A MINIMALIST ANALYSIS OF COORDINATION: DECONSTRUCTING THE COORDINATE STRUCTURE CONSTRAINT

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Assuming that as Merge theory predicts, coordination has an asymmetric structure of the form "[&P & [\& XP [\& & YP]]]," we provide a minimalist account of the Coordinate Structure Constraint (CSC) on A- and A'-movement, namely a "Minimal Search" analysis of A-movement and a phase-based account of A'-movement, deconstructing the CSC. Agree involved in A-movement applies to the entire coordinate structure alone by Minimal Search, hence there is no violation of the CSC in A-movement. A'-movement, not hinging on Agree, generally observes the CSC, but shows exceptional extraction out of a conjunct, which is predicted by the availability of External Merge of &, provided that &P forms a phase. Finally, we show that Agree means full agreement with respect to \( \varphi \)-features and conjuncts.

Keywords: coordination, correlative conjunction, asymmetrical, full agreement, phase

1. Introduction

This study is an attempt to account for some of the major facts about coordination in language and in English in particular, for English is at the typologically extreme end in allowing coordinate structures easily (e.g. allowing coordination of virtually all categories unlike many other languages), exhibiting rich diversity and thus giving us a useful window into agreement systems. We assume the Chomskyan minimalist framework (Chomsky (2000, 2001, 2004, 2007, 2008)), departing from it as the need arises in the discussion to follow. In the Chomskyan theory Agree is a central operation and thus merits close attention. One good testing ground for the validity/viability of a theory of Agree is the agreement patterns in coordination, which are quite complex but nevertheless can be seen to fall within a certain range. The challenges we face come from the fact that coordination exhibits both apparently symmetric and asymmetric properties crosslinguistically. Thus, any adequate analysis of coordination must come to grips with and account for these conflicting properties within the strict theoretical con-
fines of the minimalist program (MP).

This article mainly focuses attention on coordination of DPs, base-generated as such. Thus, we depart from the novel account of coordination in Camacho (2003) that analyzes the subject coordination ("DP₁ and DP₂") sentence as derived from "[₁p DP₁ [₁[₁ and]₁p DP₂ [₁ VP]]]." The reason is that a conjoined subject raises as a constituent and binds an anaphor as a unit, which forces him to posit a controlled pro for a non-NSL (Null Subject Language) like English: "John₁ and Mary₁ seem pro₁+j to have been called t₁i+j" (Camacho (2003: 83)). This proposal calls for many other unmotivated stipulations, which militate against minimalist aspirations.

We submit that the basic structure of coordination is universally what Munn (1993), Johannessen (1998) and Zoerner (1995) propose: basically, [&P XP [&i XP &i YP]], where "&" is shorthand for a coordinating conjunction. We adopt Zoerner's idea of copying the conjunction "&" upwards to create a higher occurrence of conjunction &, as in [&i,p ZP [&i' &i [&i' XP [&i' &i YP]]]], where the lower &i raises to create the higher &i (Internal Merge or IM). This raising is recursive. This asymmetric structure straightforwardly allows for asymmetry in Agree between XP and YP in favor of XP over YP (or similarly between ZP and XP) as well as symmetry in Agree under certain natural assumptions to be made.

A prima facie symmetrical property with coordination is Ross's (1967) Coordinate Structure Constraint (CSC), according to which neither conjunct may be extracted, nor may any part of a conjunct out of the coordinate structure, although across-the-board (ATB) extraction is licensed. This symmetrical ban on extraction of an element from a conjunct in A-movement falls out of the mechanism of Agree. To account for such a ban in A'-movement, we propose that a coordinating conjunction "&" is a phase head (PH), creating a (strong) phase ("&P"), along with v* and C, which are posited by Chomsky as PHs. Thus, (the material embedded in) a conjunct is in principle immune to extraction under the interaction of the phasehood of &P with the properties of coordination, as will be demonstrated below. As for conjunct extraction, however, phonology excludes it.

As for ATB extraction, we put it aside here. See Munn (1992, 1993), Franks (1995), and Bošković and Franks (2000: 124) for the convincing argument that there is no such extraction, overt or covert. This is a desideratum since ATB extraction is a significant departure from the strong minimalist thesis (SMT).
2. The Problem

Coordination is not among the most intensively studied topics in the generative literature but there has recently been growing attention paid to it by generative linguists. It is widely known that coordinate structures display both symmetrical and asymmetrical properties in behavior. See Ross (1967), Munn (1993), Zoerner (1995), Johannessen (1998), Culicover and Jackendoff (1997), Bošković and Franks (2000), Camacho (2003), etc.

Restricting our discussion to two-conjunct coordinate structures for the moment, a canonical case of the symmetrical properties of coordination is the agreement of both conjuncts with C-T or with v*-V. Another such case has to do with a ban on extraction from/of one of the conjuncts, the CSC. Observe (1) and (2):

(1) a. [Hun og jeg] gikk til skolen. (Oslo Norwegian)
   she.NOM and I.NOM went to the.school
   ‘She and I walked to school.’ (Johannessen (1998: 139))
   b. Jeg så [deg og dem]. (Oslo Norwegian)
      I saw you.ACC and them.ACC
      ‘I saw you and them.’ (Johannessen (1998: 139))

(2) a. *John seems [t and Mary] to be a student. (Goodall (2000: 448))
   b. *Who did you see [John and I]? (ibid.: 448)
   c. *What movie did Bob both go to a restaurant and see t at the
      Nick that night? (Merchant (2001: 193))

In (1a) T enters into Agree with both conjuncts, assigning Nom(inative) to each of them, while in (1b) V agrees with both conjuncts, assigning Acc(ussative) to each of them. The example in (2a) involves subject raising, where only one conjunct enters into Agree with T and raises in violation of the CSC. (2b) and (2c) demonstrate that the CSC also holds for “A'-movement” such as interrogative wh-movement.

On the other hand, coordinate structures exhibit their asymmetrical properties exactly in the same domains of agreement and extraction as well as in the area of binding. Witness (3)–(5):

(3) a. Půjdu tam [já a ty]. (Czech)
    will.go-1SG there I and you
    ‘You and I will go there.’ (Johannessen (1998: 28))
    b. Aber links war [die Binnenalster und die weissen
       but left was.SG the inner.Alster.SG and the white.PL

   (Oslo Norwegian)
   she.NOM and I.NOM went to the.school
   ‘She and I walked to school.’ (Johannessen (1998: 139))
   b. Jeg så [deg og dem]. (Oslo Norwegian)
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Lichtreklamen] (German)
ligh.advert.PL
‘But to the left were the inner Alster (lake) and the white
light-adverts.’ (Johannessen (1998: 29))

(4) a. This is the senator that the Mafia pressured t and the senate
       voted for health care reform.
       (Culicover and Jackendoff (1997: 206))
   b. That is one rock star that I see another cover story about t
       and I’ll scream. (Culicover and Jackendoff (1997: 207))

(5) a. Every man_i and his_i dog went to mow a meadow.
       (Munn (1993: 16))
   b. *His_i dog and every man_i went to mow a meadow. (ibid.: 16)
   c. John’s_i dog and he_i went to mow a meadow.
   d. *He_i and John’s_i dog went to mow a meadow.

In (3), only the first conjunct determines agreement. In (4), extraction
takes place only from the first conjunct (in A’-movement, never in A-move-
ment, to our knowledge). In either case apparently no CSC violation effect
arises. Actually, one can extract an element only from the second conjunct
as well. See (28) below.

The sentences in (5) exemplify another aspect of the asymmetrical nature
of coordination: the first conjunct can bind (into) the second but not con-
versely ((5a) versus (5b)); a pronominal in the first conjunct binds (into) the
second conjunct in (5d), whereas a pronominal in the second conjunct fails
to bind (into) the first in (5c). These examples are crucial to the character-
ization of coordinated structures as fundamentally asymmetrical, for binding
manifests absolutely no symmetry by its very nature, unlike agreement: the
binder must asymmetrically c-command its bindee to bind it. Progovac’s
(1997) objections to the c-command requirements for Condition (C) and
quantifier binding are unfounded, as convincingly shown by Camacho (2003:
17–22).

3. The Structure of Coordination

When we think of the structure of coordination, what immediately springs
to mind is a flat structure like (6), not a hierarchical one like (7):

(6) a. &P or b. &P
       α & β & & α & β
It is known (since at least Munn (1993)), however, that a flat structure like those in (6) cannot account for some of the basic facts about coordination (viz. binding facts in (5)), and thus some sort of asymmetrical structure such as (7) is required for coordinate structures. It is worth noting then that the Chomskyan Merge Theory cannot generate flat structures like those in (6), since Merge can apply to at most two syntactic objects (SOs) in the theory, and necessarily yields empirically correct asymmetrical structures for coordination such as (7a, b). This lends empirical support to his theory of Merge.

Let us further assume that coordinated constructions look like (8a), but not (8b).

\[(8)\]
\[
\begin{array}{ll}
(8a) & \text{a. } \&P \\
 & \&' \\
 & \& \\
 & \&' \\
& \& \\
& \&' \\

(8b) & \text{b. } \&P \\
 & \&' \\
 & \& \\
 & \&' \\
& \& \\
& \&' \\
\end{array}
\]

A dotted arc terminating in an arrowhead indicates movement in (8a). We are not assuming X' theory, so “&” and its projections “&’” and “&P” are used here only for expository purposes. Nor are we assuming here a theoretical apparatus that takes indices seriously; they serve only to facilitate exposition.

In (8a), \&\_i first merges with \(\beta\) (External Merge or EM), with \&\_i as the label, yielding \&', and then \(\alpha\) merges with the complex \&', yielding another \&'. Next, following Zoerner (1995), we propose that \&\_i raises overtly and remerges with higher \&' to yield \&P. Note that this proposal is a null hypothesis, since in principle IM is always available (see below for motivation for IM here). Only the original copy is typically transferred to the phonological component \(\Phi\) (and the semantic component \(\Sigma\)), as in (1)–(5), but both copies may be overtly realized in some constructions in many languages. We take this to mean that coordinating conjunctions are unique in
that they are overtly raised and both of their copies may be transferred to $\Phi$ as well as to $\Sigma$. The higher copy of $\&$ is typically suppressed (viz. not transferred), but both may surface.\(^1\)

A derivation in (8a) clearly involves “self-attachment” as Chomsky (1995: 320–321) calls it, involving ambiguity as to whether the target “projects” or the raised head does. The case Chomsky discusses involves raising of V and attaching it to its own projection VP, thus causing ambiguity as to whether the raised V projects or the VP does. He suggests that operations of self-attachment are barred on the grounds that such ambiguity is interpreted as a crashed derivation. This might seem to preclude the raising of $\&_i$ in (8a). At issue is, however, category ambiguity. If we take seriously Chomsky’s reasoning for excluding self-attachment, namely, that category ambiguity arising from self-attachment makes a derivation crash, then self-attachment in (8a) should be allowed, for no category ambiguity arises in (8a) since $\&$ has no categorial feature like V, N, A, P, etc. Furthermore, raising of $\&$ is not a case of vacuous movement, standardly banned. As we saw in note 1, $\&$-raising obtains in NS, as it feeds both semantic interpretation (a distributive or collective reading) and phonological interpretation (multiple & occurrences).

What about (8b)? It seems that this must be excluded: the prima facie motivation for its exclusion is that we would like to say that $\&$ is a phase head like $v^*$ and $C$ so that we may provide a straightforward account for CSC effects (in A’-movement), barring movement to the edge of $\&$. If (8b) were admitted, then the first conjunct $\alpha$ would be immune to the effects of

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\(^1\) Here we are not contending that either in either ... or ... or both in both ... and ... occupies the position of higher $\&_i$ in (8a) in English. See Johannessen (2005) for some serious problems with this view. Rather, we believe that an overt form internally merged in the higher $\&_i$ position is not transferred to $\Phi$ (nor $\Sigma$) in English. An overt form may surface in the higher $\&_i$ position as well as in the lower one in languages like French (et _ et _ ), Italian (e _ e _ ), Russian (nu _ , nu _ /mo _ , mo _ ), Serbo-Croatian (i _ i _ ), Godoberi (_-la _-la), etc. Cf. Progovac (1999) and Corbett (2006: 245).

The overt presence of an extra occurrence of a conjunction gives rise to a multiple-event (viz. distributive) reading, as Progovac (1999: §3) observes, while coordination with a higher occurrence of a conjunction suppressed is ambiguous between a distributive and a collective reading. All such interpretation will be properly assigned in $\Sigma$.

A remark is in order here. Chomsky (2000, 2001) and others have suggested that head movement may not belong in Narrow Syntax (NS) but in $\Phi$. (At least) $\&$-movement however must take place in NS, because it feeds $\Phi$/SM and $\Sigma$/C-I interface. This point will become clearer in §§5.3, 5.4. See also Zwart (2001) for a counterargument to the suggestion.
the CSC, since $\alpha$ is at the edge of the relevant (strong) phase, &P.

In order to preclude (8b), we might simply assume that Transfer requires each conjunct to be "introduced" by a conjunction to be licensed as a coordinate conjunct. Suppose a coordinating conjunction can introduce and license a unique conjunct (that is, no more than one conjunct) only if the former c-commands the latter as in (8a), where the higher $&i$ licenses $\alpha$ and the lower $&i$ $\beta$. In (8b), $\beta$ is licensed but $\alpha$ is not, in this sense. This assumption about a licensing coordinating conjunction is independently required, because in some coordinations each conjunct is introduced by an overt $\&$, as noted above. Thus, the need to license a conjunct motivates overt movement (IM) (or External Merge (EM)) of $\&$ in (8a). We return to the case of EM of $\&$ in §5.3.

4. Labeling of Coordinate Structures and A-movement

The first question is how to derive the effects of the CSC for A-movement. Let us see how we can derive the case in which all the conjuncts of the conjoined subject agree with T receiving Nom, raising as a unit, while excluding all CSC violations. Note that the CSC holds for A-movement without exception, unlike for A'-movement, which means that A- and A'-movement must not be treated in parallel fashion, all other things being equal. For more on this, see our discussion at the end of this section. Consider (9), where a double-arrowheaded line indicates (putative) Agree:
Observe that no conjunct in (9) may raise out of the highest &P in Narrow Syntax (NS), a CSC effect. We agree with much recent literature (e.g. Bošković (2007)) that Agree is not subject to the Phase Impenetrability Condition (PIC). So we must seek a solution elsewhere. Notice that if &Pi counts as DP, as it in fact does, Minimal Search renders impossible all the instances of Agree indicated in (9), allowing for Agree between T and &Pi alone.

(10) Minimal Search
A probe searches its domain top-down for the goal that is closest in terms of the number of branches that it traverses to reach the goal, where a branch is defined as that section of a line which links a node with one of its daughter nodes. Consequently, the entire &Pi alone in (9) may overtly raise (as A-movement) to [Spec, TP] triggered by the label(s) of &Pi. The question is how to make sure that this type of pied-piping takes place, designating &Pi as DP in (9). Pied-piping is apparently a real operation in language, yet has not received much serious attention in the literature. Our discussion here must be restricted to the pied-piping in coordination and remain tentative, to be pursued in future research.

It seems that the pied-piping involved in (9) has to do with the labeling of the coordinate structure, &Pi. We follow Chomsky (2008: 145) in as-
assuming the following algorithms for label identification:

(11) Labeling Algorithms (LAs)

a. In \{H, α\}, H an LI, H is the label. [LI=lexical item]

b. If α is internally merged to β, forming \{α, β\}, then the label of β is the label of \{α, β\}.

As Chomsky observes, (11a) and (11b) leave open the case of EM applying to a pair of non-heads. He suggests that in such cases the label of either non-head may project, but one or the other of the projections will yield a deviant structure at the C-I interface.

Now notice that something interesting happens when the LAs apply to coordinate structures. Since a conjunction & is the head (H) of \{&, DP\}, & is the label of \{&, DP(=α)\} in accord with (11a). Recall that the current minimalist theory has abandoned X-bar theory including bar-levels, which means giving up on the idea of projecting categorial features alone. Thus, feature percolation for such features is unformulable in the minimalist framework. Instead, the notion of label is introduced to replace projection of heads in X-bar theory. A label of an SO is its head containing all of its features, formal or otherwise, among which will be its categorial feature (see Chomsky (1995: 243–246)). This entails that label projection necessarily includes projection/percolation of a category feature of the head, which is thus an unnecessary, hence unlicensed device as an independent operation. For expository convenience, we will use the notion of a category feature as one component of an LI in the discussion to follow. A more viable approach might be in terms of a category-defining light category like a light verb, as convincingly argued by Marantz and others working in the framework of Distributed Morphology, often ignored by syntacticians.2

2 That is, one might want to replace a categorial feature with a category-defining light category, adapting Halle and Marantz’s (1993) framework of Distributed Morphology (DM; see also Marantz (1997) and subsequent related work such as Marantz (2007), and Embick and Marantz (2008)). We then assume that a lexical item (LI) results from amalgamating a light category (e.g. a light verb v, a light noun n, a light adjective a, a light determiner d, etc.) with a root (e.g. \N{DESTROY}, \V{GROW}, \V{THE}, etc.). For example, v+\N{DESTROY} yields destroy, n+\N{DESTROY} destruction, a+\N{DESTROY} destructive, d+\V{THE} the, and so on. In structure build-up, a light category may be merged to a root plus its potential complement.

On this approach, it is plausible to say that & is a bare root, \V{&}, with no category-determining light category amalgamated, that is, a category-less LI. A bare root \V{&} is compatible with any normal LI (say, \V{the}) in terms of a category, since the former lacks a category-defining light category and hence is category neutral. Nothing hinges on the choice between the approach expounded in the text and the one laid out here, as far as
Suppose lexical and functional heads bear a categorial feature with a value. Thus, verbs bear a category feature \("F_c\) with its value \("V\), \("[F_c [V]],\)" nouns \("[F_c [N]],\)" adjectives \("[F_c [A]],\)" etc. Determiners, INFL, and complementizers carry \("[F_c [D]],\)" \("[F_c [I]],\)" and \("[F_c [C]],\)" respectively. It is reasonable to say that \& bears an unvalued category feature \("[F_c]\) ." An unvalued category feature \("[F_c]\) and a valued one, say, \("[F_c [D]],\)" are compatible in terms of category features causing no feature clash, so both may project in labeling, let us assume. That is, \("[F_c]\) plus \([F_c [D]]\) is in effect \([F_c [D]]\) in terms of a category feature. A label is the head, obviously including its category feature with or without a value. Thus, the combined labels of the SO \{"and, DP_1\} will be \("(and•D_1)\) (including their respective category features, here suppressed for brevity), where a dot denotes conjunction as in propositional logic. The label possibilities of \{"and, DP_1\} to be accessible to a probe then will logically be (i) \(\text{and}\), (ii) \(D_1\), and (iii) \(\text{and and D}_1\). The possibility (i) leads to semantic deviance as \& (and) is devoid of semantic content. The alternatives (ii) and (iii) are viable, since \(D_1\), which possesses semantic content, may enter in Agree with the probe (T or V), serving as a goal.

Next, DP_2 may be externally merged to \{"and, DP_1\} to form \{DP_2, \{"and, DP_1\}\}, as in (9). Assume that if the \("\&\) involved is of the ‘additive’ type (e.g. \(\text{and}\)), not of the ‘disjunctive’ type (e.g. \(\text{or}\)), both the feature complex \("[F_c] \text{ plus } [F_c [X]],\)" where \(X\)=a value of \(F_c\) (e.g. \([D_1]\), and a simple feature \("[F_c [Y]],\)" where \(Y\)=a value of \(F_c\) (e.g. \([D_2]\), may project in label projection by virtue of a syntactic reflex of the additive import of \(\text{and}\). Thus, unlike with \(\text{or}\), etc., the labels of \{DP_2, \{"and, DP_1\}\} are \("(D_2, •(\text{and•D}_1))\)," which makes \(D_2\) accessible to a probe in addition to \(\text{and•D}_1\).

Notice that the label complex of this SO \("(D_2, •(\text{and•D}_1))\) is hierarchically structured by virtue of “minimality in projection,” with \(D_2\) higher than \(D_1\), for example, reflecting steps of label projection. This means that \(D_2\) takes priority over \(D_1\), being ‘closer’ to the probe than \(D_1\), and therefore,
only when $D_2$ has been chosen is $D_1$ accessible, let us assume. The label possibilities of the SO will be (i) $D_2$ and (ii) $D_2$ and $D_1$, putting *and* aside, since *and* vacuously agrees with a probe (T/V), being devoid of $\varphi$-features.

Consider (12):

\[(12) \quad \begin{array}{c}
\text{and} \\
(D_2 \cdot (\text{and} \cdot D_1)) \\
\text{the desk} \\
\end{array} \quad \begin{array}{c}
\text{and} \\
(D_2 \cdot (\text{and} \cdot D_1)) \\
\text{the chair} \\
\end{array}
\]

(Note that a solid arc terminating in a single arrowhead indicates label projection.)

In accord with the LAs (11) and our assumptions about & and its additive type (*and*), we may get a structure like (12). As one possibility for Agree in (12), we may have a double labeled structure "*andP*•DP₂" with the label (\text{and}•D₂), which is syntactically well-formed because a conjunction *and* is category neutral and compatible with any lexical category feature value, and semantically licit because the coordinate structure as DP can satisfy the requirements of theta theory, in the right context, say, as an external argument in [Spec, v*P]. The assumption of a nonhead DP projecting a label in coordination in tandem with & (*and*) as in (12) is independently needed, since an entire DP coordination behaves as a DP. Similarly, a vP coordination serves as a vP, a CP coordination as a CP, etc. Such label projection thus feeds the C-I interface, required for interpretation (e.g., a DP will be interpreted as designating an intended referent and a vP-VP as predicking a property of the referent designated by a subject DP), and thus follows from bare output conditions in line with minimalism. Without label projection of conjuncts, the structure will be &P, without semantic content, leading to a crash. So & requires a conjunct. A mere juxtaposition of conjuncts (e.g. DPs) is presumably unintelligible. Thus, conjuncts conversely require conjunctions (&).³

³ Such double label projection, however, gives rise to an ambiguously labeled syntactic output, which might resist linearization in $\Phi$ (cf. Boeckx (in press)). Assume then that for linearization of such an output in coordination, $\Phi$ (or the SM interface) tries first the
Given the LAs (11) plus our assumptions about category-neutral, additive and, the &P_i in (9) should carry as label "(&i•(D_3•(&i•(D_2•(&i• D_1)))))." As one option, "(&i•D_3)" may be accessed as a goal by the probe T, given the priority of a hierarchically higher label. So the entire coordinate structure will agree with T via its label, D_3, so that the structure raises (via this induced pied-piping) to [Spec, TP] as a consequence, one might think.\(^4\) Observe (13). A solid line terminating in a single arrowhead again indicates projection or more properly labeling. Notice that "projection" or "labeling" in this context is no more than an informal way of referring to the mechanism of label identification. The claim being made here is that T does not directly agree with the first conjunct DP_3 but with the entire coordinate subject via its label D_3 so that T in effect agrees with the first conjunct alone ("partial" agreement) because of the label. The hypothesis of T directly agreeing with a conjunct makes massive incorrect predictions about A-movement, precluding raising of the whole coordinate structure, which has not entered into Agree relation with T, and often allowing raising of conjuncts which have done so. See our discussion of (20). Notice that the first conjunct DP_3 is not as close to T as the conjoined subject DP and thus is inaccessible to T under Minimal Search, a modern rendering of the A-over-A principle (see Chomsky (1968: 51–54)). The same holds for the second and the third conjunct.

\(^4\) Here we are restricting our discussion to "neutral" conjunctions found in languages like English, French, etc. See "non-neutral" ones like to (in Japanese) and (k)wa (in Korean), for which more needs to be said. Alternatively, these at least may well be comitative particles.
In point of fact, such partial agreement involving D₂ only, not D₁, in (12) does not trigger Move in English. For such evidence, let us turn to existential “there is” constructions (ECs). They pose a problem for the theory of Agree, since they appear to be exempted from Agree: “… there’s two other Shaft movies?” (Crawford (2005: 36)).

Following Schütze (1999), one might maintain that sentences like (14) below do undergo Agree despite appearances to the contrary.

(14) a. There’s/There is books on the table.
b. There are books on the table.
c. Books are on the table.  [Italics highlight (non)agreement.]

An expletive there then might be base-generated either in Spec of an unaccusative light verb v attracting copular be, or directly in Spec of TP:

(15) [TP (there) [T [vp (there) v [vp be [pp books on the table]]]]]

We then might propose that in the version of (15) with there in [Spec, vP] the expletive intervenes in between a probe T and its potential goal books blocking Agree. T gets default marking for its φ-features and subsequently there raises to [Spec, TP], driven by EPP on T, as in (14a). By contrast, in the version with there base-generated in [Spec, TP] in (15), there will be no intervention in Agree between T and books, resulting in
(14b). If the array lacks the expletive, then books raises to [Spec, TP] by EPP, as in (14c).

This account is flawed, however. There is evidence against it:

(16) a. \[TP \text{there}_t \; \text{are} \; \text{likely} \; [t_t \; \text{to be awarded several prizes}]\]
    (Chomsky (2001: 7))

b. There (?)arise/*arises typhoons in this part of the Pacific.

c. There often (?)develop/*develops many objections at the meeting.

The intervening there does not seem to block Agree; witness (16a). Furthermore, other unaccusatives like arise, develop, etc. invariably exhibit associate agreement in (16b, c). In fact, copular be is unique among unaccusatives in that it freely allows either associate or default agreement. To capture this idiosyncrasy of copular be, we suggest that forms like there's/there is are frozen formulas (cf. Chomsky (1995: 384)).

Now consider coordinate structures with regard to agreement. Observe (17)–(19): (19) represents the structure for both (17) without there and (18) with there.

(17) a. A man and a woman are in the garden.
    b. *A man and a woman is in the garden.
    c. *Three men and a woman is in the garden.

    (Munn (1993: 93))

(18) a. There is a man and a woman in the garden.
    b. *There are a man and a woman in the garden.
    c. There are three men and a woman in the garden.
    d. There is a man and three women in the garden.
    e. *There are a man and three women in the garden.

    (Munn (1993: 94))
Recall that with A-movement, Move consists of Agree, Pied-piping and IM. Data like (17) and (18) suggest that Move must involve “full” agreement with respect to conjuncts. Agree may apply in part or in full, that is, it may apply to some conjunct(s) but not all, a case of “partial” agreement, or alternatively, it may apply in full, affecting all the conjuncts, a case of “full” agreement. Assume that Agree at stake here is “full” in this sense, and full agreement is a necessary condition for Move in A-movement, though not a sufficient one.

With this assumption in place, we can provide the following account for the facts in (17) and (18). (18a) and (18d) involve partial agreement, only the first conjunct entering into Agree with T, so Move is precluded. This is guaranteed if the label complex accessed on the coordinate structure in (19) is $(\&_i D_2 \ast (\&_i D_1))$. Hence (17b) is excluded, partial agreement failing to trigger Move; so is (17c), with no agreement: Agree with the second conjunct alone is banned on our theory.

(18c) may involve partial agreement just like (18a), whence no Move. It is possible for both conjuncts to be in agreement with T, yielding plural agreement (are) in (18c), which may trigger IM, generating “Three men and a woman are in the garden,” if there is missing in the Array. (17a) involves full agreement reflecting the label complex $(\&_i D_2 \ast \&_i D_1)$ on the subject in (19). Now (18b) and (18e), (possibly) cases of full agreement, are unexpected. Their unacceptability might lead one to conclude that full agreement with respect to conjuncts necessarily triggers IM, overriding
external merger of there. This conclusion begs the question of what motivates this. Besides, it is in conflict with the optionality of raising with a simple non-coordinated nominal in (14b) versus (14c): (14b) is fine.

We suggested that V(be)+T agrees with the entire coordinate structure or the first conjunct, depending on whether both labels D2 and D1 on the conjoined subject in (19) are targeted by the probe T. If both are, T agrees with DP2 and DP1 simultaneously, normally resulting in plural agreement, given number resolution. Move may be triggered only when T agrees fully with the entire coordinate structure, with concomitant number resolution, which yields (17a), excluding (17b) and (17c). If not, T indirectly agrees with DP2 alone via D2, yielding (18a), (18c), and (18d). The question remains why (18b) and (18e) are deviant, in light of the fact that (14b) is fine. We have no solution to offer. To return to (13), we now see that the raising of the conjoined subject requires full agreement, with the probe accessing all the D labels on the subject simultaneously. Compelling evidence for this claim will be provided in §6.1 and §6.2.

Recall that the hierarchically structured label complex on a coordinated structure induces priority in accessing by a probe: the less embedded label(s) will necessarily take precedence in entering Agree relation over the more embedded one(s). Consider (20).5

5 Coordinate constructions may involve conjuncts of different categories, as often noted; for example, see Munn (1993: §2.5):

(i) John is a Republican and proud of it.
(ii) John is sick and in a foul mood.

Sentence (i) contains coordination of NP/DP and AP, and sentence (ii) one of AP and PP. Thus, a simple amalgamation of the features including the categorial features “projected” up to the top node of coordination ends up with feature conflicts. Yet all these features are needed for semantic selection, agreement and φ-feature resolution across languages.

To solve the problem of feature clash, we offer the following suggestion. In coordination a conjunction “&” pairs up with an SO that it immediately c-commands, thus licensing the latter as a conjunct. Each of such multiple pairs in coordination is individuated from the other(s), as each pair comes to be associated with a bundle of features that come from (an occurrence of) the conjunction and its conjunct. We propose that the issue of categorial feature conflicts in NS arises only within each of such feature bundles in coordination.

These bundles of features in a coordinate structure, taken together, enter into person, number, and gender resolution at Transfer (to Φ). For example, John and me may ultimately receive the interpretation as the first person plural as a result of such resolution, which may be reflected in phonological realization of the finite verb. Later in derivation
Consider the case of T accessing the label complex (&•D2) on the conjoined subject in (20): T agrees with the subject via its label D2, & aside, (cf. (3a) and (3b)). Hence (2a) is deviant, a CSC effect, involving T's illegitimate direct agreement with DP2, which might trigger raising of DP2. Similarly, the second conjunct in isolation cannot undergo direct agreement with T: "*Mary seems [John and I] to be a student." This immediately explains the fact that in Lebanese Arabic (LAr), under this type of partial agreement (e.g. (22)), unlike under full agreement (e.g. (21)), the first conjunct alone can serve as antecedent for an anaphor, hence the anaphor must agree with the first conjunct; lacking this agreement, (22) is deviant.

(21) Bihibbo Kariim w Marwaan haalun. (LAr)
love.3PL Kareem and Marwaan themselves
‘Kareem and Marwaan love themselves.’

(22) *Bihibb Kariim w Marwaan haalun.
love.3SG Kareem and Marwaan themselves
(Aoun et al. (1994: 214))

Now to return to (20). Alternatively, DP2 and DP1 together may be accessed by T via the labels (D2•D1), & aside; T then agrees with D2 and D1 on the conjoined subject.\(^6\) This case is illustrated by (1a) and (21). A

(\(\text{or after the C-I interface), ourselves in ‘John and me enjoyed ourselves/*himself’ will be licensed as a legitimate reflexive, while himself will not.}\)

\(^6\) We are assuming that T as a probe enters into Agree with all the accessed cooccurring labels of the top coordination node simultaneously. This will, for example, account for number computation of the conjuncts: coordination of two singular DPs normally yields plural agreement on the verb, and so on. Computation of gender is more complex in coordination. See Corbett (2006) for discussion of number, person and gender
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similar case holds for (1b), with object agreement.

This approach does not yet account for the case in which no conjunct enters into Agree with the probe (viz. T, V, etc.) To deal with this problem, we propose to decompose Case assignment into Case valuation and Case realization, suggesting that Case realization, not Case valuation, is optional in coordinate structure. Thus, even if Agree holds between C-T/v*-V and DP and Case valuation occurs, Case realization (and therefore Case assignment) may not take place as one option, in which case default Case realization (e.g. accusative Case in English) takes over. We know that Case valuation is obligatory under Agree, for once a DP has entered into Agree it is no longer visible to any further Agree in a later phase.

We have good reason to believe that Case realization is optional in coordinate structures. Consider (23)–(25), in which both conjuncts or at least the second conjunct apparently fails to be properly Case-realized (viz. not Case-realized as Nom):

(23) Mary and me are leaving tomorrow.
(24) [Me and Scott] are going to go play video games.
(25) [Them and us] are going to the game together.

(Johannessen (1998: 62))

In (23), the second conjunct (at least) is not assigned Nom, yet it must be participating in Agree, since otherwise the copula should exhibit the singular feature for number. Thus, we must conclude that the second conjunct also agrees with T but is not assigned Case (hence default Case). Similarly, in (24) and (25) Agree has indeed applied to both conjuncts, hence number agreement, yet Case assignment has presumably applied to neither. We are forced then to say that Case realization is optional in these cases, and that Case valuation has taken place owing to Agree but Case realization has not, at least in these cases. By extension, it can be said that Case realization is optional in coordination in general. The data like “*[Him and she] are coming” versus “[She and him] are coming” lead us to conclude that Case realization is also subject to a priority condition on conjuncts. Thus, let us say that T optionally transmits the property of licensing Case realization to the closest &, which in turn optionally transmits it to its closest & and so

resolution. This account immediately provides an explanation for the binding fact in (21) above. Full agreement in (21) (viz. agreement with both conjuncts) designates a conjoined subject as plural via number resolution, which sanctions a plural reflexive haalun. Notice that we are not dealing with the issue of feature resolution and related issues here, because it would take us too far afield.
on. Each & sanctions the Case realization of its associate conjunct. This optional transmission derives the relevant priority condition.

At any rate, the asymmetrical structure of coordination plays a crucial role in interaction with labeling and hence in partial agreement and partial Case realization. A remaining problem is how to prevent extraction of A'-elements (wh-phrases, topics, focused phrases, etc.) out of the coordinate structure (CSC effects). It is important to note that A'-movement does not rest upon Agree, so our analysis of CSC effects with A-movement does not carry over to A'-movement. As observed at the beginning of this section, A-movement must be treated differently (as it is here, by means of independently needed label projection and Agree) than A'-movement, which will receive a phase-based account in the next section, §5. For example, a phase-based analysis of A-movement parallel to that of A'-movement to be developed in §5 would make an empirically wrong prediction that A-movement also has exceptions to the CSC like A'-movement. In the next section, we propose then that & is a (strong) phase head (PH) along with v* and C, yielding a (strong) phase. Given the Phase Impenetrability Condition (PIC), an A'-constituent may escape the coordinate structure only by way of the edge of a phase.

5. &P as a (Strong) Phase

5.1. The Status of &P as a (Strong) Phase

Chomsky speaks of the properties of a (strong) phase in terms of its semantic status as a proposition and its phonetic independence as manifested by its “transportability,” etc. That is, a phase represents a proposition and is isolable, serving as a fragment answer, etc. Obviously, these are not criterial properties. Some non-phase SOs like unaccusative vPs, small clauses, raising and ECM infinitivals also denote propositions as much as v*Ps do in the sense that all θ-roles of their predicate heads are assigned. Some others like AP are isolable (e.g. its susceptibility to pseudoclefting). &P clearly does not necessarily denote a proposition or exhibit transportability on its own; its status as a proposition or its transportability hinges on that of its conjuncts. But this then by itself should not bar it from being a phase.

Thus, the notion of phase seems stipulative as it stands, yet it accounts for extraction facts and contributes to economy in computation, at least in NS. Notice that like v*P and CP, &P forms a (relative, not absolute) barrier for extraction, banning in principle extraction from within in A'-movement. Further, in view of economy in computation, cycles of deriva-
tion, which phases are, should be as small as empirically feasible. Postulation of &P as a phase is more conducive to economy in computation than otherwise, hence independently motivated. Cf. Chomsky’s (2007) principles of efficient computation. Furthermore, this view of &P as a phase enables us to provide a minimalist account of CSC effects as well as their exceptional absence, as we will show in §5.2 and §5.3 below.

5.2. The General Absence of an Escape Hatch with &P in A'-movement

The phases v*P and CP have an escape hatch associated with them: an edge. On the other hand, &P typically bans all extraction operations, viz. CSC effects, as if it had no such escape hatch. The question now is how it is so. We suggest that it is due to a unique characteristic of &: & is comprised of multiple occurrences of &, two occurrences of & in the case of two conjuncts, and three in the case of three conjuncts, etc.

To simplify the exposition, let us concentrate on the case of a two-conjunct &P. Consider how &P is formed. As first Merge, & and, say, XP₁ may merge together, yielding an SO, {&₁, XP₁}. At this point in derivation, &₁ with an edge feature EF has an edge position. Thus, as a second Merge, another XP, say, XP₂, may merge to {&₁, XP₁} to become a specifier, resulting in another SO: {XP₂, {&₁, XP₁}}, viz. (26a). Or alternatively, XP₂ may merge to {&₁, XP₁} as an adjunct. See Munn (1993) for such a view. At this stage of derivation, &₁ as a head is at the edge of the phase, so it may raise (IM) to yield a still another SO, {&₁, {XP₂, {&₁, XP₁}}}, viz. (26b).

(26)

We now have a coordinating conjunction comprised of two elements, the higher &₁ and the lower &₁ in (26b), a “correlative conjunction,” as we might call it. A question arises here whether this discontinuous conjunction &₁⁻&₁ has an edge associated with it. In order to answer this question, we must take a close look at the definition of an edge. As an edge, we restrict
our discussion to the specifier position for the moment, putting aside the head position, as this does not concern us now. We return to the head position as an edge in §5.5.

It is reasonable to define an edge position (Spec) as a position that is "closest to the head," characterizing "closest" in terms of immediate asymmetrical c-command.

(27) a. An edge (Spec) is a position that is closest to the head H.

b. $a$ is closer to H than $\beta$, where H is a chain of links, iff $a$, not $\beta$, immediately asymmetrically c-commands each link of the head chain.

At the stage of derivation where XP2 is merged to {&i, XP1} in (26a), XP2, not XP1, immediately asymmetrically c-commands &i, a trivial chain, hence XP2 is closest to &i and at the edge of &i, a single-membered conjunction.

Next, when &i has raised to create another &i as in (26b), we now have a full-blown two-membered discontinuous conjunction, &i-&i, which by definition fails to possess an edge. XP2 is not an edge of this correlative conjunction, because it immediately asymmetrically c-commands only the lower &i, one member of the two-membered conjunction, but not the higher &i, the other member. Suppose another XP, XP3, merges with the coordinate structure in (26b), resulting in (26c). This XP3 position does not qualify as an edge of the correlative conjunction either, since XP3 immediately asymmetrically c-commands the higher but not the lower &i, which is immediately asymmetrically c-commanded by XP2.

We conclude then that a correlative conjunction &i-&i may have an edge feature but fails to possess an edge. This accounts for the general absence of an escape hatch with &, which is necessarily a multi-membered discontinuous conjunction, on our assumptions. In §5.5, this account will be restricted to the case of extraction out of a conjunct.

5.3. An Exceptional Escape Hatch for &P

It has been known ever since the CSC was first proposed by Ross (1967) that there are some exceptions to the constraint, noted by Ross himself and others. Johannessen (1998: 217) gives examples of this phenomenon from English, involving extraction of part of one conjunct from the entire coordinated structure:

(28) What kind of cancer can you eat herbs and not get r?

(29) What kind of herbs can you eat r and not get cancer?

The attestation of these exceptions is exactly predicted by Chomsky’s framework of EM and IM. Consider (26a) and (26b) again. At the stage
of derivation (26a), another LI “&” may merge with the SO in (26a) as an EM operation instead of raising (IM) of &i (a null hypothesis) and serve to license XP₂ as a (syntactic) conjunct.⁷ In that case, a newly merged &, viz. &j, is not a copy of the lower &, viz. &i, hence it should have an edge. This sets the stage for raising an element out of XP₂ (or XP₁, for that matter, since the lower &i also has its own (extra) edge then) to an edge (Spec) of &j, the escape hatch for extraction out of a conjunct in (30), which contains two independent &Ps, &jP and &iP, unlike (26b), which forms a single &P, &iP.

(30)

```
&j
/   \
|   |
\   /  \
&i  XP₁
```

This accounts for cases like (28) and (29), involving extraction via an edge of v*P and &P.

We suggest that in Σ (or at the C-I interface), the two occurrences of an LI “&” as in (26b) are interpreted to conjoin semantically coordinate entities, while a pair of two distinct LIs of the type “&” as in (30) are construed as subordinating one entity to the other. In the next section, we will present some evidence adduced in favor of this suggestion. Cases like (28) and (29) call for special interpretation involving subordination of one conjunct to the other. For example, (28) has a conditional or purpose reading like “What kind of cancer is it that, if you eat herbs, you won’t get (it)?” or “What kind of cancer can you eat herbs in order not to get (it)?” We believe that such specific interpretation is to be determined on the basis of sentence-internal interpretation plus pragmatic understanding outside the C-I interface. The structure (30) should be involved in the so-called “Imperative-Like Conditionals” (Davies (1986)) like “(You) come one step closer, and I’ll shoot,” “Be polite and you’ll get an invitation,” etc. These sentences have the structure (30) in which the first conjunct is an imperative serving as a protasis and the second a declarative sentence functioning as an apodosis. Analogously, semantically non-coordinate coordinations like “a

⁷ To preclude this possibility of external merger of a distinct &, we need arbitrary stipulation, which goes against the minimalist spirit.
cup and saucer,” and “bread and butter,” should involve structure (30) with concomitant semantic subordination, as predicted by our analysis. Namely, in these cases the second *and* and hence its conjunct (*saucer, butter*) are semantically subordinated to the first *and* (phonologically suppressed here) and its conjunct (*cup, bread*) respectively.

An anonymous referee brought to our attention Lakoff’s (1986) observation that there are systematic differences in semantics between the case of extraction from the first conjunct and that of extraction from the second. If this is indeed the case, it tends to support our analysis in that such semantic subordination between the two conjuncts obtains as noted above on our account of EM coordinations, though the devil is in the details regarding the semantics of EM coordinations. These considerations call for a close scrutiny, which we leave to a future study. In the next section, we look at a different approach to this type of coordination.

5.4. Culicover and Jackendoff’s (1997) Mismatching Hypothesis

Culicover and Jackendoff (1997) deal with the phenomenon of extraction from one conjunct in coordinate structure in apparent violation of the CSC discussed in §5.3. They address the issue of extraction from the left-hand or right-hand conjunct, dubbing the construction the “left-subordinating and-construction (abbreviated as \(\text{LSand}\)-construction).” They suggest that these constructions are syntactically coordinate and semantically subordinating. These constructions differ from normal coordinating and-constructions (abbreviated as \(\text{And}\)-constructions) as the latter ban any extraction from within except for ATB extraction. As a consequence, they conclude that the CSC holds at conceptual structure. They refer to this approach as “the Mismatching Hypothesis,” because on their analysis, \(\text{LSand}\)-constructions are syntactically coordinate but semantically subordinate, and they contrast it with “the Matching Hypothesis,” which takes \(\text{LSand}\)-constructions to be subordinating syntactically as well as semantically, deriving them from *if*-clauses, for both have a conditional reading. (31a) is synonymous with (31b).

(31) a. You drink another can of beer, \(\text{LSand}\) I’m leaving.
   
   b. If you drink another can of beer, I’m leaving.

(Culicover and Jackendoff (1997: 197))

They correctly point out that although \(\text{LSand}\)-constructions display some of the properties that *if*-clauses do, such as failure to undergo right node raising and gapping, etc., they evidently behave as coordinating constructions in other respects: the “wrong” internal structure that would be needed if they were subordinate constructions \([[S_1 \text{Lsand}] \ S_2]]\), with an unusual clause-final
"subordinating" conjunction), the existence of the OM-construction (One more can of beer and I'm leaving) along with the _Lsand_-construction in (31a), and most importantly, the possibility of allowing for "extraction independently from either conjunct" (Culicover and Jackendoff (1997: 206)).

Consider (32a)–(32d).

(32) a. You can just wave your hands like this _Lsand_ we arrest the whole gang.

b. ?This is the way that you can just wave your hands _t_ _Lsand_ we arrest the whole gang.

c. If you just wave your hands like this, we arrest the whole gang.

d. i. *This is the way that if you just wave your hands _t_, we arrest the whole gang.

ii. *This is the way that we arrest the whole gang if you just wave your hands _t_.

(Culicover and Jackendoff (1997: 208))

The contrast between (32b) and (32d) is unexplained on the Matching Hypothesis, which derives (32a) and (32b) from something like (32c) and (32d), respectively. The contrast points to the first conjunct of _Lsand_-constructions being different from the syntactically subordinate _if_-clause.

Culicover and Jackendoff suggest that the subordinate _if_-clauses in (32c) and (32d) are genuine syntactic adjuncts, and extraction from syntactic adjuncts is constrained by some form of the Condition on Extraction Domain (CED). They go on to say that in contrast, the initial clausal conjunct in (32b) is semantically subordinate, yet syntactically coordinate; hence the CED does not block extraction from the clause. Because it is semantically subordinate, it is possible to extract from a single conjunct of the syntactically coordinate construction.

We agree that "left-subordinating _and_-constructions" are syntactically coordinating but semantically subordinating. What we take issue with is their conclusion that we are forced to appeal to a semantic solution, suggesting that the CSC must hold at conceptual structure. Given the Merge theory, we can seek a syntactic solution, with its semantic consequences, namely our analysis given in §5.3.

The extraction facts in _Lsand_-constructions follow from our analysis in §5.3. The externally merged &, _&_i, sanctions the left conjunct XP_2_ in [&_i [XP_2_ [&_i XP_1_]]] and forms a "quasicorrelative" conjunction with &_i_, _&_i-&_i_, which is later interpreted as semantically subordinating rather than coordinating, presumably in _Σ_. By contrast, a real correlative conjunction _&_i-&_i_
is interpreted as “semantically” coordinating. As pointed out in §5.3, in the EM coordination, a constituent embedded under XP₂ may escape this (syntactically) coordinate structure via the edge of &j, and one embedded under XP₁ may also do so, via the edge of &i and &j.

To see that the type of coordination in (30) with External Merge of & should have an interpretation distinct from that of the type of coordination in (26b) with Internal Merge of & and one might note that in an English construction like “[vp let₂ [vp John [let₁ [Mary leave]]]],” let₁ is clearly not on a par with, but subordinated to, let₂ in semantic as well as syntactic terms due to a difference in hierarchy. Note that let₂ cannot arise from raising (IM) of let₁, since if it did, let₂ could not ‘0-mark’ its complement VP, resulting in semantic anomaly. In general, a normal lexical item like let with semantic content fails to raise to create a higher head unlike semantically empty & presumably because of these semantic considerations.

In a similar vein, serial verb constructions (SVCs) in Ewe, a Kwa language, arguably make the same point.

(33) Me [vp₂ ṭevi-ei [v₂ nya][vp₁ pro₁ [v₁ dzo]]]
I child-DEF chase leave
‘I chased the child away.’

(adapted from Collins’s (1997) (44) and (46))

In (33), V₁ is clearly subordinated to V₂ semantically as well as syntactically, as reflected in the meaning of the sentence: “I chased the child, resulting in the child leaving.” Collins (1997: 485) argues that the second verb V₁ incorporates into the first verb V₂ in an SVC, not the other way around (syntactic subordination of V₁ to V₂) and that there is some relation between V₂ and VP₁, namely “consequence” (semantic subordination of V₁ to V₂). Japanese has a similar construction involving incorporation of V₁ oshi-‘push’ into V₂ taos-u ‘topple,’ resulting in oshi-taos-u ‘push-topple’ (Nishiyama (1998)). By the same token &i is subordinated to &j semantically as well as syntactically in (30).

This is only to be expected, for a hierarchically higher constituent has traditionally been correctly taken to be semantically superordinate to a hierarchically lower one. For instance, an interrogative main clause with a declarative clause embedded in it is not a statement but rather a question, even though the converse is a logical possibility. That is, a higher C° which heads the main clause CP semantically supercedes a lower C° which heads the embedded clause CP, and determines the sentence type.

In contrast, (26b) contains two occurrences of a single conjunction &, so the issue of one conjunction being subordinated to the other does not even
arise. Thus, we may reasonably conclude that we end up with semantic coordination, not subordination, in (26b). This much of the semantic difference between (30) and (26b) falls out of the mechanics of independently motivated Internal and External Merge (of &), and the rest should be relegated to the semantic component and competence beyond the C-I interface.

We prefer this type of syntactic solution to the issue of these CSC exceptions over a semantic one like Culicover and Jackendoff’s (1997) for four reasons. First, they do not distinguish conjunct extraction from extraction out of a conjunct, being silent on the first. These two types of A’-movement behave differently, and must be distinguished: while extraction out of a conjunct exhibits CSC effects, conjunct extraction does not. Witness sluicing facts in §5.5 below. Their semantics-based analysis cannot account for the contrast, as it stands. Second, they simply stipulate the CSC following tradition, unlike our account, which exploits the independently motivated machinery of the Merge theory with the IM/EM distinction and a phase, the only new assumption made here being the phasehood of &P, a new addition to an already expanding repertoire of phases: v*P, CP, DP, and PP. Third, they posit two inherently distinct types of and, and and Lsand, with different semantics, which account for a difference in syntactic behavior with regard to the CSC. In contrast, our theory needs a single and, with the basic relevant semantic and syntactic differences following from the IM/EM distinction, given our assumption that &P constitutes a phase, a notion independently motivated. Lastly, we might note that the tactic of seeking a syntactic solution rather than a semantic one in the tradition of generative grammar has proven to be fruitful, because syntactic approaches are more conducive to empirical refutation in that one can produce clearer hypotheses and predictions in terms of the properties of syntactic representation than in terms of semantics.

5.5. The Coordinate Structure Constraint (CSC) and Sluicing

As is well known, there are two components to the CSC: (I) the ban on extraction of an entire conjunct, conjunct extraction, and (II) the ban on extraction out of a conjunct. Merchant (2001: §5.1.4) shows that Ban (I) as a syntactic constraint is ill-conceived in view of the fact that sluicing, which is wh-movement in NS followed by deletion of IP in phonology as he convincingly shows, rescues cases of violation of Ban (I):

(34)  a. *I don’t know who [IP [Irv and t] were dancing together].

    b. Irv and someone were dancing together, but I don’t know who.  

(Merchant (2001: 193))
Since the sluiced sentence in (34b) is acceptable, conjunct extraction itself in (34a) must be allowed in NS; otherwise (34b) will not be generable, because its second conjunct derives from the structure that underlies (34a).

Merchant concludes that conjunct extraction itself is licit, and that the deviance of a case like (34a) is due to the fact that it offends Grosu’s (1981: 56) Null Conjunct Constraint, which states that conjuncts may not be phonetically null, as illustrated in (34a’) (from Merchant (2001: 195)):

(34) a’. *Bob can juggle, and Abby both can [___ and sing], too.
Notice that (34a’) does not involve extraction. This independently motivated constraint also accounts for (2b) under this revised analysis. (2a) never arises, since direct agreement with a conjunct is not possible, as we have seen. (34b) is ruled in, because the offending structure “Irv and t” is elided in phonology along with the rest of the IP under sluicing:

(34) c. ..., but I don’t know who [IP [Irv and t] were dancing together].
[Strikethrough indicates elision.]

In our view, Grosu’s constraint applies in the phonological component.

Under our theory developed so far, however, extraction of a conjunct in (34a) is unfortunately barred in NS, because the coordinated structure with a raised conjunction and (cf. (26b)) lacks an edge (Spec), an escape hatch. But notice that and or its occurrences themselves obviously stand at an edge, as and is a head: in the structure [andi [DP2 [andi DP1]]], and_i as a head is at an edge at first Merge, and then it raises with all of its features at re-Merge, including the relevant feature of “edge.” Let us assume that a conjunct comes to share with its associate occurrence of and the edge feature, by virtue of label projection whereby both project their own labels and pair up (see note 5 and §4). In this regard, and or more generally & is unique among heads, being compatible with a conjunct of any category. In consequence, a conjunct will be at an edge and freely extractable out of the &P phase.8

This revision affects only a conjunct as a unit, not any constituent

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8 Our revision pertains only to the associate conjunct of each (occurrence of) &, which comes to acquire edgehood by virtue of label projection and paring up with &. It follows then that each occurrence of & created by IM (e.g. each &i in (26b)) has no edge (that is, no escape hatch) other than the position of the conjunct, whereas each distinct conjunction & (e.g. &i and &j in (30)) has such an edge besides that of the conjunct. Obviously, the position of a conjunct itself is unavailable to an element within to be extracted as an escape hatch, unless we countenance excorporation, which is plainly a wrong move, since it vitiates the effects of some islands like wh-island as well as those of the Head Movement Constraint.
contained in the conjunct so affected, thus not touching Ban (II), as desired. This ban is clearly a syntactic one, as Merchant (2001: §5.3.3) argues. He observes that the CSC effect at issue is not undone by sluicing: (35a) has (35b) as its source, in which sluicing does not salvage the derivation.

(35)  
   a. *No farmer [sold his farm and moved to a certain town—I don’t remember which. (Merchant (2001: 224))
   b. ... *I don’t remember which [IP no-farmer–sold–his–farm–and–moved–to–t]
   
Cf.  
   c. *No farmer sold his farm and moved to a certain town—I don’t remember which he moved to. (Merchant (2001: 225))

One might object that there are apparent cases of repair by sluicing with such extraction (e.g. (36a)), but they are only apparent and in actual fact involve licit extraction, not implicating coordination: (36a) derives from (36b), with an E-type pronoun he.

(36)  
   a. Bob [ate dinner and saw a movie] that night, but he didn’t say which. (Merchant (2001: 223))
   b. ... which [IP he saw t that night] (Merchant (2001: 225))

Even this sort of derivation is not available for (35a), because a subject headed by the determiner no does not give rise to an E-type pronoun, as shown in (35c). That is, when the non-island violating source is unavailable as in (35c), sluicing is also disallowed, as in (35a). Thus, our syntactic account in §§5.1 and 5.2 still stands with regard to Ban (II) of the CSC. Notice that Lasnik (2001) casts doubt on Merchant’s claim about the effects of the relative clause island not being undone by sluicing, providing some strong counterevidence to the claim about the island, but not for Ban (II). Thus, Lasnik’s argument apparently does not affect our analysis of the...
ban. If it did extend to this subpart of the CSC, we might drop the above revision concerning Ban (I) and treat both bans on a par (viz. syntactically), reverting to our original analysis. Then, following Chomsky (1972: 72) (or its adaptation in Lasnik (2001)), we might say in effect that violation of either ban incurs "*' marking on the offending coordinate structure, which, unless deleted in phonology (e.g. by sluicing), is interpreted as a crashed derivation at the SM interface.

6. Further Evidence in Support of Our Proposal Regarding Full Agreement

Our proposal of the asymmetric structure (8a) for coordination immediately accounts for binding in (5). Similarly, facts like those in (2), (3) and (4) are easily accountable in our terms, as we saw above. Symmetrical agreement in (1) was shown to be easily amenable to our analysis. Let us see further data confirming our theory about full agreement.

6.1. Arabic

In Standard Arabic (SAr) the verb agrees “in full” in terms of φ-features (viz. in person, number, and gender) with the simple subject under the order SV, while it agrees with the subject partially, that is, only in person and gender, under the order VS. In the SV order with a conjoined subject of the form “DP₂ and DP₁,” the verb agrees in all φ-features with both conjuncts of the subject, a case of “full agreement” as we called it in §4 (cf. our discussion surrounding (19)), which triggers movement. In contrast, in the VS order with a conjoined subject, the verb agrees with both conjuncts of the postverbal subject in gender alone, or only with the first conjunct and furthermore only in gender.

In Moroccan Arabic (MAr) and Lebanese Arabic (LAr) the verb agrees “in full” (with respect to the φ-features) with the simple subject in both orders SV and VS. In the SV order with a conjoined subject, the verb agrees with both conjuncts of the subject fully in terms of φ-features as in SAr, and in the VS order with a conjoined subject it may also fully agree with both conjuncts unlike in SAr. In addition it may agree fully with the first conjunct only in the VS order. See Fassi Fehri (1993, Ch. 2, §§1, 3; Ch. 4, §2) and Aoun et al. (1994).

Adopting the standard view of word order alternation in VSO languages, we assume that the subject raises across the verb to [Spec, TP] to yield the SVO construction under the VP-internal Subject Hypothesis. In VSO sentences a null expletive resides in [Spec, TP] in SAr, MAr and LAr, we as-
sume with Aoun et al. (1994: 200).

In the case of coordination, "full" is ambiguous between "full" with regard to φ-features and "full" with respect to conjuncts. The fact seems to be that movement is driven by EPP under the condition of the double sense of full agreement, namely, with respect to both φ-features and conjuncts. Only when a full set of φ-features of a full set of conjuncts participates in Agree (only a necessary condition), is IM sanctioned for A-movement. In the case of a simple subject, a unique DP as the subject constitutes a full set of conjuncts (viz. a singleton). Less than "full agreement" in this double sense is "partial agreement," partial either with regard to φ-features or conjuncts or both, failing to trigger IM.

A striking confirmation of this requirement for IM is provided by the Aux SVO construction in SAr, in which the auxiliary verb shows partial agreement (lacking number agreement), whereas the main verb shows up with full agreement, as in (37):

(37) kaan-a l-junuu-u laa y-a?kul-uu-na.
be.PAST-(3.SG.M.) the-soldiers-nom not 3-eat-M.PL.-INDIC

'The soldiers were not eating.' (Fassi Fehri (1993: 157))

Thus, the subject raises across the finite main verb (shifted to the lower T) to the Spec of the lower T, triggered by full agreement, but no farther, given that the higher T takes partial (or no) φ-agreement (witness singular or default agreement on the auxiliary), under the assumption of Fassi Fehri that higher T selects TP in (37).

More interestingly, in the case of the conjoined subject, LAr optionally may prepose the subject even across the progressive auxiliary keen, as in (38a) as opposed to (38b).

(38) a. Kariim w Marwaan keeno am yil abo.
Kareem and Marwaan were ASP playing(PL)
'Kareem and Marwaan were playing.'

b. Keeno Kariim w Marwaan am yil abo.
were Kareem and Marwaan ASP playing(PL)
'Kareem and Marwaan were playing.'

c. Keen Kariim w Marwaan am yil abo.
was(3P.MAS.SG) Kareem and Marwaan ASP playing(PL)
'Kareem and Marwaan were playing.'

(Camacho (2003: 107))

Notice that as Camacho observes, if the conjoined subject precedes the auxiliary as well as the main verb, both auxiliary and main verb fully agree with the subject (cf. (38a)), whereas if the subject follows the auxiliary but
precedes the main verb, the verb fully agrees with the subject but the auxiliary may fully agree with the subject (cf. (38b)) or agree only with the first conjunct of the subject (cf. (38c)). In the former (viz. (38a)), both verb and auxiliary access both D labels of \((\&_1(\&_2(\&_1D_1)))\) on the conjoined subject, viz. \(D_2\) and \(D_1\), (cf. (20)), while in the latter (viz. (38b) and (38c)) the main verb accesses both D labels, but the auxiliary may access both D labels inducing full agreement (cf. (38b)) or the highest one \((D_2)\) alone inducing partial agreement (cf. (38c)). Recall that full agreement is merely a precondition for IM, not necessarily triggering raising. This array of facts strongly supports our analysis.

(39a) and (40b) fall out naturally from our analysis. This account again raises the question of why the subject cannot stay in situ with full agreement in SAr (cf. (39b) versus (40a)), given that a form in English like (14b) with full agreement is licensed with the subject in situ:

(39) a. daxal-at n-nisaa?-u makaatib-a-hunna. (SAr)
   entered-F.[SG] the-women-NOM office.PL.-ACC-their.F.
   ‘The women have entered their offices.’  
   b. *daxal-na n-nisaa?-u makaatib-a-hunna.
   entered-F.PL. the-women-NOM office.PL.-ACC-their.F.

(40) a. n-nisaa?-u daxal-na makaatib-a-hunna. (SAr)
   the-women-NOM entered-F.PL. office.PL.-ACC-their.F.
   ‘The women have entered their offices.’
   b. *n-nissa?-u daxal-at makaatib-a-hunna.
   the-women-NOM entered-F.SG. office.PL.-ACC-their.F.

(Fassi Fehri (1993: 32))

We leave this question as well as the one regarding (18b) and (18e) to future work. Fassi Fehri accounts for the correlation between agreement and word order by postulating the “AGR Criterion” involving the Spec-Head relation, a notion no longer sanctioned in the MP framework. Besides, (14b) is a direct counterexample to the AGR Criterion.

6.2. Other Languages

Postverbal subjects are found in many languages, especially in VSO languages. Fassi Fehri (1993: 36) notes that in Celtic, verbs take either null or partial (viz. gender) agreement with postverbal subjects as in SAr, citing Welsh sentences from Rouveret (1991):

(41) a. Darllenodd y plant y llyfr.
   read-PAST-3SG the children the book
   ‘The children read the book.’
b. *Darllenasant y plant y llyfr.
   read-PAST-3PL the children the book
   ‘The children read the book.’

French also offers illustrations of null/poor agreement with a postverbal subject and full agreement with a preverbal one. Observe (42a) and (43b) with no subject-verb agreement and (43a) and (42b) with such agreement:

(42) a. Il est venu trois enfants.
      it is come(SG) three children
      ‘There came three children.’

b. *Ils sont venus trois enfants.
      they are come(PL) three children

(43) a. Trois enfants sont venus.
      three children are come(PL)
      ‘Three children came.’

b. *Trois enfants est venu.
      three children is come(SG)

[The glosses and translations are ours.] (Fassi Fehri (1993: 35))

Trentino (T) and Fiorentino (F), north Italian dialects, pattern in parallel fashion, again somewhat like SAr but unlike (standard) Italian, as in (44) and (45).

(44) a. Gli è venuto delle ragazze. (F)
      is come some girls
      ‘Some girls have come.’

b. E’ vegnú qualche putela. (T)

(45) a. *Le son venute delle ragazze. (F)
      they are come some girls
      ‘Some girls have come.’

b. *L’è vegnuda qualche putela. (T)

(Fassi Fehri (1993: 35))

(Fassi Fehri (1993: 36))

The agreement patterns in (41)–(45) are basically on a par with those in SAr and amenable to the same analysis in terms of full versus null/partial agreement.

(Standard) Italian diverges from this picture in that even in VS contexts, full agreement with subjects is required, as observed by Fassi Fehri (1993: 36): (46a) and (46b) show full agreement, much like MAr and LAr.

(46) a. Sono venute delle ragazze.
      are come some girls
      ‘Some girls have come.’

b. E’ venuta Maria.
      is come Maria
‘Maria has come.’

As is well-known, Italian is a null subject language and sentences like (46a) and (46b) contain a null expletive subject, much like SAr, MAr, and LAr. Thus, they are analogous to a sentence like (14b). Cf. Fassi Fehri (1993: 37) and Aoun et al. (1994: 200).

Further evidence in favor of our hypothesis about full agreement (possibly) triggering A-movement comes from the facts about agreement with coordinated subjects in Dutch dialects presented by van Koppen (2006), which manifest complementizer agreement with the subject like West Flemish, Bavarian, Frisian, etc. She shows that in Dutch dialects like Tegelen Dutch (TD) and Lapscheure Dutch (LD), the complementizer and the verb agree with the subject. This double agreement with the subject is unproblematical because it takes place within the same phase CP, and the φ-features originate in C (cf. Chomsky (2008)).

Interestingly, in the case of the conjoined subject again, the complementizer may agree with the first conjunct of the following subject or the entire conjoined subject, depending on the dialect. In contrast, the finite verb always agrees with the entire subject, which again confirms that full agreement may trigger movement of the subject, to [Spec, TP] in this case.

(47) a. ... de-s [doow en ich] ôs
treff-e.
‘... that you and I could meet.’ (van Koppen (2006: 126))

b. Kpeinzen da-n [Valère en Pol] morgen
goa-n.
‘I think that Valère and Pol will go tomorrow.’
(van Koppen (2006: 134))

In TD the complementizer cannot agree with the whole subject as in (47a), while in LD the complementizer cannot agree with the first conjunct alone as in (47b). See van Koppen (2006). The agreement patterns in conjoined subjects in Brazilian Portuguese (BP) lend further support to our account of raising, as do those in (47). Space prevents discussion of relevant data in BP, for which we refer the reader to Camacho (2003: 109–110). We conclude that universally, partial agreement never triggers raising.
6.3. Multiple Conjuncts in English

Our analysis generalizes to coordination of multiple conjuncts such as (48), taken from Zoerner (1995: §§3.1.4, 3.1.5), a first conjunct necessarily merging as an adjunct:

(48) a. He, she and Robin (all) left.
    b. Him, her and Robin left.
    c. *Him, she and Robin left.
    d. He, she and me all left.
    e. ?Him, her and I all left.
    f. ?Robin saw him, her and I yesterday.

Case marking of conjoined subjects and objects in English presents a somewhat confusing picture due to compounding extralinguistic factors like prescriptive rules (viz. Sobin’s (1997) “viruses”), sentence processing (see Schütze (1999)), etc. But the general patterns of agreement and Case marking seem clear enough. In our terms, at least (48a)–(48e) must involve full agreement (viz. all the φ-features of all the conjuncts participating in Agree), since the whole subject has raised to [Spec, TP]. Presumably, the conjuncts have all fully agreed and consequently have received Case valuation in these sentences. Case realization is optional: higher conjuncts may have Case realization to the exclusion of lower ones. Only if a higher conjunct has Case realized, may a lower one, so the first alone or the first and the second alone, etc. may have Case realized, leaving the other(s) without Case realization (assignment), but not conversely. This seems to be the general pattern. See our discussion revolving around (23)–(25) above. The unexpected nominative Case on the last conjunct “I” in (48e) and (48f) should be due to the “... and I ...” Rule of Sobin (1997), “a virus that tinkers with a certain grammatical form to achieve a socially prescribed norm.”

This array of facts is what our analysis predicts in terms of the asymmetrical structure of coordinate constructions plus the theorem of a higher node taking priority over a lower one in Agree and Case realization. The priority in Agree follows from minimality in label projection and the one in Case realization from the optionality of the transmission of the Case realization property from T down to the & system, as shown in §4.

7. Conclusion

As a point of departure, we assumed that coordination has hierarchically asymmetric structure, a standard assumption and a consequence of Merge Theory. On this assumption we showed that crosslinguistic agreement pat-
terns in coordination fall into place under Minimal Search and minimality in label projection, which allows a conjunction & and its conjunct alike to simultaneously project their labels up because they are category compatible. We then argued that CSC effects for A-movement also fall out in these terms, proceeding on the Chomskyan assumption that A-movement is comprised of Agree, Pied-Piping and IM. Next, we proposed that a coordinate construction forms a phase, which gives a principled explanation of Ban (II) effects of the CSC as well as the exceptional absence thereof in terms of IM and EM of a conjunction in A’-movement, unlike in A-movement where the CSC effects hold invariantly. Hence we proposed different accounts of the effects for A- and A’-movement. Finally, we showed that Agree involved in A-movement is full agreement targeting all φ-features of all conjuncts, which provides a basis for explanation of a crosslinguistic word order distinction (SV versus VS). Our discussion is restricted to VO languages but readily generalizes to OV languages modulo word order: in the latter, with a post-conjunct conjunction, the last conjunct is in a higher position than the other conjuncts, a privileged position for Agree. See Johannessen (1998) for relevant facts.

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