block (40). (Another potential issue here is that, as discussed above, the I of the second conjunct is Iq, due to C-I association; what we have in (40) is then a wh (not a yes-no) question where there is no wh-phrase/wh-trace in the IPq of the second conjunct, which may cause a problem—the issue here being whether IPwh-q must contain a wh-phrase/wh-trace. (Note that wh and yes-no question C may have different feature specifications, given that they have different morphological realizations in some languages.)) [20]

[19]Whatever that is-see Messick (2016), Bošković (2016a) for labeling-based accounts within Chomsky's (2013, 2015) approaches respectively (the latter otherwise requires subject movement to label IP in constructions like *she left*).

[20] Consider also (i), which involves ATB subject movement (not shown below) and wh-movement from the first conjunct.
(i) *Who$_i$ did John hire t_i and fire Mary?
There are several ways of analyzing (i) due to uncertainty regarding how several issues involved here should be treated (the open questions are the level of coordinaton, whether such examples involve object shift prior to wh-movement and whether this movement lands in a position higher than the subject base-position, whether the base merger of the subject results in labeling...) I give here one way of analyzing (i) that involves a particular set of assumptions regarding these issues. Suppose that objects undergoing wh-movement undergo object shift on the way up, and that the object shift position is higher than the subject base-position, as argued in Bošković (1997b) (and as was the case in the system that assumed that object shift targets AgroP; with the elimination of AgroP, this would mean that object shift targets a SpecvP above the subject base position (the subject SpecvP could be created via tucking in after the object SpecvP is created; see also Abels 2007). Assuming that (i) involves vP-level coordination and that subjects in their base position cannot undergo labeling, as in Chomsky (2013), the first conjunct in (i) will be labeled (given that object shift results in labeling, like movement to SpecIP), while the second conjunct will not be labeled (before subject movement to SpecIP, which is what matters for our

Also relevant is (45):

(45) Who can leave and must work harder?

There are many arguments that the traditional IP domain contains more than just TP, i.e. that there is additional structure between vP and the phrase whose Spec the subject occupies in languages like English (see e.g. Belletti 1990, Stjepanović 1999, Cinque 1999, Bošković 2001 for arguments concerning intermediate V-movement, Bobaljik and Jonas 1996 for arguments from Icelandic for two distinct subject positions above the subject θ-position and Bošković 2004 for arguments regarding floating quantifiers). In fact, sentential adverbs can intervene even between the subject and modals/auxiliaries in English, which also indicates that the subject is located in the Spec of a projection that is higher than the projection where the modals/auxiliaries are located. Within Pollock-style (1989) split INFL system, Bošković (1997) and Watanabe (1993) analyze (46) as having the subject located in SpecAgrsP and the modal in T (Kayne 1989 also proposes such an analysis).[21]

(46) John probably can play the guitar.

In fact, unless bar-level coordination is allowed even constructions like (47), where the subject is outside of the coordination but the modal is not, indicate that the subject and the modal are not located in the same projection, the modal here being lower than the phrase whose Spec the subject occupies.

(47) John [travels to Rome tomorrow] and [will fly for Paris on Sunday].

Assuming the Bošković/Watanabe analysis (though the exact labels of the projections in question don't really matter), (45) can then be analyzed as involving TP coordination, with the subject moving from SpecTP directly to SpecCP (after formation of an ATB dependency), the ban on local subject wh-movement being implemented as a ban on movement from SpecAgrsP to SpecCP (I will refer to the subject not passing through SpecAgrsP, which otherwise has to be filled, when moving to SpecCP as the *who left* effect).[22] The ban in question is then tied to agreement, i.e. the agreeing SpecAgrsP subject position where lexical subjects are located. SpecAgrsP is where the subject is located in the second conjunct of (40), which must then involve AgrsP-level coordination (given CL), the construction being ruled out as discussed above. Note also that in (45), which, as discussed above, involves TP coordination, the subject will move to the edge of the conjunct because the conjunct is a phase although otherwise such movement is not necessary, the traditional EPP requirement, which, as

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purposes hence for ease of exposition I ignore labeling that occurs after the relevant movements. Note also that, as discussed in Lasnik (1999), object shift is not limited to DP arguments in English.)

(ii) *Who$_i$ did John$_j$ [$_{vP}$ t$_i$ t$_j$ hire] and [$_?$ t$_j$ fire Mary]

There is an alternative, where movement of a wh-phrase via the edge of vP would always be considered true successive-cyclic movement, hence it would not involve labeling. Under this assumption we would need to assume that the subject can undergo feature-sharing with its sister vP in the base position, which means the second conjunct in (i) would be labeled. Since the first conjunct is not, due to it "hosting" successive-cyclic movement, (i) then still involves a CL violation.

[21]Examples like (46) and (ia) are unacceptable in French but so is (ib) (see Belletti 1990, Bošković 2000; (ib) is acceptable in English), which indicates that there is more to the difference between English and French here than just V-movement.

(i) a. *Jean probablement vendra ces livres. b. *Probablement, Jean vendra ces livres.
Jean probably will-sell these book

[22]In fact, under the approach to antilocality in Bošković (2016a) and Erlewine (2016), in the configuration [$_{CP}$[$_{AgrsP}$[$_{TP}$]]], antilocality bans movement to SpecCP from SpecAgrsP but not from SpecTP. Furthermore, the presence of ConjP in AgrsP&AgrsP cooordinations does not change anything in this respect under Bošković's (2016a) approach to antilocality.

discussed above, is voided in subject questions (i.e for traditional Inflq), holding for the highest position in the split IP domain (AgrsP). The relevant structure for (45) is shown below.[23]

(48) [$_{CP}$ Who$_i$ [$_{AgrsP}$ [$_{TP}$ t_i can leave] and [$_{TP}$ t_i must work harder]]]?

Returning to (40), under the proposed analysis (40) can be derived without violating the CSC. As a result, we would expect that it would not become acceptable with ATB, as long as the second conjunct has an overt subject so that the second conjunct is forced to be an AgrsP. The expectation is borne out. Consider (49), where *who* undergoes ATB movement.

(49) *I wonder who$_i$ [t_i left] and [Mary kissed t_i]

Here, the second conjunct must be an AgrsP due to the presence of a lexical subject, which then forces the first conjunct to be an AgrsP as well. However, if the first conjunct is an AgrsP, movement of *who* to the edge of the conjunct, which is necessary since the conjunct is a phase, will result in a violation, as discussed above (for two reasons in fact: due to the *who left* effect and because of CL, given that the first conjunct would then be labeled while the second conjunct, whose outmost edge is targetted by successive-cyclic movement (not shown above), would not be).

Consider also (50).

(50) *I wonder who$_i$ [John saw t_i] and [t_i kissed Mary]

It is not clear whether the *who left* effect will arise here. The coordination here has to be on the AgrsP level. Below I adopt Nunes's (2004) sideward movement analysis of ATB. Under that analysis, *who* can move to SpecAgrsP of the second conjunct and then get remerged under sideward movement into the object position of the first conjunct. If what is responsible for the *who left* effect is that a subject undergoing wh-movement cannot move to SpecAgrsP, movement of *who* to the SpecAgrsP of the second conjunct will still be blocked. However, if what is responsible for the *who left* effect is movement from SpecAgrsP to SpecCP, the issue will not arise here, due to sideward movement of *who* (there is never movement from SpecAgrsP to SpecCP in (50)).[24] At any rate, (50) is still ruled out due to CL: the first conjunct is targeted by successive-cyclic movement, as discussed above, which is not the case with the second conjunct, a situation that results in a CL violation due to a labeling conflict.[25]

An interesting contrast noted by Qilin Tian (p.c.), where (51) is worse than (52), can help us pinpoint the culprit for the *who left* effect. In light of (49), this contrast also indicates that infinitives

[23]If AgrsP is present in subject questions (with its EPP requirement voided, as discussed above), both CP and AgrsP would be outside of the coordination in (45). Alternatively, AgrsP could be missing in subject questions (in which case we may not be able to appeal to antilocality in the account of the constructions in question (see footnote 22) unless one of the mechanisms discussed in Bošković's 2016a (regarding *who left*) is adopted; see also (51) below). It is worth noting here that the proposed analysis of (45) makes an interesting prediction regarding WVU Q-float. Since movement to SpecTP is forced in constructions of this type due to the presence of coordination, we might expect Q-float of the kind found in (44a) to be unacceptable in *Who was arrested all and must come to school* (given (44b)). I do not know what the facts are here.

[24]Note here that if what is responsible for the *who left* effect is movement from SpecAgrsP to SpecCP, the unacceptability of **Who$_i$ did he say t_i liked her and he hated Sue* provides evidence that the ban should not be limited to movement to +wh-SpecCP but SpecCP in general (here, the first conjunct must be an AgrsP given that the second conjunct is an AgrsP due to the presence of a lexical subject and movement to SpecAgrsP of the first conjunct is forced independently of the EPP by the PIC, given that conjuncts are phases, an issue that would not arise in *who$_i$ did he say t_i liked her*).

[25]Note also the improvement of (50) in (i).

(i) I wonder who$_i$ [John saw t_i] and [Peter thinks t_i kissed Mary]

Here the outmost edge of both conjuncts is targeted by successive-cyclic movement so that no problem regarding CL arises.

also have split IP (i.e. AgrsP and TP), with the presence of *Peter* in the second conjunct forcing this conjunct to be an AgrsP—the first conjunct then also must be an AgrsP.

(51) *Who$_i$ did you believe for a long time now [t_i to be a liar] and [Peter to be trustworthy]?
(52) ?I've believed John$_i$ for a long time now [t_i to be a liar] and [Peter to be trustworthy].

As discussed above (cf. (36)), *John* in (52) undergoes feature-sharing movement to the Spec of the infinitive (i.e. SpecAgrsP, cf. the discussion of (49)), which results in labeling, which is then followed by movement to the matrix SpecvP. This movement violates the traditional CSC but conforms with its deduction here. If wh-movement quite generally cannot proceed through SpecAgrsP, that derivation is not an option in (51); (51) can then be accounted for in the same manner as (40). Since, in contrast to *who* in (40), after moving to SpecAgrsP (of the infinitive) *who* in (51) does not move directly to SpecCP, the unacceptability of (51) then indicates that what is responsible for the *who left* effect is that subjects undergoing wh-movement cannot move to SpecAgrsP, in other words, the culprit here is the movement of the wh-subject to SpecAgrsP, not its movement from SpecAgrsP to SpecCP.

7. Intervention effects

7.1. Standard intervention effects and ATB-movement

We have seen above that movement out of a conjunct in violation of the traditional CSC is possible exactly in the environments where it is expected to be possible under the analysis presented in this paper. Thus, possessors, which are base-generated at the TNP edge, can extract out of a conjunct in SC.

(53) Markovog$_i$ je on [t_i prijatelja] i [Ivanovu sestru] vidio.
Marko's$_{ACC.MASC.SG}$ is he friend$_{ACC.MASC.SG}$ and Ivan's$_{ACC}$ sister$_{ACC}$ seen
'He saw Marko's friend and Ivan's sister.'

Interestingly, such movement in violation of the CSC is possible only from the first conjunct, as shown by the unacceptability of (54), where the possessor is extracted out of the second conjunct. In fact, the CSC violating movements discussed above are quite generally possible only out of the first conjunct.[26]

(54) *Markovog$_i$ je on [Ivanovu sestru] i [t_i prijatelja] vidio.
Marko's$_{ACC.MASC.SG}$ is he Ivan's$_{ACC}$ sister$_{ACC}$ and friend$_{ACC.MASC.SG}$ seen
'He saw Ivan's sister and Marko's friend.'

I suggest there is no violation of the CSC here; if the CSC were to ban possessor extraction out of conjuncts in SC it would also rule out (53). Appealing to the well-established fact that the first conjunct is structurally higher than the second conjunct (see Munn 1993), following Johnson (2002) I

[26]See fn 11 regarding Dutch *r*-pronouns. (i), which contrasts with (30)-(32), and (ii), which contrasts with (35b), show this show this for clitic doubling and Japanese quantifier-float respectively (they are both disallowed from the second conjunct).
(i)* a. omda-**k** gou en **ik** makannern gezien emmen.
because-I$_{CLITIC}$ you$_{STRONG}$ and I each.other seen have
'because you and I saw each other.' (Van Craenenbroeck and van Koppen 2008:232)
b.?*Carlos **la** llamó al profesor y **a María**.
Carlos her$_{CL}$ called the professor and María
'Carlos called the professor and María (Gabriel Martínez Vera, p.c.)
c.*Que Deus **te** ilumine ele e **você**.
that God 2$_{SG.ACC}$ illuminate he and 2$_{SG.NOM}$
'May God illuminate him and you.' (Machado-Rocha, p.c.)
(iv)*banana-o$_i$ Taro-wa [ringo-o san ko] to [t_i ni hon] tabeta
banana-$_{ACC}$ Taro-TOP apple-$_{ACC}$ 3 CL and 2 CL ate (Japanese)

sugggest the problem with (54) lies in an intervention effect. The first conjunct, which is higher than the second conjunct, causes an intervention effect, blocking movement out of the second conjunct.[27]

There is independent evidence for this analysis. It is well-known that intervention effects, in fact all kinds of locality violations, can be voided with traces. The relevant situation regarding intervention effects is given in (55) and illustrated by (56). A-movement across an experiencer is disallowed in Italian, which is standardly analyzed as an intervention effect: (56a) involves A-movement across an A-Spec (there are various accounts of why such examples are possible in English; I put this issue aside here). Crucially, the intervention effect is voided if the intervener is turned into a trace, as in (56b).

(55) Traces do not count as interveners (Chomsky 1995, Bošković 2011, a.o)

(56) a. *****Gianni$_i$ sembra a Maria [t_i essere stanco] b. A Maria$_j$, Gianni$_i$ sembra t_j [t_i essere stanco]
Gianni seems to Maria to-be ill

All types of locality effects can in fact be voided with traces. Thus, Bošković (2016b) argues that (57) involves a configuration where the TNP phase has multiple edges, *onu* and *staru* (see Bošković 2016b for relevant evidence). Each of these elements can extract on its own. However, when both are present, only the higher edge, *onu*, can extract (cf. (57b) vs (57c)). Bošković (2016b) argues that the paradigm should be analyzed in terms of the PIC, where in multiple phasal edge configurations only the higher edge is accessible from the outside. Crucially, in contrast to (57c), (58) is acceptable. Bošković argues that traces do not count as edges for the PIC, which essentially means that traces void PIC effects.

(57) a. On prodaje onu staru kuću.
he sells that old house
b. Onu$_i$ prodaje t_i staru kuću.
that sells old house
c. *Staru$_i$ prodaje onu t_i kuću.
'He is selling that old house.'
d. cf. Staru$_i$ prodaje t_i kuću.

(58) Onu$_i$ staru$_i$ prodaje t_i t_j kuću.
that old sells house

Traces also void traditional islandhood. Thus, Bošković (2013) argues for the generalization in (59), observing that quite generally, turning the head of an island into a trace voids islandhood. This is shown in (60)-(61) with Galician article incorporation. (60) is ruled out because it involves extraction out of an island (an adjunct). The island effect is voided by article incorporation in (61), due to (59).

(59) Traces do not head islands.

(60) *de que semana$_j$ traballastedes [$_{DP}$ o [Luns t_j]]?
of which week worked the Monday
'Of which week did you guys work the Monday?'

(61) de que semana$_j$ traballastede-lo$_i$ [$_{DP}$[$_{D'}$ t_i [Luns t_j]]] ?

[27]We may not actually be dealing here with a relativized minimality (RM) but a PIC effect. If ConjP is a phase, extraction out of ConjP must proceed via SpecConjP. Assuming Richards' (2001) tucking in, a phrase moving out of the second conjunct must move to a lower SpecConjP, tucking in under the first conjunct. Since only the outmost edge of a phase with multiple edges is accessible from the outside due to the PIC, as argued in Bošković (20016b) (see the discussion of (57)-(58) below), the element in the lower SpecConjP then cannot move out of ConjP due to the PIC. Nevertheless, for ease of exposition I will simply use the term intervention effect for the configuration in question. (At any rate, the way the effect in question is treated below when it comes to exceptions to it would not change regardless of whether it is seen as a PIC or an RM effect (note that Rackowski and Richards 2005 treat the outmost edge effect in terms of classical intervention).)

of which week worked-the Monday

Returning to (54), independent evidence that we are indeed dealing here with an intervention effect is provided by the fact that the construction becomes acceptable if the first conjunct is turned into a trace.

In contrast to English, SC allows extraction of conjuncts, as in (62) (see Stjepanović 2014, Bošković 2017, Oda 2017).

(62) ?Knjige$_i$ je Marko [t_i i filmove] kupio
Books is Marko and movies bought
'Marko bought books and movies.'

Crucially, as noted in Stjepanović (2017), when the first conjunct is turned into a trace, extraction from the second conjunct is possible. Compare here (63) and (64)-(65). In (64)-(65), the first conjunct stays in situ, blocking extraction from lower conjuncts. In (63), the first conjunct is a trace, i.e. it undergoes movement, which opens the door for extraction out of the second conjunct (see below for what happens with the conjunction).

(63) Koja serija$_i$ se i čiji$_j$ tebi [$_{ConjP}$ t_i [t_j film] dopadaju?
which series self and whose you.dat movie please
'Which series and whose movie are pleaseing to you?'
(64) *I čiji$_j$ se tebi [$_{ConjP}$ koja serija [t_j film] dopadaju?
and whose self you.dat which series movie please
'Which series and whose movie are pleasing to you ?'
(65) *Čiji$_i$ se tebi [$_{ConjP}$ koja serija [t_i film] i kakva knjiga] dopadaju?
whose self you which series film and what book please
'Which series, whose movie and what book are pleasing to you?'

These facts parallel Italian (56): turning an intervener into a trace voids the intervention effect. I take the presence of a typical intervention voiding effect as evidence that the impossibility of extraction out of the second conjunct in (54) should be analyzed in terms of an intervention effect.

The reader may have noticed that extraction from the second conjunct carries the conjunction with it in (63). The reason for this is that, as Stjepanović (2014) shows, the conjunction is a proclitic which proclicitizes to the element following it, so that any movement of that element carries the clitic with it. Oda (2017) and Stjepanović (2014) in fact argue that cliticization of the conjunction is a prerequisite for the possibility of conjunct extraction. Thus, conjunct extraction is also possible in Japanese, where the conjunction head is an enclitic, and is in fact carried along under movement of the first conjunct.

(66) ?Kyoodai$_i$-to kanojo-wa [t_i Toodai]-ni akogareteiru.
Kyoto.University-and she-Top Tokyo.University-Dat admire
'She admires Kyoto University and Tokyo University.'

Both Oda (2017) and Stjepanović (2014) analyze the effect in question in terms of (59): ConjP is an island but its islandhood is voided in SC and Japanese because the head of ConjP is a trace, due to the movement of the conjunction head.[28]

[28]Stjepanović gives prosodic evidence that the second conjunct in (62) and (63) moves to the lower SpecConjP, with the conjunction procliticizing to it. She unifies this analysis with the account of extraordinary LBE, illustrated by (i), which Bošković (2005, 2013) and Talić (in press) analyze as involving AP movement to SpecPP, followed by procliticization of the P to the adjective, as a result of which further movement of the adjective carries the P along (the PP in question is an island, but its islandhood is voided here through (59); see also Talić in press for prosodic evidence for this account of (i)).

At any rate, in light of the above discussion I conclude that the reason why possessor extraction is normally disallowed from the second conjunct (i.e. the reason for the contrast between (53) and (54)) is an intervention effect: the first conjunct intervenes for extraction from the second conjunct; the intervention effect is voided when the intervener, the first conjunct, is turned into a trace.

A question arises at this point. Given that the first conjunct induces an intervention effect for extraction out of the second conjunct, why doesn't the intervention effect arise in ATB constructions, where it appears that there is movement out of each conjunct, which means that movement out of the second conjunct crosses the first conjunct. Since the goal of this paper is not only to account for the CSC but also for ATB the question cannot be put aside. The question is then what is the relevant difference between examples like (54), where the first conjunct induces an intervention effect for extraction from the second conjunct, and ATB examples like (11), where this is apparently not the case?

Note first that in cases like (63), where extraction from the second conjunct is possible, the intervener is turned into a trace. This is not the case in ATB examples like (11): there is a trace in (11) (see (68) but the trace is the edge of the first conjunct, the first conjunct itself is not a trace. We will see in section 7.2 that this may actually be relevant. Pending that discussion, I focus on another difference between (11) and (63), which is the fact that it is the same element that is extracted from both conjuncts in (11), the defining property of ATB. There is actually an approach to ATB which easily resolves the intervention issue, namely, Nunes (2004).

Nunes (2004) proposes a unified account of parasitic gap and ATB constructions involving what sideward movement. Under his analysis, the element participating in a parasitic gap/ATB construction is merged within the adjunct/second conjunct, then essentially re-merged in a non-c-commanding position that corresponds to the other gap of parasitic gap/ATB constructions. I show this below with the former. Putting details aside, *what* is merged in the object position of the adjunct, then in the matrix object position, undergoing movement from this position. Two chains are then formed, both of which are headed by *what* in SpecCP, with the lower copy of each chain deleted in PF.[29]

(67) What$_i$ did [John file ~~what~~$_i$] without reading ~~what~~$_i$]

The sideward movement analysis can be rather straightforwardly applied to the ATB movement case in (11), repeated in (68). *Who* is merged in its θ-position in the second conjunct, moving to the edge of the second conjunct (a DP, hence a phase, see also fn 29). It is then re-merged in its theta-position in the first conjunct, moving to the edge of this conjunct. The movement to the edge of the conjuncts delabels both conjuncts, so that CL is not violated here. Crucially, there has never been movement from the second conjunct that crosses the first conjunct on the sideward movement derivation. The intervention problem with such movement that arises in constructions like (54) then does not arise here. The sideward movement analysis thus rather straightforwardly resolves the intervention effect issue, which can in fact be interpreted as an argument for this analysis of ATB.

(68) Who$_i$ did you see [t_i friends of t_i] and [t_i enemies of t_i]?

7.2. Non-ATB ATB

(i)[U veliku]$_i$ je on ušao [t_i sobu].
in big is on entered room

[29]There are islandhood effects within the adjunct/second conjunct of parasitic gap/ATB constructions, which I take to indicate that there must be movement to the edge of the element in question, within the adjunct/second conjunct, before remerger/sideward movement.

Under the current analysis it is in principle not necessary that the same element moves out of each conjunct to void the CSC effect. In principle, a different element can move out of each conjunct: this would suffice to delabel the conjuncts, voiding the CSC effect. However, the problem with such extraction is the intervention effect: as discussed above, the first conjunct intervenes for extraction out of the second conjunct. The intervention can be voided with ATB under Nunes's account of ATB. The account would not, however, apply to non-ATB constructions. To illustrate the point with *tough*-movement, (69c) involves wh-movement from the second conjunct and *tough*-movement from the first conjunct (assuming there is such movement). The first conjunct is an intervener for extraction out of the second conjunct, the intervention effect being voided in (69b) under ATB, as discussed above (I return to *tough* constructions below).

(69) a. It is tough to play these sonatas and keep these violins balanced.
b. Which violins$_i$ are tough [to play ___(i)] and [to keep ___(i) balanced]?
c. *Which violins(i) are these sonatas(k) tough [to play ___(k)] and [to keep ___(i) balanced]?

It thus appears that the intervention effect forces an ATB dependency: the reason why it has to be the same element that moves out of each conjunct is the intervention effect.

Nevertheless, let's see try to take advantage of the fact that possessor (more generally left-branch) extraction is possible out of conjuncts in SC and see what happens if we do multiple left-branch extraction, extracting different left-branches from different conjuncts. Note first that multiple left-branch extraction itself is a tricky business. As Fernández-Salgueiro (2005) notes, for an unclear reason such extraction is generally disallowed, as (70) shows; SC otherwise allows left-branch and multiple wh-extraction, hence all the ingredients for successful extractions are in place in (70).

(70) *Čiji$_i$ kakva$_j$ [$_{NP}$ t$_i$ otac] kupuje [$_{NP}$ t$_j$ kola]?
whose what-kind-of father is-buying car
'Whose father is buying what kind of a car?' (Fernández-Salgueiro 2005)

Another issue that would arise if multiple left-branch extraction were to be performed in SC counterparts of constructions like *Mary likes whose house and which car* (as the input to left-branch extraction) is that the remnants of the extraction would participate in a coordination but there would be no overt coordinator there, since the coordinator would be carried along under movement of the wh-phrase in the second conjunct, as discussed above, which might raise a problem. Interestingly, this kind of multiple extraction is possible if the coordinator is repeated (as observed by S. Stjepanović, p.c.).

(71) Crvena$_i$ i bijeli$_j$ su se meni t$_i$ suknja i t$_j$ kaput dopali.
red and white are self me.$_{DAT}$ dress and coat pleased
'The red dress and the white coat pleased me.'
(72) Crvena$_i$, bijeli$_j$ i šareni$_k$ su se meni t$_i$ suknja, t$_j$ kaput i t$_k$ šešir dopali.
red white and colorful are self me.$_{DAT}$ dress coat and hat pleased

It is possible that we are dealing here with pronunciation of a lower copy of the coordinator, which is needed to indicate coordination. But there is another possibility here.

Interestingly, even multiple left-branch extractions like (70) become acceptable with coordination.

(73) Čiji$_i$ i kakva$_j$ [$_{NP}$ t$_i$ otac] kupuje [$_{NP}$ t$_j$ kola]?
whose and what-kind-of father is-buying car
'Whose father is buying what kind of a car?

(73) appears to involve formation of coordination after movement, which in itself raises all kinds of interesting questions. Coordination formation typically takes place through base-generation, i.e. lexical insertion, which means pre-movement. On the other hand, (73) appears to involve coordination formation in the moved position (of wh-phrases). Similar cases, where structures that are typically formed via lexical insertion, i.e. external merge, are formed via internal merge, have been noticed before. One such case involves what van Riemsdijk (1989) termed regeneration in Germanic, where it appears that in a D-NP structure, NP can undergo movement, with another D merged with the NP in the moved position. It would be way beyond the scope of this paper to tackle the issue of how such cases are derived, hence I won't be able to tackle the issue of the proper analysis of (73) here.[30] What is important for our purposes here is simply to bear in mind the possibility of conjunction formation in the moved position, i.e. the possibility that the coordination we see in the moved position in (71)-(72) is created after movement, in the same way as the coordination in (73).

At any rate, consider again example (72), repeated below.

(74) Crvena$_i$, bijeli$_j$ i šareni$_k$ su se meni [t_i suknja], [t_j kaput] i [t_k šešir] dopali.
red white and colorful are self me.$_{DAT}$ dress coat and hat pleased

Notice first that we are not dealing here with typical trace-voiding of intervention effects. We have seen above that turning an intervener into a trace voids intervention effects: in (74), the intervener itself is not a trace, only its edge is a trace. Thus, focusing on the first two conjuncts, in contrast to (63), where the whole first conjunct moves, in (74) only the edge of this conjunct moves. In other words, in (63), the intervener is a trace, but in (74) only the edge of the intervener is a trace (see Bošković 2012 for arguments that the adjective is located at the edge of the TNP in SC, which is in fact what enables its extraction). The relevant structure is shown in (75). This means that we are not dealing with the run-of-the-mill voiding of intervention effects with traces in (74).

(75) white$_j$ [$_{TNP}$ t_i dress] t_j

What is even more interesting is that ATB is forced for each conjunct here: (76), where extraction does not take place out of the last conjunct, is unacceptable.

(76) *Crvena$_i$ i bijeli$_j$ su se meni [t_i suknja], [t_j kaput] i [šareni šešir] dopali.
red and white are self me.$_{DAT}$ dress coat and colorful hat pleased

It should be pointed out that, as noted by S. Stjepanović (p.c.), the surface string in (76) is acceptable if the first two conjuncts are pronounced as a single prosodic unit, with another conjunction between them, as in (77). What is going on here is that *suknja i kaput* form a coordination, which is then coordinated with *šareni šešir*. In other words, we are not dealing here with a single coordination with three conjuncts, as in (74)-(76), but with two separate coordinations, each of which has two conjuncts. Under this analysis, *suknja i kaput* forms a ConjP that is itself located in the Spec of a ConjP (the head of the second coordination takes *šareni šešir* as its complement).

(77) Crvena$_i$ i bijeli$_j$ su se meni (t_i suknja i t_j kaput) i [šareni šešir] dopali.
red and white are self me.$_{DAT}$ dress and coat and colorful hat pleased

[30]Recall that in SC, the second conjunct can move to SpecConjP, tucking in under the first conjunct, with the conjunction head adjoining to it (see footnote 28). It is then possible that the conjunction head in (73) takes the rest of the clause as its complement, with the wh-phrases moving to the Specs of ConjP, the second wh-phrase tucking in under the first one, with the conjunction head adjoining to the lower Spec, all of which are processes that are independently attested in SC.

The ungrammaticality of (78) is relevant in this context.

(78) *Crvena$_i$ i bijeli$_j$ i šareni$_k$ su se meni [$_{ConjP}$ ([$_{ConjP}$ [t$_i$ suknja] i [t$_j$ kaput]]) i [t$_k$ šešir]] dopali.
red and white and colorful are self me.$_{DAT}$ dress and hat and coat pleased

The ungrammaticality of (78) is actually not surprising: it is unacceptable because it involves an intervention effect. The first conjunct intervenes for extraction out of the second conjunct. Notice that, as noted above, (74) indicates that for a reason that is yet to be explained, an intervener that has a trace as its edge does not function as an intervener (I provide another case of this sort in work in preparation). This is not the configuration we have in (78): here the whole ConjP is the intervener, and the ConjP itself does not have a trace at its edge, the trace is buried deeper within this ConjP.

The SC constructions under consideration raise a number of puzzling questions. First, how come the intervention effect is voided in (74), given that the intervener has not been turned into a trace, only its edge has been turned into a trace. This is actually similar to the ATB case in (68), which shows that the intervention effect is also voided under ATB. In (68), the potential intervener also has a trace at its edge, just as in (74). However, the above analysis of (68) crucially appealed to the fact that (68) involves traditional ATB, applying to this construction an account of traditional ATB, namely Nunes's (2004) analysis. Under that analysis movement from the second conjunct does not actually cross the first conjunct. Since under that analysis it is crucial that the construction involves traditional ATB, i.e. that it is the same element that is extracted out of each conjunct, the analysis cannot be extended to (74). The lack of an intervention effect is not the only puzzling aspect of (74). The contrast between (74) and (76) indicates that the ATB requirement is in a sense at work here. Extraction must take place out of each conjunct. However, what is striking here is that it is not the same element that is extracted out of each conjunct, but different elements. An ATB requirement is then apparently imposed on a non-ATB construction (I will therefore refer to the construction in question as non-ATB ATB). Even more interestingly, this holds for (74), where three conjuncts are coordinated, but it does not hold for the CSC exceptional case in (15), where two conjuncts are coordinated. In other words, the ATB requirement seems to be imposed in (79a) but not (79b).

(79) a. NP&NP&NP
b. NP&NP

This actually turns out not to be quite correct. The ATB requirement is not imposed on (79a) if extraction takes place out of the first conjunct only.

(80) Crvena$_i$ se meni [t$_i$ suknja], bijeli kaput i šareni šešir dopadaju.
red self me.$_{DAT}$ dress white coat and colorful hat pleasing
'I like a red dress, white coat, and colorful hat.'

The number of conjuncts then doesn't matter but from which conjunct extraction takes place: if it takes place only from the initial conjunct, the ATB requirement is not imposed, if it takes place from a non-initial conjunct, the ATB requirement is imposed: extraction must then take place out of each conjunct.

How can all these puzzling aspects of (74) and related constructions be accounted for? This section will propose an account of the paradigm in question that crucially relies on the labeling framework, hence to the extent that it is successful it provides strong argument for it. What we are trying to capture is what I refer to as non-ATB ATB, where extraction takes place out of each conjunct but it's different elements that are extracted. Note first that the existence of non-ATB ATB is not surprising under the current account, where to void the CSC it's simply necessary to extract from each conjunct (everything

else being equal, which often it is not, due to the intervention effect that the first conjunct induces for extraction out of the second conjunct). The timing of labeling and the satisfaction of CL will be important in the discussion below. In this respect, I will continue to assume that CL must be satisfied when ConjP is formed and crucially, that labeling takes place as soon as it is possible.

Crucial to the discussion below will be trace-voiding of intervention effects. As noted above, it is well-known that traces void locality effects. The case we are considering here is different from those discussed in the literature in this respect. While in the standard cases the trace itself is the intervener, in the cases we are considering the trace is the edge of the intervener. We will see below that this can be naturally captured in the labeling framework. Due to the factors discussed below, the trace in the edge of the intervener has the effect of turning the intervener into an unlabeled element. In other words, in the relevant cases where the intervention effect is voided, the intervening element is unlabeled (due to the presence of a trace at its edge, see below). This then leads me to propose (81), which, as discussed in section 1, is rather natural given the current understanding of intervention effects.

(81) Unlabeled elements do not function as interveners.

The intuition is the following: given that extraction from one conjunct that crosses another conjunct induces an intervention effect, the effect can be voided if the intervener is turned into an unlabeled element, given (81), which is precisely what extraction from the first conjunct does. So, not to induce an intervention effect, when extraction takes place from the second conjunct it also must take place from the first conjunct. Since all this has an effect on labeling, CL will then force extraction from all conjuncts, even those that are not on the path of the extraction from a conjunct we are trying to "save".

The idea here is then to block labeling of the first conjunct in (74) at the point when extraction from the second conjunct takes place. There are several ways of implementing this. I'll use here a particular implementation that relies on a proposal from Bošković (in prep) that the presence of an uninterpretable feature blocks labeling via feature-sharing in XP-YP configurations. I will also assume, following Bošković (2007), that movement in general is driven by the presence of an uninterpretable feature, uK, on the moving element. This proposal actually fits the labeling framework quite naturally. The natural expectation in this framework is that all, or at least most, movement is labeling driven, i.e. it takes place to resolve labeling problems.This is in fact what occurs in cases where XP and YP merge without feature sharing: movement takes place in such a case to resolve the labeling problem. What happens here is that the problem, and the reason for movement, is present in the pre-movement structure (I will refer to it as the base position of movement). In other words, the base position of movement drives the movement: something would go wrong in the base position of movement if it does not take place—there is nothing in the higher structure that motivates it. This is in fact exactly the characteristic of Bošković's (2007) approach to movement, which is implemented through the presence of a uK feature on the moving element, which then forces movement (in other words, both the labeling approach of Chomsky 2013 and Bošković 2007 involve base- rather than target-driven movement). It therefore seems natural to adopt Bošković's uK assumption here. This means that in (82), *Jovanovu* has the uK feature which drives the relevant movement operation: the presence of the uK feature blocks feature sharing, with movement taking place to resolve the labeling problem. The labeling problem does not arise in (83), where the relevant uK feature is not present (it if were, *Jovanovu* would have to move).[31]

(82) Jovanovu on voli knjigu.
John's he loves book
(83) On voli Jovanovu knjigu. (SC)

[31]I leave open whether the presence of a uK feature would block labeling more generally, including the head-phrase case (if the phrase has uK; I also leave open whether head movement is uK-driven in this manner).

To account for the non-ATB ATB paradigm under consideration we will have to slightly complicate this overall picture. Moving elements always have a uK feature, which blocks labeling via feature sharing. However, this uK feature can be added to the relevant element either before or after the initial/relevant merger. If uK is added to XP prior to XP merging with YP, the presence of the uK feature will block feature sharing, and labeling via feature sharing, forcing XP to move. This is not the case if it is added after XP and YP undergo merger. Since labeling takes place as soon as it is possible, in this case XP and YP will be able to undergo feature sharing and labeling.

Now, in examples like (74), for movement out of the second conjunct to be able to cross the first conjunct the latter cannot be labeled so that it does not function as an intervener (cf. (81)). This means the edge of the first conjunct must also undergo movement, so that it can have the uK feature that blocks labeling. This uK feature is added to the AP prior to the AP-NP merger; it blocks feature sharing so that the first conjunct is not labeled. But given CL, none of the conjuncts in (74) can then be labeled. This forces extraction out of each conjunct, i.e. each conjunct must "host" movement so that the labeling is blocked. This is indeed the case in (74). However, this is not the case in (76), where no movement takes place out of the last conjunct. The last conjunct is then labeled in (76) (recall that labeling occurs as soon as it is possible), while the other conjuncts are not—this yields a CL violation.

In (15), on the other hand, the uK feature is not added to the possessor immediately: the possessor first undergoes merger, which results in feature sharing and labeling that in turn satisfies the CL requirement (the second conjunct is labeled). The uK feature is then added, with the possessor underoing movement. This was not an option in (74)-(76) since movement from the second conjunct would then cross a labeled element, resulting in an intervention effect. uK must be added to the relevant element in the first conjunct immediately so that this conjunct is not labeled. CL then forces all conjuncts not to be labeled, which in turn forces each conjunct to "host" extraction.

There is an issue of the ordering of AP-movements that needs to be clarified. Focusing on the first two conjuncts in (74), the first conjunct needs to be unlabeled at the point when movement from the second conjunct crosses it, so that the intervention effect is voided. Notice first that we are not dealing here with typical superiority configurations, which means that the order of movements should in principle be free (at any rate, superiority is quite generally relaxed even with wh-movement in SC, see Rudin1988). The next phasal head in (74) is v.[32] There are two possibilities here, bearing in mind Chomsky's assumption that in an XP-YP configuration that does not involve feature sharing turning one of the relevant elements into a trace enables labeling (by the other element). Movement from the second conjunct to the vP phase can take place before movement from the first conjunct. Alternatively, we can assume that all movements to the same phasal head take place simultaneously. In fact, movement can even take place from the first conjunct before it takes place from the second conjunct if we assume either that the "next round" of labeling takes place at the next phasal level, when the phase is completed (see Chomsky 2013, this would mean only after all movements to the edge of the vP phase take place) or that movements to the edge of the same phase that create multiple Specs are in a sense a single operation that cannot be split by anything else: only after all these movements take place other operations, including labeling that is made possible by traces, can take place.[33] At any rate, recall that in the cases under consideration the co-ordination structure is in a sense "re-created" in a higher position, with another ConjP. It seems natural to assume that there should be some parallelism between

[32]Left-branch extraction with longer remnants in SC in general sounds best if the remnant precedes the verb (I assume it is VP-adjoined in (74)).

[33]It should be noted that given (81), ATB cases like (68) could be accounted for even without Nunes's sideward movement. The first conjunct intervention effect would be voided in (68) anyway under (81) given that the conjunct is unlabeled (being a target of successive-cyclic movement). However, it's not clear how certain more complicated cases discussed below that involve interaction between standard ATB and non-ATB ATB as well as some parallelisms with parasitic gap constructions discussed below could be accounted for without Nunes's sideward movement, hence I will continue to assume it below.

the two coordinations where the order of the conjuncts in the higher ConjP should correspond to the order of the conjuncts in the lower ConjP. This will filter out any derivations where this is not the case (the order of the conjuncts in the higher ConjP indeed needs to correspond to the lower ConjP).[34]

It is also worth noting that we are dealing with actual extraction in the relevant cases, as confirmed by their island-sensitivity. Thus, the presence of an adjunct island between the extracted APs and the remnant NPs causes ungrammaticality in (84).

(84) *Crvena, bijeli i šareni je otišao zato što su se meni suknja, kaput i šešir dopali.
red white and colorful is left because are self me.$_{DAT}$ dress coat and hat pleased
'He left because I liked a red dress, white coat, and colorful hat.'

Interestingly, the non-ATB ATB whose existence was revealed by the discussion above can be mixed with true ATB. Thus, notice that that there are only two fronted APs in (85), with three nouns in the lower coordination. Yet, in contrast to (76), (85) is acceptable.

(85) Crvena i bijeli su se meni suknja, kaput i šešir dopali.
red and white are self me.$_{DAT}$ dress coat and hat pleased

However, (85) is acceptable only on a particular meaning: 'red dress, white coat, and white hat', where a traditional ATB dependency is formed between 'white coat' and 'white hat' with respect to 'white'. What makes this possible is that both 'coat' and 'hat' are masculine: the adjective that modifies them is also masculine (note that *crvena* and *suknja* are feminine (SC has A-N agreement)).

(86) Crvena$_i$ i bijeli$_j$ su se meni [t_i suknja], [t_j kaput] i [t_j šešir] dopali.
red and white are self me.$_{DAT}$ dress coat and hat pleased

Notice now that, in contrast to (85), (87) is unacceptable.

(87) *Bijeli i crvena su se meni kaput, suknja i šešir dopali.
white and red are self me.$_{DAT}$ coat dress and hat pleased

Apparently, a traditional ATB dependency can only be formed between contigious NPs here. There can be no ATB between 'red dress' and 'red hat' since the adjective needs to agree with the nouns and the nouns have different gender (*suknja* is feminine, *šešir* masculine). Also, there can be no ATB between 'white coat' and 'white dress' since these nouns also have different gender (*kaput* is masculine, *suknja* feminine). Interestingly, there can apparently be no ATB between 'white coat' and 'white hat'. There is no gender disagreement issue here since the nouns have the same gender. We seem to be dealing here with a locality effect on traditional ATB formation: it is not possible to skip an intervening NP.[35]

[34]If the multiple Specs of vP could in principle move higher up in any order, the orders that do not conform with the parallelism would then be filtered out.

[35]Alternatively, this could be seen as a maximize ATB effect, similar to Merchant's (2001) Max Elide. A similar effect is actually found with parasitic gaps, which Nunes (2004) also treats in terms of sideward movement (we may be dealing here with a more general effect on sideward movement), as (i), taken from Nissenbaum (2000:547) (who discussed it in a different context), shows: As in the case of ATB (87), it is not possible to skip a potential parasitic gap site in (i). (There are various ways of implementing the effect in question (see Citko 2005 for a Max ATB-style proposal), discussing which would take us too far from our concerns.)

(i) a. Who did you praise *e* to the sky [after criticizing *e*] [in order to surprise *e*]?
b. Who did you praise *e* to the sky [after criticizing *e*] [in order to surprise **him**]?
c. *Who did you praise *e* to the sky [after criticizing **him**] [in order to surprise *e*]?

(88) *Bijeli$_i$ i crvena$_j$ su se meni [t_i kaput], [t_j suknja] i [t_i šešir] dopali
white and red are self me.$_{DAT}$ coat dress and hat pleased

This is rather interesting under the sideward movement approach to ATB. Sideward movement was originally proposed by Nunes for parasitic gap constructions, in order to create a dependency that voids traditional islands. That we see a locality effect here is quite interesting from this perspective. It is a different kind of a locality effect though: it does not involve traditional islandhood, it is more akin to intervention effects (traditional islands and intervention effects are treated rather differently in the current theory; this was also the case with the GB accounts in Chomsky 1986 and Rizzi 1990, where they in fact involved different configurations: domination vs c-command).

Note that ATB formation need not involve the last conjunct, as it might appear to be the case from the above data: (89), with ATB between 'red dress' and 'red shirt' (*košulja* is feminine), is acceptable.

(89) Crvena$_i$ i bijeli$_j$ su joj se [t_i suknja], [t_i košulja] i [t_j kaput] dopali.
red and white are her.$_{DAT}$ self dress, shirt and coat pleased

I will not go into the actual derivation of the mixed non-ATB ATB and true ATB cases in (85)-(89);the reader can verify that all the acceptable cases are straightforwardly derivable in the current system.[36]

To sum up, the discussion in this section has revealed a new type of ATB, where movement takes place out of each conjunct, but different elements are moving from each conjunct.[37] That such cases exist is not surprising under the current account, which does not in principle require that the same element is extracted out of each conjunct. However, non-ATB ATB possibility is rather limited due to other factors. One such factor concerns intervention effects, where higher conjuncts block extraction from lower conjuncts. We have, however, seen that in a particular context the intervention effect can be voided. It is well-known that traces void intervention effects. The discussion in this section has uncovered cases where intervention effects are voided if the edge of the intervener, rather than the intervener itself, is turned into a trace. We have seen that this trace-voiding intervention effect can be naturally captured in the labeling framework through the generalization that unlabeled elements do not

[36]Consider also English (i-ii). (Three conjuncts are used so that extraction from the last conjunct can be part of an ATB dependency; without it the element moving from the last conjunct would have to move to SpecConjP if ConjP is a phase; it is not clear that, in contrast to SC (see fn 28), English allows such movement, which would also violate antilocality, a violation which is voided in SC via rescue by PF deletion (the violation would induce *-marking of the head of ConjP (see Bošković 2013), which is a trace in SC, but not in English).

(i)?*Which president do you wonder which famous writer John reads essays by, articles about, and tweets from

(ii) **Which president do you wonder which famous artist John reads essays by, articles about, and tweets from Brady

(i)-(ii) involve non-ATB ATB (mixed with true ATB in (i) for the reason noted above). It should first be noted that Franks (1993) notes a thematic parallelism requirement on ATB dependencies which may be interpreted as requiring that in any coordination involving ATB, there must be a thematically parallel gap (see Franks for the relevant notion of thematic parallelism) connected to the same antecedent, in other words, as requiring that the same element must discharge all theta-roles, hence the parallelism. This requirement would rule out non-ATB ATB for thematic elements, confining it to non-arguments (like the AP cases discussed above; I discuss the requirement in question in more detail in work in preparation). Putting this issue aside, note that there are several interfering factors here which contribute to the degraded status of (i-ii): they both involve extraction out of a wh-island, and processing issues, which may be mitigated in the SC examples discussed in this section due to overt agreement between the extracted adjectives and the nouns that are left behind, also arise (an independent difference in the sensitivity to Superiority between SC and English (see Rudin 1988) may also be relevant here). I assume that these issues contribute to the degraded status of the examples (Maximize ATB, noted in fn 35, could also be relevant here, depending on how this effect is stated). What is interesting, however, is that (ii) is worse than (i), which parallels the contrast between SC (74) and (76). As in the case of the SC examples, an additional CL violation that occurs in (ii) but not in (i) may be responsible for the contrast in question.

[37] In work in preparation I provide additional cases of non-ATB ATB.

function as interveners, a rather natural generalization given the nature of intervention effects (where features of the intervener matter; projecting features, however, requires projecting a label, i.e. labeling).

Focusing on the particular non-ATB case discussed here, in the relevant case extraction must take place from each conjunct, although it is different elements that are extracted from each conjunct. Under the proposed account, the ATB is imposed in this case in the same way as in traditional ATB dependencies, namely, it is imposed by CL. In order for extraction from a lower conjunct to take place across a higher conjunct without traditional ATB, which for reasons discussed above (sideward movement) voids the intervention effect in question, the edge of the conjunct that is crossed needs to be turned into a trace, the effect of which is that the higher conjunct is unlabeled at the relevant point of the derivation. The CL requirement then forces the edge of each conjunct to be a trace (even the lower conjuncts that are not crossed by the relevant movement), so that each conjunct is unlabeled. Each conjunct then must be extracted from even when different elements undergo extraction.

8. *Tough* constructions

Under the current account of the CSC, there is improvement with ATB extraction because with ATB we get movement from each conjunct so that each conjunct is delabeled—there is then no CL problem. As noted above, in principle it is not necessary that the same element moves out of each conjunct as long as there is movement out of each conjunct. Having this in mind, in this section I will use the current approach to the CSC to tease apart different approaches to the *tough* construction, illustrated in (90):

(90) These sonatas(k) are tough to play __(k)

There are a number of different approaches to *tough* constructions. The main three are the following:
-*The null Op-movement account* (e.g. Chomsky 1977), where there is no movement out of the *tough* complement. A null operator (Op) moves to SpecCP of the complement of *tough* and stays there.
-*The improper movement account* (e.g. Brody 1993), where *tough* constructions involve regular movement out of the *tough* complement, which means they involve traditional improper movement via SpecCP in (90) (the account thus implies that the ban on A-A'-A movement should be dispensed with).
-*The complex Op+smuggling account* (e.g. Hicks 2009), where a null Op is merged with *these sonatas* in (90). The complex operator Op+*these sonatas* moves to SpecCP of the *tough* complement. Then, *these sonatas* moves out of the complex operator. (The first movement essentially smuggles *these sonatas* with respect to the traditional improper movement ban).

Under all these approaches there is movement to the Spec of the *tough* complement—the approaches differ with respect to what exactly moves there and what happens after that movement. I will simply refer to the movement(s) discussed above as *tough*-formation movement, using this as a neutral term.

To test the above approaches to *tough*-constructions with the current account of the CSC consider (91), which in addition to *tough* movement involves another movement out of the *tough* conjunct, which furthermore enters into an ATB dependency with wh-movement from the second conjunct. Notice that the first conjunct intervention effect is voided in (91) given Nunes's sideward movement analysis: The wh-phrase moves to the edge of the second conjunct and is then remerged in the first conjunct, voiding the first conjunct intervention effect.

(91) *Which violins(i) are these sonatas(k) tough [to play ___(k) on ___(i)] and [to tune __(i)]?

(91) involves two movements to the Spec CP of the first conjunct. Following accounts of multiple wh-fronting in Bulgarian, which involves the same configuration (Richards 2001), I assume Superiority

forces *tough*-formation movement to take place first, with wh-movement tucking in, as in Richards (2001), in the lower SpecCP (since (k) asymmetrically c-commands (i)).[38]

Let us now compare the accounts of *tough* constructions with respect to (91). Consider first the improper movement analysis. Since on this analysis *tough*-formation movement involves regular movement out of a clause, with successive cyclic movement through SpecCP of the *tough* complement, both conjuncts should be delabeled in (91) (they both "host" successive-cyclic movement via their highest edge), which means that it should be possible to coordinate them.

On the other hand, under the null Op-movement analysis and the complex Op+smuggling analysis (I will refer to these analyses together as Op-movement analyses), *tough*-formation movement which takes place at the top of the first conjunct is not successive-cyclic movement, it is a "final" movement which results in labeling, hence the *tough* conjunct is labeled under these approaches. (Under the null Op-movement analysis there is no *tough*-movement out of the *tough*-complement; under the complex Op+smuggling analysis there is but a different element moves out of the *tough*-complement: Op+*these sonatas* moves to the SpecCP of the *tough* complement, *these sonata* moves out). Since the *tough*-conjunct is labeled and the second conjunct is not labeled due to successive-cyclic wh-movement to its edge, (91) then violates CL under these analyses.

Consider also (69c), repeated here as (92), which does not involve an ATB dependency. This means that the movement from the second conjunct does cross the first conjunct, which, as discussed in section 7.2, should lead to an intervention effect.

(92) *Which violins(i) are these sonatas(k) tough [to play ___(k)] and [to keep ___(i) balanced]?

This is actually not the case under the improper movement analysis. Since on this analysis *tough*-formation movement involves successive-cyclic movement, the first conjunct in (92) is targeted by successive-cyclic movement on this analysis, which means that it is not labeled. As a result, it should not function as an intervener (see section 7.2. regarding the timing of labeling here; note that CL is also satisfied in (92) on the improper movement analysis, since both conjuncts are unlabeled). This is not the case under the Op movement analyses, where the conjunct in question is targeted by final movement, which means that it is labeled, as discussed above (in fact, (92) is also ruled out by CL under the Op-movement analyses). I conclude therefore that (91) and (92) favor the Op-movement analyses over the improper movement analysis of *tough*-constructions.[39]

9. ATB cover up

Tough constructions bring us to another case where the current analysis makes a rather interesting prediction regarding the possibility of violating the CSC though we will see below that an interfering factor arises with testing this prediction. Under the proposed analysis we may expect that a CSC violation can be covered up by an ATB dependency on top of it: If there is an ATB dependency formed with extraction out of two conjuncts, it can sneak in an extraction in violation of the traditional CSC. Abstractly, we would have here a pattern like (93), where ATB and non-ATB extraction are

[38]I will not consider (i), where the base wh-movement site is higher than the base *tough*-formation movement site since this example is unacceptable even without coordination, as (ii) shows, which means that (i) is ruled out independently of CL/coordination issues that we are interested in here.
(i) *Which simphonies(i) are these violins(k) tough [to play ___(i) on ___(k)] and [to conduct __(i)]?
(ii) *Which simphonies(i) are these violins(k) tough to play (i) on (k)?

[39]As shown in Bošković (in preparation), the current approach to the CSC/ATB can in fact also tease apart the null Op-movement and the complex Op+smuggling analysis of *tough* constructions based on lower level coordinations (below infinitival *to*) like *which violins$_i$ are tough to [play ___(i)] and [keep ___(i) balanced]*.

mixed and the relevant elements are at conjunct edges, getting there as a result of successive cyclic movement (which means they undergo further movement not shown in (93)).

(93) [ATB$_i$ non-ATB$_j$… t_i t_j] and [ATB…t_i]

Here, both conjuncts are unlabeled, there is no crossing of the first conjunct, and superiority is obeyed within the first conjunct. Since both elements have to be extracted from the coordination, a locality violation is bound to arise in English (see below), but crucially no CSC violation should arise under the current analysis, in contrast to the classical CSC approach, where non-ATB extraction in (93) would violate the CSC. It appears that we can test this configuration with English *tough* constructions: all we need is to switch the dependencies in (91) so that the ATB dependency is higher than the non-ATB dependency in the first conjunct prior to the conjunct edge movement, as in (94).

(94) *Which simphonies(i) are these violins(k) tough [to play ___(i) on ___(k)] and [to conduct __(i)]?

(94) is unacceptable, but the problem is that, as noted in fn 38, even (95), with no coordination, is unacceptable, which indicates that we are dealing here with an issue independent of coordination.

(95) *Which simphonies(i) are these violins(k) tough to play (i) on (k)?

There is, however, a more general interfering issue here. The formation of an ATB dependency between (i) and (i) in (94) (and (93) more generally) skips a potential ATB dependency site (k in (94) and t_j in (93)). In section 7.2 we have seen a number of examples from both constructions involving sideward movement indicating that this is simply not possible, see here the discussion of (87), which contrasts with (89) and (85), and fn 35, where similar examples involving parasitic gaps are given (I referred to this effect as Max ATB). The relevant constructions abstractly involve the configuration in (96): they indicate that it is not possible to form a sideward movement dependency (ATB or PG) between e_i and e'_i across e_j (while it's possible to form it between all three of these, or between e_i and e_j, and e_j and e'_i).

(96) e_i…e_j….e'_i

I add in (97) a different kind of PG examples (c/d are more detailed representations of the a/b examples), which are closer to the kind of examples we need to test here, where all relevant elements need to move. What is important is that, while both examples involve extraction out of an island, (97b/d) is better than (97a/c): the former represents a sideward movement dependency between e_j and e'_i in (96) and the latter between e_i and e'_i. I will refer to the effect in question as the ban on non-contigious ATB (although we have seen that it holds for sideward movement in general).

(97)a.*Which article do you wonder who John talked to about reviewing after talking to
b. ??Which article do you wonder who John talked to about reviewing after printing
c. *Which article$_1$ do you wonder who$_2$ John talked [to t_2] [about reviewing t_1] after talking to PG$_2$
d. ??Which article$_1$ do you wonder who$_2$ John talked [to t_2] [about reviewing t_1] after printing PG$_1$

The effect in question interferes with what we are trying to test here. At any rate, the relevant examples are given in (98). The examples are rather long with a number of movement/sideward movement dependencies and involve extraction out of an island, so they are all expected to be degraded. The question is how they compare with each other. Note first that, in addition to the issues just noted, (98a), but not (98b), involves a violation of the ban on non-contiguous ATB (there is an ATB dependency between e_i and e_i across e_j in (98a)). Under the traditional CSC approach, both examples involve a CSC

violation, which then means that (98b) should be better than (98a) (for the same reason (97b) is better than (97a)). This is not necessarily the case under the analysis presented here. Under the current analysis, the CSC is not violated in both examples in (98). Although (98a) violates the traditional CSC it doesn't violate it under the deduction proposed here, since the CSC-"violating" extraction is covered up by an ATB dependency in (98a), as discussed above regarding (93) (abstractly we have here configuration [e_i e_j John…] and [e_i Peter…] at the edge of the bracketed conjuncts). (98b), on the other hand, does violate the CSC even under the current approach. While the relevant judgments are obviously subtle due to the complexity of the examples, (98a) does appear to be better than (98b).

(98) a. ???Which manuscript$_j$ do you wonder who$_i$ [John talked to e_i about reviewing e_j] and [Peter talked to e_i about publishing it]?
b. *Which manuscript$_j$ do you wonder whether [John talked to Mary about reviewing e_j] and [Peter talked to Bill about publishing it]?

This is unexpected under the traditional CSC approach, where (98a) and (98b) differ only in that (98a) violates the ban on contigious ATB, which (98b) does not violate: (98b) is then incorrectly predicted to be better than (98a) under the traditional CSC approach. On the other hand, these data can be captured under the current analysis, where only (98a) violates the ban on contigious ATB and only (98b) violates the CSC. CSC violations are in general rather strong: (98b) is then worse than (98a) because it involves a stronger violation.

The same kind of argument can be made for SC. Thus, (99a), which involves a traditional CSC violation combined with ATB, is better than (99b), where the CSC violation is not combined with ATB, in spite of the former also violating the ban on non-contigious ATB.

(99) a. ?*Koja kola$_j$ se pitaš koga$_i$ je ubijedio t_i da kupi t_j i umalo nagovorio t_i da proda kuću
which car self wonder whom is persuaded that buys and almost convinced that sells house
'Which car do you wonder who he persuaded to buy and almost convinced to sell the house?'
b.*Koja kola$_i$ se pitaš da li je ubijedio Petra da kupi t_i i umalo nagovorio Ivana da proda kuću
which car self wonder whether is persuaded Petar that buys and almost convinced Ivan that sells house
'Which car do you wonder whether he convinced Petar to buy and almost convinced Ivan to sell the house?'

In fact, since SC is a multiple wh-fronting language, it is possible to have both wh-phrases move to the same clause, as in (100), which shows the same contrast as (99), (100b) being better than (100a), on a par with the contrast between (99a) and (99b). In fact, since the wh-island violation is removed in (100), the relevant contrast is even clearer. Under the current analysis, (100a) involves a CSC violation and (100b) involves a violation of the ban on non-contiguous ATB; (100b) does involve a violation of the traditional CSC but not under the current account of the CSC effect, where the violation is covered up by an ATB dependency here, as discussed above with respect to (93) (abstractly, we have the following configuration at the edge of the bracketed conjuncts in (100b): [t_j t_i…] and [t_j…]).

(100) a.*Koja kola$_i$ je [ubijedio Petra da kupi t_i] i [umalo nagovorio Ivana da proda kuću]?
which car is persuaded Petar that buys and almost convinced Ivan that sells house
'Which car did he persuade Petar to buy and almost convinced Ivan to sell the house?'
b. ??Koga$_j$ je koja kola$_i$ [ubijedio t_j da kupi t_i] i [umalo nagovorio t_j da proda kuću]?
who is which car persudaded that buys and almost convinced that sells house
'Who did he persuade to buy which car and almost convinced to sell the house?'

These examples then show that an ATB dependency can sneak in a violation of the traditional CSC: the fact that (100b) is better than (100a), which violates the CSC, indicates that (100b) does not violate the CSC (the degraded status of (100b) being due to an independent factor, namely the ban on non-contiguous ATB).

We thus have here another case where the traditional CSC can be violated, namely by piggybacking on ATB, which can be accounted for under the proposed approach to the CSC/ATB.

11. Postal's exception to the CSC

Postal (1998) discusses three contexts that exceptionally allow extraction from conjuncts which are defined in semantic terms: the conjuncts are temporally ordered, or there is a cause-effect relationship between them, or one conjunct represents a state of affairs that is unexpected in light of the preceding conjunct. Postal shows that only the first case involves actual coordination, hence I will focus on this case here, illustrated by (101), where the event characterized by the first conjunct precedes that of the second conjunct.

(101) a. the stuff which$_i$ Arthur [sneaked in] and [stole t_i] (Postal 1998:53)
b. Here's the whiskey which$_i$ I went to the store and [bought t_i] (Ross 1967:103)

Ross (1967) and Postal (1998) observe several strict constraints on such coordinations. Thus, such exceptional CSC-violating extraction is only possible with bare VP conjuncts.

(102) a. *the cheese which$_i$ Frank went to the store and his wife bought t_i
b. the book which$_i$ Gail will drive there and (*will) buy t_i (Postal 1998:58)
c. *the shirts which$_i$ I went to the movies and didn't pick up t_i will cost us a lot of money (Ross 1998:103)

Furthermore, extraction is not possible from the first conjunct.[40]

(103) *What$_i$ did he [buy t_i], went home, and [ate t_i]?

When there are more than two conjuncts, extraction can take place only out of some, or all non-initial conjuncts—there is no ATB requirement here.

(104) a. the cheese which$_i$ Frank drove to the store, bought t_i, went home, and gave t_i to Greta (Postal 1998:56)
b. the stuff which$_i$ Harry went to the store, bought t_i, went home, and ate t_i (Postal 1998:66)

The current analysis makes it possible to account for the acceptability of (101) as well as the restrictions displayed in (102)-(103) and the lack of the ATB requirement displayed by (104). The construction in question is clearly exceptional, hence it merits an analysis that is at least to some extent exceptional. I suggest that what is exceptional here is that the coordination is not fully parallel, the first conjunct is a vP while the other conjuncts are (or can be, see below) bare VPs. More precisely, given that the subject in traditional SpecvP does not udergo feature sharing with its sister, which is a vP (see Chomsky 2013; the discussion in this section follows the first set of assumptions from footnote 20), the first conjunct is actually unlabeled at the point when the coordination is formed. The suggestion is that this kind of coordination, which does not fully conform with CL, is only possible under the temporal

[40] As noted below, the last conjunct has to be extracted from, hence the trace in the last conjunct.

sequence condition, which I assume also exceptionally licenses the "discharge" of the external theta-role of the verb in conjuncts where vP is not present. This immediately captures the bare-VP restriction, i.e. (102).

Regarding (103), the details of labeling are important here. As noted above, what is exceptionally licensed with respect to CL here is the situation where the first conjunct is unlabeled (recall that the subject in traditional SpecvP does not undergo feature-sharing) and other conjuncts are VPs. However, the extraction in (103) changes this exceptional situation. As discussed above, an object undergoing wh-movement undergoes object shift, the landing site of object shift being higher than the subject base-position. Object shift results in phi-feature sharing, which labels the relevant phrase. This then departs from the exceptional labeling configuration noted above, hence it results in a CL violation.

Why is extraction from other conjuncts possible, in fact in a non-ATB manner (104)? This is surprising, since even independently of CL, extraction that takes place in a non-ATB manner should yield an intervention effect: as discussed above, generally only extraction from the first conjunct is possible without ATB due to an intervention effect. In fact, the first conjunct should be an intervener for any extraction from lower conjuncts, even if extraction from lower conjuncts itself were to take place in an ATB manner or if there is only a single extraction, as in (101). Recall, however, that the first conjunct is actually unlabeled in (101) and, importantly, that unlabeled elements don't function as interveners. The potential intervention effect, which would be caused by the first conjunct, is then voided in (101).[41]

Finally, why is it that lower conjuncts do not cause intervention effects either, as indicated by the fact that extraction from non-initial conjuncts need not proceed in an ATB manner, i.e. it need not affect each conjunct (cf. (104))? This is actually not surprising under the current analysis.[42] An ATB dependency can be formed via sideward movement between the two traces, so that actual movement takes place only out of the second conjunct, movement out of the second conjunct crossing only an unlabeled element, as discussed above.

Note that this does not force movement to start from the second conjunct in all constructions of this type. Consider (105).

(105) the cheese which$_i$ Harry [went to the store], [took out his wallet], [grabbed a five dolar bill], [bought t_i], [went home], [took a shower], and [then ate t_i] (Postal 1998:57)

Here, the conjuncts above the [bought t_i] conjunct can all be vPs (in fact, as discussed below, only the last conjunct must be a VP). Movement from the conjunct in question then only crosses unlabeled elements, as discussed above (furthermore, as the reader can verify, no problem arises with movement of the subject, which in fact can proceed in an ATB fashion from the vP conjuncts in question).

Interestingly, Postal (1998) notes that exceptional temporal CSC extractions are disalowed in French.

(106) a. Jacques a couru au marché, a acheté du pain$_1$, a foncé chez lui, et l'a mangé.
'Jacques ran to the market, bought some bread$_i$, rushed home, and ate it.'

[41]As discussed above, I assume that if labeling cannot occur immediately (as in head-complement or feature-sharing configurations), it occurs at the next phasal level. Subject movement to SpecTP will enable v to label the relevant structure. However, the labeling only occurs after the CP phase is completed, hence after wh-movement from the second conjunct to SpecCP.

[42]A clarification is in order regarding the PIC. In Uriagereka's (1999) original multiple spell-out proposal, not only the Spec of phase XP, but also its complement is accessible from the outside, only what is dominated by the complement is not. Bošković (2015, 2016a) argues for a return to this conception of the PIC, a consequence of which is that a phasal complement need not move via the phasal edge. I also adopt it here. This means that movement out of the VP conjunct in e.g. (101) need not proceed via the edge of the conjunct (which, being a conjunct, is a phase; not much would actually change if edge movement were to take place, we would only need to modify the condition under which temporal sequence conjuncts allow for a relaxation of CL).

b. *le pain que$_1$ Jacques a couru au marché, acheté t_1, foncé chez luiz et mangé t_1
'the bread which$_1$ Jacques ran to the Market, bought t_1, rushed home, and ate t_1' (Postal 1998:75)

What could be the relevant difference between French and English here? I suggest it's the well-known difference regarding V-movement: French is a V-movement language and English is not.[43] Lasnik (1995) analyzes this difference by positing a feature in the verb in French which requires French verbs to move, while no such feature is present in English verbs: they are lexically bare in the relevant sense, hence they don't need to raise, undergoing PF merger with the inflectional affix under adjacency in PF. (As for the v-V relation, if there is V-to-v movement, not just PF merger between the heads in question, in English, under Lasnik's approach it would be driven by a property of v, not V.). Given this, bare VP coordination of the kind discussed here is simply not possible in French (since the verb must raise), it is only possible in a bare, non-featural V languages (in Lasnik's terms), where verbs do not raise.

The analysis makes a prediction that examples like (101) will only be allowed in non-V-raising languages. While I leave a confirmation of the prediction for future research, I note here that such examples are disallowed in SC, also a V-movement language (see Bošković 2001, Stjepanović 1999).

(107) *hljeb koji$_i$ se ušunja u prodavnicu i kupi t_i
bread which self sneaked-in to store and bought
'the bread which he sneaked into the store and bought.'

Postal (1998) notes several additional properties of exceptional temporal CSC extractions, which may be explainable under the proposed analysis. Thus, they disallow quantifier *both*, as in (108), and interwoven dependencies like the one in (109).

(108) the dress which$_1$ Jacqueline (*both) went to Sears and bought t_1 (Postal 1998:58)
(109) the wine and beer which$_1$ Jack and Bob will go to the store and buy t_1 (*respectively)
(Postal 1998:59)

If such cases require the presence of the subject trace in the second conjunct, which seems especially plausible for (109), the ungrammaticality of (108)-(109) can be captured under the current, bare VP analysis of temporal CSC extractions.[44]

Finally, Postal (1998:80) and Lakoff (1986:153-154) observe that extraction must take place out of the last conjunct in the coordinations under consideration (compare **the stuff which$_i$ Harry went to the store, bought t_i, went home, and ate it* with (104b)). We have seen above (cf. the discussion of (105)) that VP coordination need not start with the second conjunct. In fact, I suggest that only the last conjunct must be a VP and take the forced movement here to indicate that a bare VP cannot tolerate the presence of a lexical object. In fact, having in mind Chomsky's (2001) requirement that something must move out of vP, if the same requirement holds for VP if there is no vP above it, object movement would be forced (since the verb cannot move here, and the subject is not even present). The suggestion can be tested with constructions not discussed by Postal and Lakoff, where the last conjunct simply has an intransitive verb. Such cases are also unacceptable, as shown by **the stuff which$_i$ Harry went to the store, bought t_i, went home, and fell asleep*, as expected under the suggested account.

11. Conclusion

[43]In fact, even participles and infinitives raise in French, see e.g. Pollock (1989) and Belletti (1990).
[44]Postal notes the coordinator *or* is not possible with coordinations under consideration (**the cheese which$_1$ Frank went to the store, bought t_1, went home, or gave t_1 to Greta)*, which could be interpreted to mean that *or* is not compatible with bare VP-level coordination (particular coordinators can be sensitive to the level of coordination, in fact some languages, like Japanese, have different coordinators for clausal and NP coordination).

The paper has proposed a deduction of one part of the CSC, namely the ban on extraction out of conjuncts, which also captures the ATB exception to the CSC. The paper has actually reformulated the traditional CSC based on a number of cases where extraction out of conjuncts was shown to be possible. In particular, it was shown that the CSC holds only for successive-cyclic movement, as in **Who$_i$ did you see [t_i friends of t_i] and Sue*; elements that are base-generated at the edge of a conjunct, or move there independently of successive-cyclic movement, can extract. I have shown that the restriction of the CSC effect to successive-cyclic movement can be captured in a principled way in Chomsky's (2013) labeling framework, where successive-cyclic movement changes the category of the element it targets. The gist of the account is the following: Conjuncts are phases. As a result, movement out of a conjunct has to proceed successive-cyclically via the conjunct edge. Successive-cyclic movement via the conjunct edge delabels the conjunct, i.e. it changes its category. As a result, if movement takes place only out of one conjunct, a violation of the Coordination-of-Likes requirement ensues, the violation being remedied if movement takes place out of each conjunct, as in traditional ATB. The analysis restricts the CSC effect to successive-cyclic movement, which was shown to have strong empirical motivation based on a number of cases where elements which are base-generated at the conjunct edge, or which move to the conjunct edge independently of successive-cyclic movement, were shown to be able to undergo extraction out of conjuncts. The relevant cases include left-branch extraction in SC, *r*-pronoun movement in Dutch, V-2 movement in German, clitic doubling in Dutch and Romance, quantifier float in Japanese, article-incorporation in Galician, and object shift in English. Postal's (1998) semantically conditioned exception to the CSC was also accounted for. It was also shown that ATB movement, whose exceptional behavior is captured rather straightforwardly in the proposed analysis, can license an additional extraction out of a conjunct (from which ATB movement takes place) in violation of the traditional CSC. Furthermore, the discussion in the paper has led to a discovery of a new type of ATB, where movement out of each conjunct takes place but it is not the same element that is extracted out of the conjuncts, as in traditional ATB, but different elements.

The proposed analysis was shown to have a number of additional theoretical and empirical consequences. Thus, the paper has established the generalization that unlabeled elements do not count as interveners, a rather natural generalization given the nature of intervention effects, where features of the intervener matter (projecting features requires projecting a label, i.e. labeling). The discussion in the paper also shed light on the mysterious ban on local wh-movement from SpecIP to SpecCP, which is widely observed crosslinguistically. I have argued for a return to split IP, in the spirit of Pollock (1989), and shown that subjects undergoing wh-movement cannot move to the highest projection in the split IP even when this movement is not immediately followed by movement to SpecCP. If the projection in question is involved in agreement licensing, as in the original AgrsP/TP split, we can then also account for the fact that in many languages wh-movement of the subject affects agreement.

Additionally, the paper has provided evidence that conjuncts are phases, a new diagnostic for teasing apart analyses of *tough* constructions, as well as evidence for Nunes's sideward movement account of ATB (and parasitic gaps). Overall, to the extent that the analysis proposed in the paper is successful it provides strong evidence for the phase theory (including a particular contextual approach to phases) and Chomsky's (2013) labeling system, which allows unlabeled elements during the derivation.

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