Adjoined koP in Korean Clausal Coordination: Implications for the Across-the-Board Analysis

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Abstract

This paper investigates the syntax of coordinate structures in Korean. The proposed analysis is consistent with the direction taken by most current theories of coordination, which hold to the assumption that phrase structure is fundamentally asymmetric. The resemblance of syntactic asymmetries found in so-called Across-the-Board (ATB) questions to those found in parasitic gap constructions provides an empirical justification for the adjunction analysis advanced here, where a conjunction phrase koP (constituting the first conjunct plus the conjunctive suffix -ko) is assumed to be adjoined to the final conjunct. On this analysis, conjoined wh-questions in Korean are not so "across-the-board" as traditionally assumed; rather, there is only one A-bar movement chain, namely that of a null operator into Spec,koP. The proposed analysis departs in significant ways from Munn's (1993) adjunction analysis of English ATB sentences. Most significantly, the wh-phrase in Korean is analyzed to be base-generated in the left periphery and also to bind pro in the second conjunct. These differences are described as syntactic reflexes of more general typological differences between the two languages including word order and the (un)availability of pro. A particularly important consequence of the proposal is discussed, namely the reformulation of the Coordinate Structure Constraint as a kind of parallelism requirement on conjuncts, i.e., phrases of the same category/size (here, TPs).

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1 Introduction

This paper aims to show that clausal coordination in Korean involves adjunction. In particular, so-called Across-the-Board (ATB) questions, exemplified in (1), are analyzed as instances of parasitic gap constructions involving null operator binding, exemplified in (2).

(1)　Nwukwu/enu haksayng-ul John-un　e **chingchanha-(ss)-ko** Mary-nun　e
　　　who/which student-ACC　John-TOP e praise-(PST)-and　　Mary-TOP e
　　　kkucic-ess-ni?
　　　scold-PST-Q?
　　　'Who/which student did John praise and Mary scold?'

(2)　Nwukwu/enu haksayng-ul John-i　　e **chingchanha-kose** Mary-ka　　e
　　　who/which student-ACC　John-NOM e praise-after　　　Mary-NOM e
　　　kkucic-ess-ni?
　　　scold-PST-Q?
　　　'Who/which student did Mary scold after John praised?'

I take up Munn's (1993) adjunction analysis of coordination in English as the starting point. On his analysis, so-called ATB[1] extraction in English involves two distinct A-bar chains: *wh*-movement from the leftmost (matrix) conjunct and null operator movement in the rightmost adjoined conjunct. This paper essentially asks whether Munn's approach is equipped to deal with ATB questions in Korean, a head-final language.

There are several reasons why Korean presents an interesting point of contrast to English. First, Korean is a *wh*-in-situ language and does not require interrogative Spec,CPs to be overtly filled by a *wh*-phrase. ATB questions are an exception to this in that they typically involve fronted *wh*-phrases (1).[2] Thus, one question this paper aims to address is how *wh*-phrases in coordinate structures are derived—via movement or base-generation?—and what syntactic position they occupy.

Second, unlike English, Korean presents a case in which linear precedence does not represent structural hierarchy, i.e., on the head-final, left branching configuration of Korean, the structurally higher conjunct correlates with the rightmost conjunct rather than with the leftmost one. It would be of interest to see how or whether this discrepancy between structural hierarchy and linear order bears on the dependency relations found in ATB questions.

Finally, as observed by Kwon and Polinsky (2008), "Korean differs from English in that it has very little true coordination." In many descriptions of Korean grammar, "[t]he distinction between coordination and subordination is not clear-cut and is a matter of degree" (Sohn, 2001, p. 304). This is related to the fact that Korean is a clause-chaining language. As we will see, the two types of structures—coordinate and subordinate—are minimally distinguished by the fact that only coordinate structures permit overt tense marking on non-final verbs. The absence of a significant structural distinction between the two types provides some initial motivation for a unified syntactic analysis.

In what follows, I will show that Munn's adjunction approach to coordination correctly captures some important syntactic parallels between ATB (coordinate) and parasitic gap (subordinate) constructions in Korean. Yet, independent differences between Korean and English prevent the direct application of his analysis to deriving ATB sentences in Korean like (1). In particular, there are

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[1]For expository purposes only, I will continue to use the term "ATB" to refer to constructions involving conjoined *wh*-questions, although, as we will see, there is no "across-the-board" movement as the name implies.

[2]That the *wh*-phrase in (1) is not just short-scrambled is revealed by the fact that it can occur in sentence-initial position when the coordinated phrase is embedded under a higher matrix verb, e.g., 'which student do you think that John praised and Mary scolded?'

puzzles about coordination (a)symmetries in Korean which cannot be accounted for by assuming that one A-bar chain involves overt *wh*-movement in the matrix clause while the other involves null operator movement in the adjoined clause. I will argue that that *wh*-phrases are base-generated in the left periphery in Korean–a property I claim is related to the availability of *pro* in Korean.

The paper is structured as follows: Section 2 discusses Munn's adjunction analysis of coordination in English. Section 3 tests the predictions of Munn's analysis for Korean using ATB data. Two important generalizations follow from this section: (i) (a)symmetries in Korean coordinate structures parallel those in parasitic gap constructions, just as is the case in English; however, (ii) these asymmetries go in the *same* direction as in English, contrary to predictions. Section 4 aims to explain this puzzle by proposing that ATB sentences in Korean are derived by a combination of two facts, only the first of which reflects an element of Munn's analysis: (i) there is a null operator movement, but it is from the object position of the *first* conjunct (into Spec,*ko*P) and (ii) fronted *wh*-phrases are base-generated Focus Phrases. Section 5 offers some remarks on the controversy surrounding the nature of the *-ko* morpheme, which has variably been treated as either a coordinator or subordinator. On the proposed analysis, the divergent (coordinate vs. subordinate) behavior of *-ko* is attributed to minimal variation in one and the same (adjunction) structure: subordinate *-ko* selects *v*P while coordinate *-ko* selects TP. Section 6 concludes.

2 Munn's (1993, 2000, 2001) Adjunction Analysis of English Coordination

There is a well-known constraint on movement out of coordinate structures, formulated in (3) and exemplified in (4).

(3)   Coordinate Structure Constraint (CSC) (Ross, 1967)
       In a coordinate structure, no conjunct may be moved, nor may any element contained
       in a conjunct be moved out of that conjunct.

(4)   a.   *Which book did John read [the magazine and e]?
       b.   *Which bicycle did [John decide to buy the truck, and Mary decide to sell e]?

Ross notes a notable exception to the CSC: extraction seems to be acceptable when an identical constituent is displaced from both conjuncts. This has been referred to as Across-the-Board (ATB) movement, exemplified in (5):

(5)   a.   Who did John like e but Mary dislike e?
       b.   Which book did John read e and Mary review e?

Munn (1993, 2000, 2001) explains this exception by treating ATB extraction from coordinate structures as instances of parasitic gaps. This analysis follows from the view that coordinate structures are syntactically hierarchical and asymmetrical; specifically, one conjunct is a syntactic adjunct to the other. This is schematized in (6): the rightmost conjunct (IP_2) is part of a so-called Boolean Phrase (BP) which is headed by the conjunction (B^0), and this phrase is adjoined to the other conjunct (IP_1).

(6)   IP
           /   \
        IP_1 BP
        /\   / \
      ... B^0 IP_2
             | /\
            and   ...
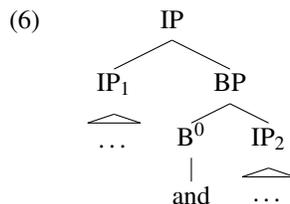
On this analysis, the sentences in (5) involve two distinct A-bar dependencies: (i) overt *wh*-movement out of the first conjunct (IP_1) into Spec,matrixCP and (ii) null operator movement into Spec,BP. The two A-bar chains thus formed undergo a process of chain composition (Chomsky, 1986), by which the correct interpretation is derived. This analysis unifies ATB extraction from coordinate structures with parasitic gap formation, as shown in (7) and (8).

(7)   a.   [$_{CP}$ Which film$_i$ did [$_{IP}$ John buy t$_i$ [$_{BP}$ Op$_i$ and Mary review e$_i$]]]?
       b.   [$_{CP}$ Which film$_i$ did [$_{IP}$ John buy t$_i$ [$_{BP}$ Op$_i$ before Mary reviewed e$_i$]]]?

(8)
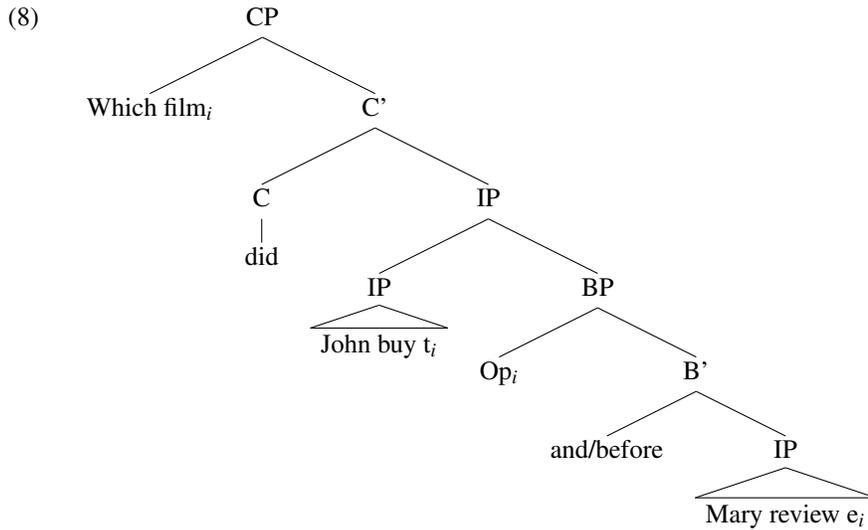
Munn (2000) presents three sets of evidence that argue against the claim that a *wh*-phrase is extracted in an across-the-board manner from conjuncts. All of them point to the syntactic asymmetry of coordinate structures. First, he notes that an anaphor may reconstruct only into the first ATB gap, not the second gap. This parallels Kearney (1983)'s observation that in parasitic gap constructions, an anaphor may reconstruct into the real gap (the trace), but not into the parasitic gap (9).

(9)   No reconstruction into the parasitic gap

         a.   Which pictures of himself/*herself did John$_i$ paint t before Mary$_j$ bought e
         b.   Which pictures of himself$_{i/*j}$ did John$_i$ buy t after Bill$_j$ painted e

(10)   No reconstruction into the second ATB gap

         a.   Which pictures of himself/*herself did John buy and Mary paint
         b.   Which pictures of himself$_{i/*j}$ did John$_i$ buy and Bill$_j$ paint

Second, weak crossover (WCO) effects only arise with real gaps in parasitic gap constructions (11) and, correspondingly, with first ATB gaps in coordinate structures (12).

(11)   No WCO in the parasitic gap

         a.   Who$_i$ did you gossip about t$_i$ despite his$_i$ mother's having vouched for e$_i$
         b.   *Who$_i$ did his$_i$ mother gosspi about t$_i$ despite you having vouched for e$_i$

(12)   No WCO in the second ATB gap

         a.   Who$_i$ did you gossip about t$_i$ but his$_i$ mother vouch for e$_i$
         b.   *Who$_i$ did his$_i$ mother gossip about t$_i$ but you vouch for e$_i$

The last set of evidence comes from Hebrew, which allows resumptive pronouns only in place of parasitic gaps, as shown by the contrast in (13). The same is true of coordinate structures (14).

(13)   No resumptive pronouns in the real gap

         a.   ha-mʔamar še karati lifnei še tiyakti **ʔoto**
               the article   that read-I before that filed-I it
               'the article that I read it before I filed'
         b.   *ha-mʔamar še karati **ʔoto** lifnei še tiyakti
               the article   that read-I it   before that filed-I
               'the article that I read it before I filed'

(14)   No resumptive pronouns in the first conjunct

a. haiš   še Rina roca ve ʔohevet **ʔoto** yoter   mikulam
    the-man that Rina wants and loves   him more-than anyone
    'the man that Rina wants, and loves more than anyone'
b. *haʔiš   še Rina roca **ʔoto** ve ʔohevet yoter   mikulam
    the-man that Rina wants him and loves   more-than anyone
    'the man that Rina wants and loves more than anyone'

In summary, in English ATB extraction, (i) anaphors may only be reconstructed into the first gap (10); (ii) only the first ATB gaps induce WCO effects (12); and (iii) (in Hebrew) resumptive pronouns are licensed only in second ATB gap position (14). Munn attributes these asymmetries to the parasitic nature of the second ATB gap—a conclusion which follows straightforwardly from the adjunction analysis of coordinate structures. This analysis has the favorable outcome of subsuming so-called ATB extraction under the more general phenomenon of null operator movement (cf. Chomsky 1986), a mechanism already independently required in the grammar.

3 New Data: *-ko* Coordination in Korean

In contrast to English, in which the conjunction *and* forms a constituent with the final conjunct, the conjunctive suffix *-ko* in Korean forms a constituent with the left conjunct. Therefore, on Munn's analysis, the *-ko* phrase must precede and be adjoined to the the final conjunct (the matrix TP clause). The basic phrase structure predicted for Korean is in (15). Note that the left-adjoined *ko*P corresponds, structurally, to the *right*-adjoined BP in Munn's structure for English, shown in (8):

(15)   Adjoined *ko*P:
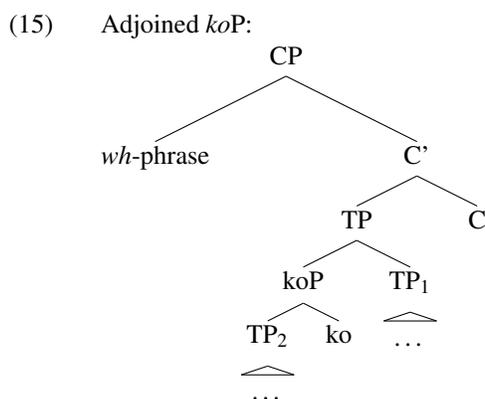
3.1 Puzzles: Coordination (A)symmetries in Korean ATB Questions

Assuming that anaphor reconstruction and WCO are movement phenomena which are sensitive to structural conditions like Condition A and to islands, the structure in (15) predicts that the adjoined first conjunct should show neither anaphor reconstruction nor WCO since (i) *wh*-extraction is obviated by the Left Branch Condition and/or the adjunct condition and (ii) the locality requirement of Condition A prevents the reconstruction of a fronted *wh*-phrase into the adjunct/parasitic domain.

What this means is that the direction of asymmetries in coordinate structures and parasitic gap constructions in Korean is expected to be just the *opposite* of that found for English. However, as we will see, these predictions are not borne out: (i) The asymmetries in anaphor reconstruction and resumptive pronoun licensing are in the *same* direction as in English; (ii) subjacency effects only arise in the adjunct; and (iii) there is no asymmetry at all with respect to WCO.

3.1.1 Subjacency Effects

Subjacency effects provide the first set of evidence for the parasitic gap analysis of ATB sentences in Korean and against the hypothesis that they are derived by *wh*-extraction from the matrix conjunct

as in English. Subjacency effects do not arise in the matrix clause of either the parasitic gap construction (16-a) or the ATB construction (17-a). Given that subjacency is a diagnostic for movement, the absence thereof suggests that there is no *wh*-movement out of the matrix conjunct. However, it remains to be seen why subjacency effects do arise in the adjoined *ko*P/parasitic gap domain.

(16) The parasitic gap is not subject to subjacency (CNPC)

  a.   Enu   haksayng-ul Mary-ka   e pangmwunhaki-to-ceney [[John-i   e
    which student-ACC Mary-NOM e visit-even-before   John-NOM e
    simsahalkela-nun] kyeyhoyk]-ul alli-ess-ni?
    will.examine-NUN plan-ACC   announce-PST-Q
    'Which student x was such that even before Mary visited x, John announced [the plan to examine x]?'

  b.   *Enu   haksayng-ul [[John-i   e simsahalkela-nun] kyeyhoyk]-ul
    which student-ACC John-NOM e will.examine-NUN plan-ACC
    alliki-to-ceney Mary-ka   e pangmwunhay-ss-ni?
    announce-and   Mary-NOM e visit-PST-Q
    'Which student x was such that even before John announced [the plan to examine x], Mary visited x?'

(17) The second ATB gap is not subject to subjacency (CNPC)

  a.   Enu   haksayng-ul Mary-ka   e pangmwunha-ko [[John-i   e
    which student-ACC Mary-NOM e visit-and   John-NOM e
    simsahalkela-nun] kyeyhoyk]-ul alli-ess-ni?
    will.examine-NUN plan-ACC   announce-PST-Q
    'Which student did Mary visit e and John announce [the plan to examine e]?'

  b.   *Enu   haksayng-ul [[John-i   e simsahalkela-nun] kyeyhoyk]-ul
    which student-ACC John-NOM e will.examine-NUN plan-ACC
    alli-ko   Mary-ka   e pangmwunhay-ss-ni?
    announce-and Mary-NOM e visit-PST-Q
    'Which student did John announce [the plan to examine e] and Mary visit e?'

3.1.2 Anaphor Reconstruction

The hypothesis that there is no syntactic extraction from the matrix conjunct is also supported by another type of asymmetry, on which an anaphor fails to reconstruct into the second ATB/parasitic gap. In (18), the anaphor *caki* 'self' in the fronted *wh*-phrase cannot be construed with the subject of the second conjunct despite it being the structurally higher matrix clause.[3] Instead, it is construed with the subject of the first conjunct - in (apparent) violation of Condition A. This puzzle, too, must be explained.

(18)   Caki-ey.tayhan enu   phyenglon-ul John-i   e kacang cohaha-ko Mary-ka
    self-about   which critique-ACC John-NOM e most   like-and   Mary-NOM
    kacang e silhehay-ss-ni?
    most   e dislike-PST-Q?
    (i) 'Which critique about self$_i$ did John$_i$ like the most and Mary dislike the most?'
    (ii) ??'Which critique about self$_i$ did John like the most and Mary$_i$ dislike the most?'

3.1.3 Resumptive Pronouns

The asymmetries between the first and second gaps with respect to reconstruction and subjacency strongly suggest that there is no syntactic extraction out of the matrix conjunct. The second gap

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[3]The split antecedent reading is also available: 'Which critique about themselves did John like the most and Mary dislike the most?' However, this reading is more naturally obtained when *caki* is overtly marked for plural (*caki-tul*).

must not be the trace of a moved *wh*-element, but is more likely to be a *pro*—a possibility allowed for by the *pro*-drop status of Korean.

The asymmetry in resumptive pronoun licensing seems to corroborate this idea. The resumptive pronoun *ku* may not occur in the adjoined second clause, or the structural equivalent of the parasitic gap domain in English. Correspondingly, in (20), *ku* may not replace the first ATB gap in the adjoined clause. To the extent that empty pronominals are like overt pronominals including resumptive pronouns, the example in (19) constitutes evidence for the *pro* status of the second gap.

(19)   Resumptive pronoun licensed in the matrix clause

Nwukwu-lul John-i   **(?*ku-lul)**/e chwuchenhay-se   Mary-ka   **(ku-lul)**/e
who-ACC   John-NOM (he-ACC)/e   recommend-because Mary-NOM (he-ACC)/e
simsahay-ss-ni?
assess-PST-Q

'Who x was such that because John recommended x, Mary assessed x?'

(20)   Resumptive pronoun licensed in the second gap in coordinate structures

Nwukwu-lul John-i   **(?*ku-lul)**/e chwuchenha-ko Mary-ka   **(ku-lul)**/e
who-ACC   John-NOM (he-ACC)/e   recommend-and Mary-NOM (he-ACC)/e
simsahay-ss-ni?
assess-PST-Q

'Who x was such that John recommended x and Mary assessed x?'

3.1.4 Weak Crossover

The weak crossover (WCO) phenomenon brings an interesting wrinkle to the dataset presented thus far, as it presents no asymmetry between the matrix and adjunct clause in either the parasitic gap construction (21) or the ATB construction (22).

(21)   Neither the real gap nor the parasitic gap induces WCO effects
   a.   Enu   haksayng$_i$-ul **caki$_i$** citokyoswu-ka e chwuchenhay-se   hakcang-i e
          which student-ACC his   advisor-NOM   e recommend-because dean-NOM e
          simsahay-ss-ni?
          examined-PST-Q
          'Who$_i$ x, because his$_i$ advisor recommended x, the dean examined x?'
   b.   Enu   hayksang$_i$-ul hakcang-i e chwuchenhay-se   **caki$_i$** citokyoswu-ka e
          which student-ACC dean-NOM   e recommend-because his   advisor-NOM   e
          simsahay-ss-ni?
          examine-PST-Q
          'Which student$_i$ x, because the dean recommended x, his$_i$ advisor examined x?'

(22)   Neither the first nor second ATB gap induces WCO effects
   a.   Enu   haksayng$_i$-ul **caki$_i$** citokyoswu-ka e chwuchenha-ko hakcang-i e
          which student-ACC his   advisor-NOM   e recommend-and dean-NOM e
          simsahay-ss-ni?
          examine-PST-Q
          'Which student$_i$ x, his$_i$ advisor recommended x and the dean examined x?'
   b.   Enu   hayksang$_i$-ul hakcang-i e chwuchenha-ko **caki$_i$** citokyoswu-ka e
          which student-ACC dean-NOM e recommend-and his   advisor-NOM   e
          simsahay-ss-ni?
          examine-PST-Q
          'Which student$_i$ x, the dean recommended x and his$_i$ advisor examined x?'

3.1.5 Summary of Data

The data presented above bring us to two broad generalizations concerning the syntax of ATB questions in Korean: (i) There is no extraction from the second conjunct, which suggests that the second ATB gap is a *pro* rather than an A-bar trace; and (ii) there seems to be (some kind of) A-bar movement in the first conjunct, as suggested by subjacency and anaphor reconstruction effects. It remains to be seen, however, why there aren't also WCO effects. Below is a summary of data.

	First ATB gap	Second ATB gap
a. Found in?	adjunct CP (=*ko*P)	matrix conjunct
b. Show subjacency?	yes	no
c. Site for anaphor reconstruction?	yes	no
d. Show WCO?	no	no
e. Is there movement of some kind?	yes (by the properties b and c)	No, the gap is a *pro*

Table 1: Summary of the properties of ATB gaps.

4 Non-movement Derivation of "ATB" Constructions in Korean

All the properties of the ATB gaps presented above may be accounted for under the proposal in (23):

(23) $[_{CP} [_{FocP} \textbf{\textit{wh}}_i [_{TP} [_{koP} \textbf{Op}_i [_{TP} \ldots \textbf{t}_i \ldots] \text{-ko}] [_{TP} \ldots \textbf{\textit{pro}}_i \ldots]]] \text{-ni}]$
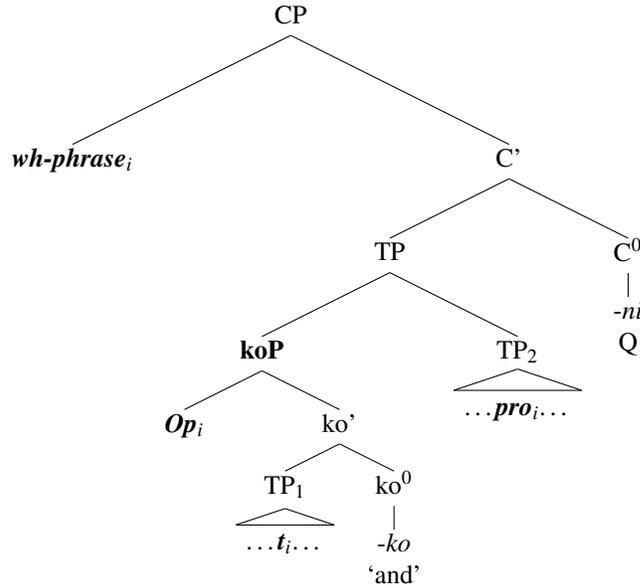
What (23) shows is that coordinated *wh*-questions in Korean are not so "across-the-board" as traditionally assumed; rather, there seems to be only one A-bar movement chain. Specifically,

  i. There is no *wh*-movement from the second conjunct (TP$_2$) as shown by the *pro*-like properties of the second gap. This is consistent with Korean being a *pro*-drop language.
 ii. In the first conjunct (TP$_1$), there is movement of a null operator from the thematic position to Spec,*ko*P; this movement obviates overt *wh*-movement.
iii. The *wh*-phrase is base generated in the left periphery. It forms a subject-predicate relation with the adjoined *ko*P through the operator movement inside it and also binds *pro* in TP$_2$.

This analysis has the favorable outcome of resolving a seeming empirical discrepancy mentioned earlier, namely the lack of WCO in the first conjunct where movement effects are otherwise

attested. An important insight comes from Lasnik and Stowell (1991), who observe that not all A-bar movement environments trigger WCO:

(24)   Lasnik and Stowell 1991, p. 691, 698
   a.   Tough movement:
        Who$_i$ t$_i$ will be easy for us [to get [his$_i$ mother] to talk to e$_i$]?
   b.   Topicalization:
        This book$_i$, I expect [its$_i$ author] to buy e$_i$.
   c.   Appositive relative clauses:
        This book$_i$, [which [[its$_i$ author] wrote t$_i$ last week]], is a hit.

According to them, these constructions are precisely the environments in which a null as opposed to an overt *wh*-operator is licensed. Thus, on the assumption that WCO is a distinctive characteristic of A-bar relations *involving genuine quantification*, the absence of WCO effects precisely where other movement effects are attested—i.e., in the first conjunct in coordinated structures—only serve to support the existence and the movement of a null operator in the first conjunct.

   In (25) a Korean ATB sentence is likened to an English sentence containing an appositive relative clause null operator movement. In each case, there is an adjoined CP containing an operator-trace chain. In (25-a), the operator is overt (*whom*) and bound by the base-generated *this student*; in (25-b), the operator is null, bound by the *wh*-phrase.

(25)   a.   This student$_i$, [$_{TP}$ [$_{CP}$ **whom**$_i$ [$_{TP}$ John praised **t**$_i$]] [$_{TP}$ Mary scolded **e**$_i$]]
        b.   Nwukwu-lul [$_{TP}$ [$_{koP=CP}$ **Op**$_i$ [$_{TP}$ John-un **t**$_i$ chingchanha] -ko]] [$_{TP}$
             who-ACC   John-TOP   praise   -and
             Mary-nun ***pro*** kkucic-ess-ni]]?
             Mary-TOP   scold-PST-Q?
             'Which student did John praise and Mary scold?'

5 The CSC Revisited and the Ambiguity of -ko

Up to this point, I have characterized *-ko* as a coordinating conjunction meaning "and" as though this were uncontroversially so; however, it is well-known that *-ko* also exhibits the properties and distribution of *subordinating* conjunctions such as *-kose* "after", *-yeto*, "even though," etc. When it functions in this way, it is interpreted to mean "after, following." The reality of the two types of *-ko* is further attested by their different behavior with respect to various syntactic tests involving backward pronominalization, relativization, and center embedding (see Kwon and Polinsky (2008)).

   In this section, I will discuss how the ambiguity of *-ko* is to be understood in light of the proposed analysis, which effectively treats *-ko* constructions as a subset of subordinate ones. This discussion must be related to an important consequence of the current proposal, namely that the CSC must be reformulated. On the current proposal, sentences like (26) cannot be ruled out on account of a violation of (3) (since I have shown that there is no overt *wh*-movement out of either conjunct):

(26)   Single gaps disallowed in coordinate *-ko* sentences:

        *Enu haksayng-ul John-un   chwuchenha(ss)-ko Mary-nun Bill-ul
        which student-ACC John-TOP recommend-and   Mary-TOP Bill-ACC
        simsahay-ss-ni?
        assess-PST-Q?

        'Which student x was such that John recommended x and Mary assessed Bill?

Rather, the ungrammaticality of (26) might be accounted for by a condition of semantic and syntactic identity of conjuncts, where "conjuncts" are defined as phrases of like categories (here TPs). In (26), a conjunct containing a gap is not of the same semantic/syntactic category as one containing no gap (see Schachter (1977) and Munn (1993) for a related discussion).

The parallelism requirement can also derive the obligatory nature of *wh*-ex-situ in ATB questions in an otherwise *wh*-in-situ language, i.e., the sentences in (27) are ruled out because one conjunct contains a gap while the other contains an overt *wh*-phrase.

(27)   *Wh*-in-situ disallowed in coordinate *-ko* sentences:

   a. ??John-un **enu haksayng-ul** chwuchenha(ss)-ko Mary-nun simsahay-ss-ni?
      John-TOP which student-ACC recommend-and   Mary-TOP assess-PST-Q?

   b. *John-un   chwuchenha(ss)-ko Mary-nun **enu haksayng-ul**   simsahay-ss-ni?
      John-TOP recommend-and   Mary-TOP which student-ACC assess-PST-Q?
      'Which student did John recommended and Mary assess?

On the other hand, subordinate *-ko* ("after, following") constructions are not subject to this parallelism requirement. They allow both single gaps (28) and *wh*-in-situ (29):

(28)   A single gap allowed in subordinate *-ko* sentences:

   a. Enu   haksayng-ul John-i   chwuchenha(*ss)-ko Mary-ka   Bill-ul
      which student-ACC John-NOM recommend-(PST)-after Mary-NOM Bill-ACC
      simsahay-ss-ni?
      assess-PST-Q?
      'Which student x was such that after John recommended x, Mary assessed Bill?

   b. Enu   haksayng-ul John-i   chwuchenha(*ss)-ko   Mary-ka
      which student-ACC John-NOM recommend-(PST)-after Mary-NOM
      kippehay-ss-ni?
      be.happy-PST-Q?
      'Which student x was such that after John recommended x, Mary was happy?

(29)   *Wh*-in-situ allowed in subordinate *-ko* sentences:

   John-un **enu haksayng-ul** chwuchenha(*ss)-ko Mary-ka   (Bill-ul)
   John-TOP which student-ACC recommend-after   Mary-NOM Bill-ACC
   simsahay-ss-ni?
   assess-PST-Q?

   'Which student did John recommend and Mary assess?' or
   'Which student x was such that John recommended x and Mary assessed Bill?'

If coordinate and subordinate sentences are instances of one and the same underlying adjunction structure, how then can we account for these differences? I argue that there is a ready syntactic explanation: The complement of subordinator *-ko* is *v*P, not IP/TP. Empirical evidence for this argument comes from Kwon and Polinsky (2008), who observed that in contrast to coordinate structures, subordinate sentences prohibit overt tense marking on the first verb (see the contrast between (26) and (27) on the one hand and (28) and (29) on the other). The relevant contrast is schematized below.

(30)   a. Subordinate *ko*P = *v*P + *-ko*   b. Coordinate *ko*P = IP + *-ko*
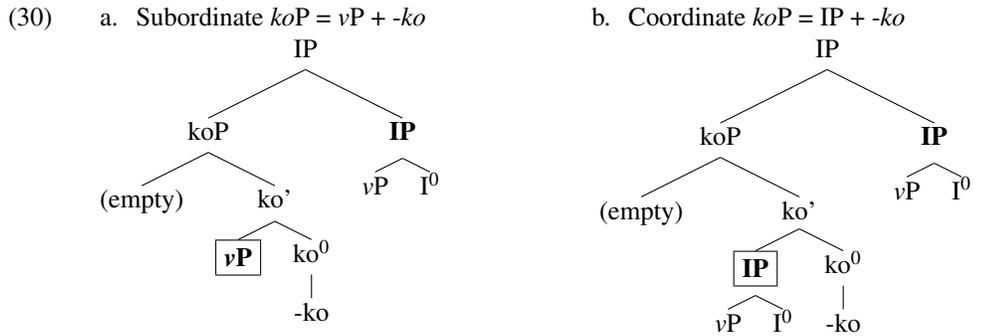
This correctly captures the correlation between the availability of overt tense marking and the coordinate interpretation of *-ko* on the one hand and the correlation between the unavailability of overt tense marking and the subordinate interpretation of *-ko* on the other, while also preserving the argu-

ment that the two underlie the same basic adjunction structure.

6 Conclusion

This paper investigated the syntax of coordinate structures in Korean. The proposed analysis is consistent with the direction taken by most current theories of coordination, which hold to the assumption that phrase structure is fundamentally asymmetric.

Based on syntactic asymmetries in ATB questions, an adjunction analysis was proposed in which *ko*P (the first conjunct plus the conjunctive suffix *-ko*) is adjoined to the final conjunct. Two distinct A-bar chains were posited, one linking a null operator to its trace from Spec,*ko*P and another containing *pro*. In addition, the *wh*-phrase was posited to be base-generated in the left periphery.

An important consequence of the proposal is the reformulation of the CSC as a kind of parallelism requirement on conjuncts (i.e., phrases of the same category/size), such that if one conjunct contains an empty category while the other contains overt material in the corresponding position (whether it be a *wh*-in-situ or an NP), the sentence is ungrammatical. Subordinate *-ko* constructions, which contain phrases of unlike categories (*v*P and TP), were shown not to be subject to this condition, with the result that *wh*-extraction out of a single clause is possible.

The implications of the proposal are as follows: First, the parallel behavior of coordinate structures and parasitic gap constructions provides an empirical justification for the adjunction analysis of coordination advanced here. This raises the possibility that ATB constructions could eventually be eliminated from the grammar and all multiple-gap constructions derived using existing devices, in particular the mechanism of null operator movement.

Second, the close syntactic relationship between the two constructions suggests that efforts to draw a sharp, dichotomic distinction between coordination and subordination might be unwarranted. In this paper, I have minimally distinguished the two by assuming that coordinate structures are special instances of the latter, specifically those containing two identical categories (TPs).

Finally, I have highlighted some important differences between English and Korean with regard to the derivation of ATB sentences. These differences could be understood as syntactic reflexes of more general typological differences between the two languages including word order and the (un)availability of *pro*. Further research is needed to understand the precise nature of *wh*-questions in coordinated contexts, particularly with reference to the question of what independent properties of coordinate structures fulfill the conditions that give rise to Focus interpretation.

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