STRUCTURE FOR COORDINATION Part I

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Capturing the structure of coordination has long posed a challenge for any theory of syntax. Given the systematic and pervasive nature of coordination cross-linguistically, it has become clear that the degree of success of any theory of language structure largely depends on how successful it is in integrating coordination. The recent years have seen a significant progress: numerous sophisticated analyses of coordination have been advanced, and a wealth of new data has been uncovered. The riddle of coordination is on the verge of being resolved.

Part I of this paper introduces the representative data relevant for determining the structure for coordination (section 1), and provides a survey of the analyses of coordination that do *not* treat conjunctions as heads of conjunction phrases (section 2). Part II, to appear in *Glot International* **3**,8 (see box), provides a survey of those analyses of coordination that *do* treat conjunctions as heads of conjunction phrases (section 3), as well as the extensive Bibliography.

1. Representative Data

1.0. Introductory words

This section introduces the data generally considered in developing a theory of coordination. It includes not only some well-known data concerning coordination, such as asymmetries among conjuncts, but also some less-known data, such as repetition of conjunctions in front of each conjunct, as well as some old data that have been reanalyzed and rethought, such as the (lack of) c-command effects among conjuncts. In order to keep this paper finite in size, the intricacies of Gapping, Right Node Raising, and VP-Ellipsis will not be discussed here in any detail; the reader is referred to Johnson (1996).

1.1. Asymmetry: Ross' effects

Ross (1967) concluded that the second conjunct forms a unit with the conjunction, but not the first conjunct, based on the following contrasts:

(1)
John left, and he didn't even say good-bye.

(2)
John left. And he didn't even say good-bye.

(3)
*John left and. He didn't even say good-bye.

Collins (1988a,b) and Munn (1993) discuss the following contrasts that illustrate that extraposition is possible of the last conjunct and conjunction, but not of the first conjunct and conjunction, which fact supports Ross' conclusion:

(4)
John read a book yesterday, and the newspapers.

(5)
*John read the newspapers yesterday, the book and.

In addition, Zoerner (1995) points out that 'etc(etera)' is used to replace the last conjunct(s) and the conjunction, establishing the two as a constituent.

(6)
I bought jam, bread, etc.

(7)
*I bought jam, bread, and etc.

These data seem to stand on a firm ground, and have been widely exploited in the GB literature as evidence for a hierarchical organization of the &P (Conjunction Phrase), as will be seen below.

1.2. Is there c-command?

The literature that adopts a hierarchical approach to coordination assumes or argues that the first conjunct in VO languages (including English) c-commands the rest of coordination. Of course, this would constitute the strongest possible argument for hierarchy. However, such a c-command relationship is not a necessary consequence of a hierarchical organization of the coordination phrase, as will become clear in the later discussion.

The question is, then, whether the first conjunct c-commands the rest of coordination or not. The answer seems to be 'no,' since the arguments for c-command are at best ambivalent. The rest of the section reviews these arguments.

Collins (1988a,b) and Munn (1993) attempt to capture the contrasts below by invoking Principle C, which is only possible if the first conjunct c-commands the second:

(8)
John$_i$'s dog and he$_i$/him$_i$ went for a walk.

(9)
*He/him$_i$ and John$_i$'s dog went for a walk.

However, the same effect is observed even across sentences, where Principle C cannot be invoked, since structural relations such as c-command operate only within sentence boundaries:

(10)
*He$_i$ finally arrived. John$_i$'s dog went for a walk.

It must be then that some other, possibly pragmatic, principle is responsible for the ungrammaticality of (10). This same principle, whatever it is, can then also account for the ungrammaticality of (9).

Given the additional data below, it seems that we not only can, but must, attribute (9) to something other than Principle C. If principle C were operative between conjuncts, it would render (11) and (12) below equally ungrammatical. (11), however, is perfectly grammatical, while (12) is marginal and marked, at best.

(11)
John and John's wife are certainly invited.

(12)
?*John certainly likes John's wife.

Another type of argument for c-command comes from bound pronouns. The possibility of binding a pronoun in (13) may look like an argument for c-command between conjuncts. However, this can only be an argument that *every* c-commands *his* at LF, since quantifiers are subject to the rule of Quantifier Raising (QR) (May 1977):

(13)
Every$_i$ man and his$_i$ dog went to mow a meadow.
(Munn 1993)

The proposal that the pronoun is c-commanded by QP at LF, rather than the trace of QP, is supported by the data discussed in Hornstein and Weinberg (1990) (thanks to Marc Authier and Lisa Reed for pointing this out to me). The data show that anaphoric epithets can function as bound variables (14), but since they obey Condition C, this is only possible if the QP in an A-bar position, but not its trace in an A-position, c-commands the epithet at LF. Otherwise, (15) would be grammatical:

(14)
John criticized every senator$_i$ in private while praising the bastard$_i$ in public.

(15)
*Bill$_i$ expected that the bastard$_i$ would win.

The ungrammaticality of (16) below would follow from some version of the Leftness Condition (see Chomsky 1973, Higginbotham 1980), as also pointed out in Munn (1993):

(16)
*His$_i$ dog and every$_i$ man went to mow a meadow.

This leaves us with no evidence for c-command between conjuncts.

In addition, cross-linguistic data on binding and negative concord reinforce the conclusion that there is no evidence that the first conjunct c-commands the second (for more details and arguments, see Progovac 1996, 1997, to appear a).

A reflexive pronoun in the second conjunct cannot be bound by the first conjunct. This is most readily observed in languages with possessive reflexives, as illustrated for Serbo-Croatian in (17), but is also obvious in English (18), (see Collins 1988a,b and Munn 1993).

(17)
*Jovan$_i$ i svoja$_i$ žena su stigli.
John and self's wife are arrived
"John and self's wife have arrived"

(18)
*Either John$_i$ or a picture of himself$_i$ will suffice.

Likewise, a negative word in the first conjunct cannot license a negative polarity item *any* in the second (19). (For conditions on polarity licensing and negative concord, see e.g. Ladusaw 1980 and Zanuttini 1991). In fact, one is required to use two negatives, as in (20), where the use of two negatives does not result in a dialectal/negative concord use. For (21) and (22), in which c-command uncontroversially obtains, exactly the opposite is true: the negative word licenses the polarity item in (21), and the use of another negative word in (22) results in a dialectal/negative concord usage:

(19)
*He chased nobody and/or any dogs.

(20)
He chased nobody and no dogs.

(21)
Nobody chased any dogs.

(22)
%Nobody chased no dogs.

There may exist alternative explanations for each of the effects discussed above. For negation, one can argue that the negative feature needs to raise out of the coordination phrase (see Zanuttini 1991 and Haegeman and Zanuttini 1991), but that such raising is blocked by CSC (Coordinate Structure Constraint), which prohibits movement out of coordinated phrases in general (see section 1.10). For binding, one can

This is the first State-of-the-Article that appears in two installments (we thought it fit the subject matter). Here is the full table of contents of both Part I and Part II of Ljiljana Progovac's **Structure for coordination**.

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argue that the conjuncts do not satisfy the condition on co-argumenthood and that this leads to ungrammaticality (see e.g. Hellan (1988) and Reinhart and Reuland (1993)). At the very least, then, one can say that there is no evidence for c-command between conjuncts. However, given that Principle C also does not hold between conjuncts (see the contrast between (11) and (12)), a stronger conclusion suggests itself: conjuncts do not c-command each other. Thus, a theory of coordination from which this conclusion follows is to be preferred.

There is only an apparent tension between the data that point to a hierarchy (section 1.1.) and the data that point to the conclusion that there is no c-command among conjuncts, as will be seen below.

1.3. Subcategorization

The question of subcategorization is relevant for coordination in two different ways: (i) first, the question arises whether or not all conjuncts have to satisfy the subcategorization requirements of the head by which they are governed; (ii) second, if a coordination phrase dominates conjuncts, it is not clear how such a phrase can satisfy the subcategorization requirement of a head that selects an NP, for example. Related to this question is also the question of conjoinability of different categories. If a coordination phrase hosts an NP, a PP and/or an AP, as in (23)/(24) below, what features will such a coordination phrase have?

(23)
Pat has become [a banker] and [very conservative].
(Sag et al. 1985)

(24)
Robin is [ugly], [a dolt] and [of no help]. (Zoerner 1995)

Different analyses offer different solutions to this problem, as will be made clear in sections 2 and 3.

As far as the first question goes, the data suggest that not all the phrases have to satisfy the subcategorization requirements of the governing head, as the following examples illustrate (see Gazdar et al. 1985):

(25)
Pat was annoyed by [the children's noise] and [that their parents did nothing to stop it].

(26)
You can depend on [my assistant] and [that he will be on time].

(27)
*Pat was annoyed by [that their parents did nothing to stop the noise] and [the children].

(28)
*You can depend on [that my assistant will be on time] and [his intelligence].

(29)
*Pat was annoyed by that their parents did nothing to stop it.

(30)
*You can depend on that he will be on time.

The above contrasts seem to illustrate that only the first conjunct has to satisfy the subcategorization requirements of the preposition, while the second conjunct can sometimes, under certain circumstances, get "a free ride." All other things being equal, that analysis of coordination is to be preferred from which these data follow.

1.4. Agreement

The agreement considerations point to potentially conflicting conclusions. On the one hand, agreement is normally established in such a way that both conjuncts are taken into account, as if the structure were symmetrical (31). This is in contrast to a clearly asymmetrical case, given in (32):

(31)
A man and three children ?*is/are at the front door.

(32)
A man with three children is/*? are at the front door.

Similarly, in the contrast below, conjuncts in (33) are interpreted as thematically parallel, as opposed to the two NPs in (34), which are clearly hierarchically arranged:

(33)
A mother and three children arrived late on purpose.

(34)
A mother with three children arrived late on purpose.

While in (34) the agentive intention "on purpose" is ascribed only to 'a mother,' it is ascribed to both 'a mother' and 'children' in (33), suggesting that whatever the hierarchical relation between 'mother' and 'three children' is in (34), it cannot be the same as the one in (33).

This is not the whole story, however. In various language, including English, singular agreement can be selected even with conjunction phrases, under certain circumstances. In the following examples from English, the first conjunct alone is responsible for the choice of agreement on the verb (see (35) and (36)), which case is reminiscent of (34) above, and not of (33):

(35)
There is /??are [a man and three children] at the front door.

(36)
There *is/are [three children and a man] at the front door.

Agreement with the first conjunct is only possible if the subject &P is preceded by the verb. Camacho (1997, 85) states that, if a language has alternative word orders, agreement with one conjunct, or partial agreement, will occur with non-canonical word order. The same preverbal/postverbal asymmetries arise in many other languages, as reported for Arabic, Irish, Portuguese, and Russian (see McCloskey and Hale 1984, McCloskey 1986, 1989, van Oirsouw 1987, Munn 1993, 1996, Benmamoun (1992), Aoun, Benmamoun and Sportiche (1994), Babyonyshev 1996, 1997, etc.). The following Arabic examples illustrate that first conjunct agreement is possible, but that it only occurs in post-verbal positions:

(37)
el-walad we-l-banaat gataluu el-bisse
the-boy and-the-girls killed-3PL/MASC the-cat
"The boy and the girls killed the cat."

(38)
el-banaat we-l-walad gataluu el-bisse
the-girls and-the-boy killed-3PL/MASC the-cat

(39)
gatal el-walad we-l-banaat el-bisse
killed-SG/MASC the-boy and-the-girls the-cat

(40)
gatalen el-banaat we-l-walad el-bisse
killed-PL/FEM the-girls and-the-boy the-cat

Some analyses of coordination, such as Munn (1993), capitalize on this set of data to argue that the first conjunct is what the &P adjoins to, but that the first conjunct is not really the part of this &P (see section 3.3., Part II). While this analysis accommodates the data with first conjunct agreement, it has to say something special about plural agreement with two singular conjuncts, as in (31), for example.

Babyonyshev (1997) offers an interesting analysis of this variation, based on the agreement pattern in Russian, where preverbal &P necessarily triggers plural agreement, while postverbal subjects optionally occur with agreement with the first conjunct only:

(41)
V komnatu vošli/vošla/*vošel/*vošlo molodaja ženščina
into room entered-pl./sg.f/sg.m/sg.n young woman-f-nom
i malen'kij mal'čik.
and little boy-m-nom
'Into the room entered a young woman and a small boy.'

(42)
Molodaja ženščina i malen'kij mal'čik
young woman-f-nom and little boy-m-nom
vošli/*vošla/*vošel/*vošlo v komnatu.
entered-pl./sg.f/sg.m/sg.n into room

She proposes an analysis which captures, straightforwardly, the asymmetry between pre-verbal and post-verbal agreement, based on the common assumption that the subject has to check its features in TP. The preverbal subject is overtly moved to TP for this purpose. On the other hand, the postverbal subject checks its features covertly (at LF). The features of the postverbal subject, if it is a &P, either move as a whole, resulting in plural agreement, or only the features of the first conjunct move to TP, resulting in singular agreement.

If Babyonyshev's analysis is on the right track, then it has the following two implications for the structure of coordination: (i) the first conjunct is hierarchically higher than the rest of &P; otherwise, there would be no asymmetry with respect to which conjunct can check its features in TP; (ii) first conjunct agreement data can be captured even if the first conjunct is the part of &P.

1.5. Conjunction Doubling

By Conjunction Doubling I will refer to the repetition of the conjunction in front of all conjuncts, including the first. (This differs from the process found in English of repeating only the intermediate conjunctions.) Conjunction Doubling is available in French, Italian, Japanese, Serbo-Croatian (SC), and other languages (see Payne 1985 for more languages), but not in English:

(43) French (Kayne 1994):
Jean connait et Paul et Michel.
Jean knows and Paul and Michel
"Jean knows both Paul and Michel."

(44) Italian:
Sono arrivati (e) Anna, (e) Roberto, e Laura.
are arrived and Anna and Roberto and Laura
"Anna (and) Roberto and Laura have arrived."

(45) Serbo-Croatian:
(I) Marija, (i) Milan, i Petar studiraju lingvistiku.
and Mary and Milan and Peter study linguistics
"Mary (and) Milan and Peter are students of linguistics."

(46) English:
*And Mary and Peter study linguistics.

As illustrated with comma placement for Serbo-Croatian and Italian examples, phonological cues (pauses) suggest that each conjunction forms a unit with the immediately following conjunct in VO languages. No other comma patterns are possible, as given below:

(47) Serbo-Croatian:
*I, Marija i Milan i Petar studiraju lingvistiku.

(48) Italian:
*Sono arrivati e, Anna e Roberto e Laura.

Interestingly and importantly, head final languages, such as Japanese, double their conjunctions to the right, as illustrated below (see Kuno 1973, Kayne 1994, Zoerner 1995). This provides a powerful argument for treating conjunctions as heads (see section 3, Part II). This is so because conjunctions show the same order with respect to conjuncts that (other) heads show with respect to their complements.

(49) Japanese:
[Robin-to Kim-to Terry-to]-ga
Robin-and Kim-and Terry-and-CASE

Since the Conjunction Doubling strategy is available crosslinguistically, a theory of coordination that can accommodate these data is to be preferred.

1.6. Chaotic Case

Recent accounts have started to make use of unexpected Case assignment in coordination phrases, most notably Zoerner (1995) and Johannessen (1998). It is well-known that coordination phrases in English tolerate accusative Case assignment to subjects, and nominative Case assignment to objects, as illustrated below. The examples also show that a mixture of nominative and accusative Cases is possible in a single coordination phrase.

(50) Subjects:
Them and **us** are going to the game together.
(Stahlke 1984, 360, quoted in Johannessen 1998)

(51)
She and **him** will drive to the movies.
(Schwartz, B.D. 1985, 165, quoted in Johannessen 1998)

(52) Objects:
All debts are cleared between **you** and **I**.
(Shakespeare, *Merchant of Venice,* quoted in Johannessen 1998)

(53)
I really wanted my mother to live with **my husband**, **Michael** and **I**.
(*Evening Standard*, 30 June 1992, 16, quoted in Johannessen 1998)

Johannessen (1998) offers data from 32 languages demonstrating that the phenomenon is widespread and systematic. For her, (50) would be the case of EBC (Extraordinary Balanced Coordination), in which both conjuncts receive unexpected Case; in contrast, (51) would be a case of UC (Unbalanced Coordination), in which only one conjunct receives unexpected Case. She establishes the following correlation (1998, 55):

(54) Johannessen's Correlation
"There is a very strong correlation between, on the one hand, the order of verb+object, and on the other, that of normal conjunct+deviant conjunct (usually the same as that between conjunction+deviant conjunct)."

Out of 12 OV languages (Amharic, Burushaski, Eastern Mari, Hopi, Japanese, Latin, Qafar, Sidaamu Afo, Swahili, Tamil, Turkic, Yagnobi), 11 have the deviant UC conjunct in the first position (excluding Yagnobi); out of 14 VO-languages, **all** have the

deviant UC conjunct in the second position (Czech, English, Fulfulde, Ga, Italian, Norwegian, Old Hebrew, Old Irish, Old Norse, Palestinian Arabic, Serbo-Croatian, Slovene, Tokelauan, Welsh). In her sample, there are six languages whose word order is mixed or unclear (Afrikaans, Dutch, Estonian, German, Homeric Greek, Vedic), and which do not conform to the correlation. Since English is a VO language, it follows from (54) that the deviant conjunct in Unbalanced Coordination will necessarily be the second conjunct.

On the other hand, it follows from Zoerner's (1995) generalization in (55) that deviant Case in the first conjunct is grammatical in English (56–57), as long as all non-final conjuncts share it. (58) and (59) are claimed by Zoerner to be ungrammatical because non-final conjuncts do not share the same Case, as required by (55):

(55) Zoerner's Generalization
All non-final conjuncts must have identical Case.

(56)
?**Him**, **her** and **I** all left.

(57)
Robin saw **he**, **she** and **me**.

(58)
*__He__, **her** and **Robin** (all) left.

(59)
*__Him__, **she** and **Robin** (all) left.

The two analyses make different predictions. Johannessen's analysis would be falsified by grammaticality of examples like (56, 57, 59, as well as by 60–63 below), while their grammaticality would follow from Zoerner's analysis. In fact, since Zoerner draws a line only between final and non-final conjuncts, he predicts grammaticality of any Case combination in two-way conjunctions. On the other hand, Zoerner's analysis would be falsified by grammaticality of examples like (58) and (63), while the grammaticality of (58) would follow from Johannessen's analysis. (I report 60–63 below without a grammaticality judgment.)

(60)
Him and **I** both left.

(61)
Robin saw **he** and **me**.

(62)
All debts are cleared between **I** and **him**.

(63)
I really wanted my mother to live with **I**, **him**, and **Michael**.

It may not be possible to determine a priori how the data bend here. There are many factors that influence native speaker judgments on these, including various prescriptive rules. This may well be a case where ultimately the theory will have to draw the line between grammaticality and acceptability. Not only can a prescriptive rule render a grammatical construction unacceptable, but it can also render an otherwise ungrammatical construction acceptable. (By 'grammatical' I mean generated by the rules of Grammar; by 'acceptable' I mean judged acceptable by native speakers.)

One conclusion emerges, however: 'deviant' Case occurs in coordination phrases cross-linguistically, and is subject to regular cross-linguistic patterns.

1.7. Coordination of Likes Constraint (CLC)

On the basis of contrasts like (64) and (65), Chomsky (1957) concluded that syntactically different categories cannot be conjoined, which constraint has been referred to as Coordination of Likes Constraint (CLC); see also Williams' (1978) "Law of Coordination of Likes:"

(64)
the scene [$_{PP}$ of the movie] and [$_{PP}$ of the play]

(65)
*the scene [$_{PP}$ of the movie] and [$_{CP}$ that I wrote]

Schachter (1977: 90) strengthens the formulation of the principle to require semantic, as well as syntactic, 'likeness,' as in (66). Schachter shows that just purely semantic considerations do not suffice, since there is a contrast between (67) and (68) below, even though they involve coordination of semantically equal functions.

(66)
"The constituents of a coordinate construction must belong to the same *syntactic* category and have the same *semantic* functions."

(67)
Bobby is the man [who was defeated by Billie Jean] and [who beat Margaret].

(68)
*Bobby is the man [defeated by Billie Jean] and [who beat Margaret].

However, just as purely semantic formulations have systematic counterexamples, so do purely syntactic approaches, as well as Schachter's formulation in (66). The examples below involve successful coordination of syntactically unlike categories:

(69)
Pat has become a banker and very conservative. (Sag et al. 1985)

(70)
Robin is ugly, a dolt and of no help. (Zoerner 1995)

(71)
Robin considers Kim completely evil, a total witch, and beyond salvation. (Zoerner 1995)

(72)
[$_{NP}$ Robin's help] and [$_{CP}$ that (s)he gave it so willingly] delighted Kim. (Zoerner 1995)

(73)
Robin realized [$_{CP}$ that the sky was falling] and [$_{NP}$ the gravity of the situation]. (Zoerner 1995)

As will be discussed below, a theory based on the idea that conjunctions are heads in the X'-schema (section 3, Part II) does not have anything to say about CLC — the principle simply does not seem to have anything to do with the theory. Most of the proponents of such theories deny the existence of CLC. The status of CLC may be more relevant in those theories of coordination that assume parallel structures, in which coordination involves a merger of two trees with identical structures (e.g. Goodall (1987), see section 2.2.). For this approach, examples like (74) below are still a problem (see Gazdar et al. 1985). (74) could not have been generated by a merger of two well-formed trees, given the ungrammaticality of (75):

(74)
You can depend on [my assistant] and [that he will be on time].

(75)
*You can depend on that he will be on time.

The contrast above is equally problematic for an attempt to make CLC follow from an analysis in which conjuncts, rather than the conjunction(s), are (multiple) heads of coordination (see section 2.1.).

While counterexamples do not necessarily falsify a *theory*, it seems safe to conclude that counterexamples do indeed falsify a *generalization* that does not follow from a theory, which seems to be the case with CLC. The contrasts discussed above may be a result of the interaction of the structure of coordination and another principle of grammar (see Appendix, Part II, for an analysis that invokes an Economy principle: Economy of Conjunction Marking).

1.8. Conjunction adverbs

Collins (1988a,b) argues that certain adverbs are associated with conjunctions, and that they modify the conjunction, as in the following examples:

(76)
John and **maybe** Mary went to the store.

(77)
Perhaps John, **maybe** Mary, and **certainly** Bill went to the store.

He provides arguments that these adverbs neither modify the corresonding NPs, nor can they derive from sentential paraphrases of coordinated NPs. For example, although (77) below is acceptable, (79) and (80) are not:

(78)
The treasurer, the president, and perhaps the CEO will get together tonight to hammer out an agreement.

(79)
??The treasurer and perhaps the president will get together tonight...

(80)
*Perhaps the president will get together tonight...

If this is the correct analysis of the examples above, then it has two consequences for the structure of coordination: first, it provides an additional argument for the head status of coordination; second, it requires that there be as many conjunctions as there are conjuncts, in order to capture the fact that each can be modified, as in (77).

1.9. Coordinate Structure Constraint (CSC)

Based on the data like (83–85), Ross (1967: 98–99) formulates the constraint in (86). (83) illustrates that extraction of a conjunct is unacceptable, while (84) illustrates that extraction out of a conjunct is unacceptable. Both contrast with the acceptable (85), where extraction is not out of a coordination phrase.

(83)
*Which surgeon did Kim date t and a lawyer?

(84)
*Which surgeon did Kim date friends of t and a lawyer?

(85)
Which surgeon did Kim date (friends of)?

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

Extraction out of conjuncts is allowed only if it applies Across-the-Board (ATB), as in:

(87)
Which surgeon did Kim date friends of and enemies of?

On the other hand, Lakoff (1986) argued that CSC is falsified by a range of data, and concluded that it constitutes a wrong generalization (see also Goldsmith 1985, Zoerner 1995).

(88)
How much can you drink t and still stay sober?

In defense of CSC, Postal (in press) argues that (88) is not an instance of true coordination, but rather that one of the conjuncts acts as an adjunct (see section 3.3, Part II, for adjunction analyses of coordination). It is not the purpose of this paper to decide whether or not CSC is real. If it is real, one would expect that it follows from a more general principle, which subsumes other islands, such as Subjects, Complex NP's, etc. (see Ross 1967). There are various analyses of islandhood, but attempts to provide a unified account (e.g. Chomsky 1986) are only partly successful. While it is obvious that a successful analysis of islandhood would shed light on the structure of islands, including coordination phrases, and while it is also obvious that a successful analysis of the structure for coordination will shed light on the analysis of islandhood, this connection is not a trivial one, and, as far as I can see, has not been established yet.

Adjunction analyses of coordination (section 3.3, Part II) have claimed advantage on this issue since they reduce CSC to Adjunct islandhood. However, this cannot be a significant advantage given that there are islands other than adjuncts, and given that the nature of adjunct islandhood is not completely understood either.

2. Conjunction as non-head

2.0. Introductory words

Various analyses of coordination treat conjunction as a reflex/spell-out of a feature, rather than as a head of a coordination phrase. One line of such analyses treats conjuncts as heads of coordination phrases, resulting in multi-headedness (section 2.1.), while another argues that conjuncts appear at parallel levels/tiers of representation, and that there are no coordination phrases at the level of syntax (section 2.2.).

2.1. Multi-headedness

Some early attempts to integrate conjunction into the phrase structure resulted in the following rules (Jackendoff 1977, Chomsky 1981):

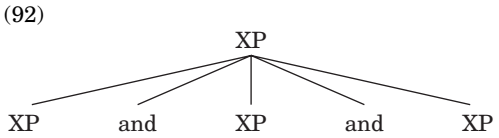
(89)
NP → NP Conj NP

(90)
VP → VP Conj VP etc.

(91)
XP → XP Conj XP

Basically, the assumed structure is as in (92) below:

(92)

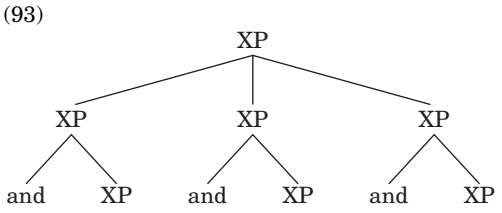


The consequences of this basic analysis of coordination, with conjuncts as heads, have been explored by many, for example, Gazdar et al. 1985, Sag et al. 1985, Pullum and Zwicky 1986, Ingria 1990, and Pollard and Sag 1994. This approach can capture, in a rather straigthforward way, our intuitive feeling

that coordination of two NPs is an NP, of two PPs is a PP, etc. On the other hand, most of the data discussed in section 1. do not follow from this structure: the structure predicts that conjuncts will each c-command the other (contra section 1.2.); that there will be no asymmetries of Ross' type (contra section 1.1.); that there should be no Case variability (contra section 1.6); etc. In addition, recent developments in the theory of structure of phrases and sentences point to the conclusion that structure involves binary branching (see Kayne 1984, for example). If that is true, then (92) cannot be the correct representation of coordination. In addition to binary branching, recent research has achieved yet another generalization which radically simplifies the conceptual system of language: that any phrase is headed by a single head, and that every head projects a phrase. If this is true, then, again, the structure in (92) is not a possible representation for coordination since in it, a single phrase XP can be headed by any number of XPs.

Lakoff and Peters (1969) have a different version of multi-headed conjunction structure:

(93)



Their proposal assumes that each conjunct is accompanied by an instance of a conjunction. All conjuncts in (93) enjoy basically equal syntactic status. The strucuture is still multi-headed, and multi-branching, but it enjoys some advantages over (92). It predicts the possibility of conjunction doubling (as discussed in section 1.5.); it predicts that conjuncts will not c-command each other, as per conclusion in section 1.2.); it predicts that each conjunction can be modified by an adverb (see example (77) in section 1.8.); it predicts asymmetries noticed by Ross (see section 1.1.). In fact, the proposals by Collins (1988a,b) and Progovac (1996,1997) are similar in spirit, as will be discussed in section 3, Part II.

In addition, this approach assumes that one and the same conjunction gets copied in a single coordination phrase, deriving (93) from (94) below. The spirit of this analysis is adopted by Zoerner 1995 (section 3.1, Part II), who provides a syntactic mechanism for achieving the link between equivalents of (93) and (94).

(94)
[and XP XP XP]

Any multi-headed analysis of coordination raises the following question: since phrases inherit the features of their heads, what features would a multi-headed phrase inherit in case the conjuncts are not of the same category, as in the examples below. The solution proposed in Gazdar et al. (1985), for example, is that the feature(s) projected to the mother node would constitute the intersection of the features of the daughter nodes (Head Feature Constraint). The major categories are represented using combinations of the binary features N and V, based on Chomsky 1970.

(95)
Pat became [$_{NP}$ a Republican] and [$_{AP}$ quite conservative].
(Sag et al. 1985)

(96)
Robin is [$_{AP}$ ugly], [$_{NP}$ a dolt] and [$_{PP}$ of no help].
(Zoerner 1995)

(97)
Zoe is [$_{NP}$ a woman], [$_{AP}$ rich] and [$_{PP}$ in the lucky position of owing a castle]. (Johannessen 1990)

However, it is often not obvious what these common features are, the issue taken in Johannessen 1998. She points out that NP, AP and PP have no categorial features in common, given that NPs are analyzed as [+N,–V], APs are [+N,+V], and PPs are [–N,–V]. Yet they coordinate successfully in the above examples. The problem cannot be just the lack of a good choice of features. Note that N, P and A are the three out of four major word level categories, excluding only V. It is hard to imagine that there will be a categorial feature unifying the three, while excluding the V. It seems equally difficult to find a feature common to clauses and NPs, which also coordinate successfully (from Bayer 1996):

(98)
[$_{CP}$ That Himmler appointed Heydrich] and [$_{NP}$ the implications thereof] frightened many observers.

(99)
Pat remembered [$_{NP}$ the appointment] and [$_{CP}$ that it was important to be on time].

The reader is referred to Bayer (1996) for the reasons against an ad hoc solution which proposes that clauses as dominated by an NP in the above examples.

For examples like (96) and (97), Jacobson (1987) proposes that the verb 'be' can be analyzed as selecting a category PRED, which, in turn, can be rewritten as AP, NP, PP. This solution is unsatisfactory for two reasons: first, it conflates the distinction between form and function; second, as pointed out in Bayer (1996), the verb 'become' (as illustrated in (95)) will have to re-write the feature PRED in a different way, since 'become' selects only a subset of categories selected by 'be.'

(100)
Robin regards Kim as completely evil, (?as) a total witch, and (??as) beyond salvation.

(101)
Robin regards Zoe as a woman, as rich and (?*as) in the lucky position of owing a castle.

The particle 'as' seems rather comfortable with NPs and APs, but not with PPs. The piece of data illustrated above is not an argument against the existence of predication phrases, but seems to be a strong argument against the CLC itself. Even when the choice of coordinating likes is available, the grammar prefers not to use it.

A multi-headed approach also does not have the tools to deal with the examples of coordination of unlike categories, where their order cannot be reversed (see section 1.7.).

Another consequence of the approaches sketched above is that the conjunction itself remains an element without a clear grammatical status: it is neither a head, nor a phrase, nor a modifier.

2.2. Multidimensional analyses

Goodall (1987, 20) sees coordination as a union of phrase markers, or as 'pasting together,' one on top of the other, of two trees, with any identical nodes merging together (see also Williams 1981, Goodall 1993). For him, coordinated structures exist at parallel levels. Thus, the two sentences with identical VPs, given in (102) and (103), merge, as illustrated in (104). The conjunction is inserted between the conjuncts during the PF process of linearization (105).

(102)
Jane saw Bill.

(103)
Alice saw Bill.

(104)
Jane
Alice saw Bill.

(105)
Jane and Alice saw Bill.

This basic analysis is also adopted in Moltmann 1992, Grootveld (1993), te Velde (1996, 1997), etc. The strongest appeal of this approach is the elegance with which it can capture Right Node Raising, as illustrated in (106). The example (106) would derive from (107), by pasting the relevant trees together:

(106)
John cooked, and Mary ate, the goulash.

(107)
John cooked
Mary ate the goulash

This solution to Right Node Raising is clearly superior to any approach that assumes a host of deletion rules.

This analysis also fares well with the conclusion that conjuncts do not c-command each other: they essentially do not see each other, since they are at different levels. In addition, the approach does not predict that only like elements can coordinate, since the union of phrase markers can presumably occur as long as the conjoined material is in the same position.

Unfortunately, a multi-dimensional approach faces problems with respect to other data, in addition to constituting a considerable enrichment of the theoretical apparatus.

One problem for this approach is that, very often, the order of the conjuncts is not reversible, as illustrated in (108–111).

(108)
John read the book and quickly.

(109)
*John read quickly and the book.

(110)
You can depend on [my assistant] and [that he will be on time].

(111)
*You can depend on that he will be on time and his intelligence.

A multi-dimensional analysis also does not predict any other asymmetries among conjuncts, which however occur, such as variability in Case and agreement assignment (sections 1.6. and 1.4.), asymmetry in extraposition possibilities (section 1.1.), etc. Moreover, as was pointed out for multi-headed analyses, conjunctions are analyzed as elements that do not exist at the syntactic level, but are rather just phonological reflexes of tree-mergers. In an analysis that involves tree-pasting, it is not at all clear why such markers of tree pasting would be necessary, let alone why they would show such intricate patterns of distribution, as illustrated in the rest of this section, as well as in the Appendix, Part II.

As pointed out in section 1.8., Collins (1988a,b) argues that conjunctions can be modified by adverbs. This would not be possible if conjunctions were not syntactically present. Next, as also pointed out by Collins, even the conjunction 'and' has a clear semantic contribution, identifying a causal/temporal relationship between conjuncts, as in:

(112)
Bill drank the poison **and** died.

(113)
?Bill died **and** drank the poison.

(114)
Bill died: he drank the poison.

The oddity of (113) is not shared by the conjunctionless (114), which is perfectly acceptable. It must be, then, that the source of temporal/causal information in this case resides in the conjunction. This, of course, can only be captured if the conjunction is present at the syntactic and semantic levels of representation.

Murder Mystery Correction

To our regret, the last few lines of Chapter 4 of Chris Tappan's Murder Mystery in *Glot International* 3, 5 were inadvertently omitted. We print the last few paragraphs here. We apologize to Chris Tappan and to our readers.

———

"Were those his exact words?" Paul asked her, ignoring her last comment and before she could continue her story.

"Something like that. 'I think you don't have enough paper!'"

"And then what happened?"

"So I go in and I was shocked to see that Nartin was angry as hell. I mean, I had not expected this because Bill had made that comment jokingly, and when I had been there earlier, the atmosphere had been fine, they were sitting there like friends, no animosity. But now, Nartin was fuming. 'Did you hear what he said?!' he asked me. I said, You mean that comment about the paper? 'Yes!' he says. 'I could kill him for it!' he said. 'I could kill him for it,' that were his exact words. I could hardly believe what I heard. Especially from Nartin. And I mean, it was only about the paper in the printer!"

"You said that they were talking about the reasons why Nartin did not get the job when you were up there earlier, right?"

"Right."

"What did they say? What were they talking about?"

"I don't know, I wasn't there for a long time, I walked in, and walked out again, right away."

"So you did not catch anything?"

"As far as I remember, Bill was telling Nartin what all the members of the committee had said. But I really did not pay very much attention."

"Thanks a lot, Esperanza." Paul said. "You have been a great help."

I think you don't have enough paper, Paul thought. They had to find Nartin. Right away.

Where was James?

STRUCTURE FOR COORDINATION Part II

by *Ljiljana Progovac*

In Part I, which appeared in *Glot International* 3–7, I introduced the representative data relevant for determining the structure for coordination. Part I also provided a survey of the analyses of coordination that do **not** treat conjunctions as heads of conjunction phrases. Part II provides a survey of those analyses of coordination that **do** treat conjunctions as heads of conjunction phrases. Part II also contains the extensive Bibliography.

3. Conjunction as a head

3.0. Introductory words

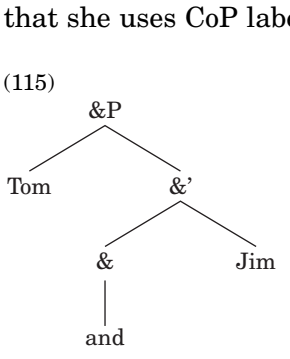
The idea that conjunction is a head of a phrase, typically the conjunction phrase (&P), has been explicitly proposed or explored by many, including: Thiersch 1985, Munn 1987a, 1987b, 1992, 1993, Collins 1988a,b, Kolb and Thiersch 1991, Woolford 1987, 1994, Kayne 1994, Johannessen 1990, 1993a–c, 1996, 1998, Zoerner 1995, Camacho 1997, etc. This analysis, of course, became more readily available only with the advent of the X'-theory, somewhere in the late seventies. This basic analysis allows of various specific implementations: conjuncts can be specifiers and complements in a &P with recursive complements (section 3.1); conjuncts can be specifiers and complements in a &Ps with recursive specifiers (3.2); conjuncts can be attached by adjunction (section 3.3); conjunctions can be treated as heads that do not project a &P (section 3.4.). The rest of this section provides a brief survey of these analyses.

3.1. Conjunction Phrase (&P) with recursive complement

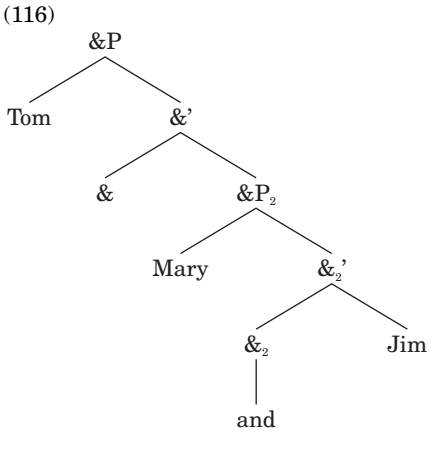
I discuss in some detail two analyses of coordination that argue that conjuncts are specifiers and complements in &Ps, where the complement is recursive: Johannessen (1998) and Zoerner (1995). These analyses are based on a host of previous papers, including: Thiersch 1985, Munn 1987a, 1987b, 1992, Kolb and Thiersch 1991, Johannessen 1990, 1993c, Grootveld 1992, etc. Since the two analyses share many of the consequences, I will discuss them in parallel.

Johannessen (1998) argues that the non-final conjuncts are specifiers in a conjunction phrase, and that the final conjunct is a complement. This is illustrated in (115) for two-termed coordination, and in (116) for three-termed coordination (note that she uses CoP label for Coordination Phrase):

(115)

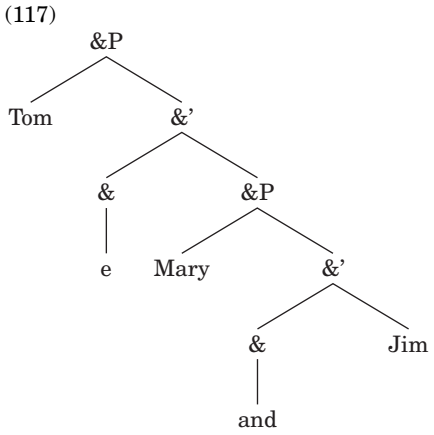


(116)



Zoerner (1995) proposes a hierarchically similar structure, although with an important difference. For Zoerner, in multiple coordination, a **single** & projects more than one layer of &P structure, in parallel to Larson's (1988) VP shell proposal (this analysis of coordination was mentioned, but argued against, in Collins 1988a,b). Thus, only one & is generated (as per Lakoff and Peters 1969), the last one, while other & positions in multiple coordination are filled by the head movement of the base-generated conjunction. The basic representation for two-term coordination will be the same as Johannessen's, the one in (115) above. Below is Zoerner's analysis of three-term coordination:

(117)



The movement of *and* to e is normally covert; if overt, the emphatic examples like (118) below will be generated (see Appendix for possible semantic contribution of repeated conjunctions). The basic advantage of Zoerner's proposal is that it predicts that one and the same form of the conjunction has to surface between conjuncts of the same coordination phrase, as illustrated below for English (Zoerner 1995 also offers comparable Japanese data):

(118)
Tom and Mary and Jim

(119)
Tom 'n Mary 'n Jim

(120)
*Tom 'n Mary and Jim

(121)
*Tom and Mary 'n Jim

Another advantage of Zoerner's idea is that it provides tools for differentiating sub-group coordination, for which examples above would be grammatical. Thus, actually, if one adopts Zoerner's structure in (117) for examples (118) or (119), then one can reserve the structure in (116) for sub-group coordination, where Mary and Jim are considered a sub-group, which coordinates with Tom. This would correspond to the fact that different conjunctions are possible with subgroup coordination, since there are two distinct &Ps:

(122)
Tom and [Mary and Jim]

(123)
Tom and [Mary 'n Jim]

(124)
Tom 'n [Mary and Jim]

(125)
Tom and [Mary or Jim]

On the other hand, if (116) is the correct representation for a single coordination phrase, then it is not clear how to represent sub-group coordination in a distinct way (see also Kayne's analysis in section 3.3.). All other things being equal, it is desirable to have this ambiguity follow directly from the structural representation.

Johannessen/Zoerner type of structure seems supported by the possibility to extrapose the highest &', providing evidence for its constituency (see Zoerner 1995):

(126)
I saw Tom yesterday, and Mary and Jim.

This analysis also predicts that each higher conjunct c-commands any lower conjuncts, which prediction may be problematic for the proposal, if the conclusion in section 1.2, Part I, is correct. This analysis has little to say about conjunction doubling, i.e. repetition of the conjunction in front of every conjunct, including the first (section 1.5, Part I). Johannessen (1998) claims that such doubled conjunctions are adverbs, which claim, as far as I can tell, will be hard to sustain.

Johannessen argues, to my mind convincingly, that the features of &P are inherited not only from its head, &, but also from its specifier, through Spec/Head agreement. On the other hand, Zoerner argues that features of all conjuncts percolate to &P. Johannessen's take on this is theoretically superior: her proposal comes at no cost since Spec/Head agreement is already widely established as a mechanism for feature-sharing. On the other hand, allowing features of both complements and specifiers to percolate up to the

This is Part II of Ljiljana Progovac's State-of-the-Article **Structure of coordination**; Part I was published in the previous issue of *Glot International*. Here is the full table of contents of both Part I and Part II:

Part I (*last month)*

1. Representative data
1.0. Introductory words
1.1. Asymmetry: Ross' effects
1.2. Is there c-command
1.3. Subcategorization
1.4. Agreement
1.5. Conjunction doubling
1.6. Chaotic Case
1.7. Coordination of Likes Constraint
1.8. Conjunction adverbs
1.9. Coordinate Structure Constraint

2. Conjunction as non-head
2.0. Introductory words
2.1. Multi-headedness
2.2. Multi-dimensional analyses

Part II (*this month*)

3. Conjunction as a head
3.0. Introductory words
3.1. Conjunction Phrase (&P) with recursive complement
3.2. Conjunction Phrase (&P) with recursive specifier
3.3. Conjuncts as adjuncts
3.4. Conjunction: Head without a phrase

4. Concluding remarks

Appendix: "Economy of conjunction marking" and adjunction

A Coordination Bibliography

phrasal node is a mechanism with no precedent in the theory. Johannessen's proposal insures that a &P whose first conjunct is an NP has the features of an NP, as desired. The plural feature of the conjunction will have to come from the conjunction itself. In addition, this analysis does not force phrases of the same/similar type to coordinate. The strongest argument for her approach is its ability to capture the otherwise problematic asymmetries discussed in section 1.7, Part I (see Gazdar et al. 1985):

(127)
You can depend on [my assistant] and [that he will be on time].

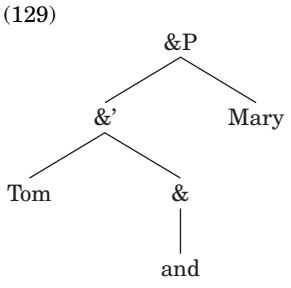
(128)
*You can depend on [that he will be on time].

Since only the features of the first conjunct will be shared by the &P, (127) is grammatical, and it is possible for the other conjunct to take the form that is not selected by the preposition. (128) shows that that-clauses are not selected by the preposition. On the other hand, it is harder for Johannessen's analysis to capture some gender resolutions that occur crosslinguistically, where both conjuncts are taken into account (see e.g. Corbett 1991, Bayer 1996).

While Johannessen's approach successfully treats examples like (127) and (128), it faces the opposite problem: how to exclude impossible cases of coordination (see section 1.7, Part I). Obviously, a separate principle would be needed, possibly an Economy principle introduced in the Appendix. In any event, an approach that overgenerates can be salvaged by identifying an independent principle at work, but an approach that rules out acceptable examples is harder or impossible to salvage.

The X'-structure Johannessen and Zoerner propose for coordination implies that the complement will precede the conjunction in verb-final languages, as in (129).

(129)



Both authors provide arguments that (129) is correct, based on constituency tests which show that indeed, in verb-final languages, the conjunction forms a unit with the preceding, rather than with the following conjunct. In addition, as pointed out in section 1.5, Part I, the conjunction doubling strategy in OV languages will repeat the conjunction following the last conjunct, rather than preceding the first, as expected under this analysis. Also, the data that served as input for Johannessen's generalization repeated below strongly suggests that a structural difference is involved:

(130) Johannessen's Correlation
"There is a very strong correlation between, on the one hand, the order of verb+object, and on the other, that of normal conjunct+deviant conjunct (usually the same as that between conjunction+deviant conjunct)."

These consistent differences between head-initial and head-final languages provide the strongest support for the idea that conjunctions are heads of phrases: they follow the pattern of order and constituency established for other (uncontroversial) heads. One puzzle remains, however: the tendency for the conjunction to appear between conjuncts cross-linguistically, avoiding a peripheral position, which tendency is not attested with the verb (cf. e.g. SOV/VSO languages).

As pointed out in section 1.6, Part I, Zoerner and Johannessen make different predictions with respect to deviant Case. Zoerner argues that the conjunction assigns Case to its complement, the final conjunct in VO languages, just like a preposition or a verb would. The particular Case to be assigned will vary from language to language, depending on whether the conjunction is endowed for particular Case assignment by a higher head, or whether default Case choice is available. On the other hand, non-final conjuncts will receive their Case by spec-head agreement with the moved conjunction, which Case need not necessarily coincide with the Case of the final conjunct. Because all non-final conjuncts receive Case through the same mechanism, they all have to have the same Case. Thus, the prediction of Zoerner's analysis is that all non-final conjuncts must have the same Case.

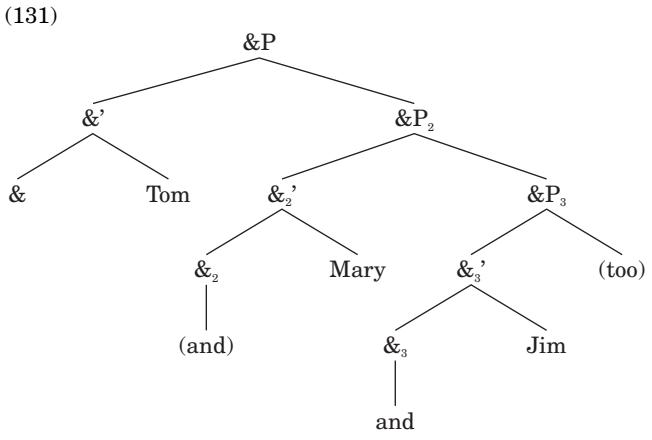
On the other hand, Johannessen argues for a cut-off point between the initial conjunct versus non-initial conjuncts in VO languages. From her Spec-Head agreement analysis it follows that the first conjunct will not receive the deviant Case unless all other conjuncts do.

Going into the details of Case assignment developed by the two analyses for **multiple-term** coordination is beyond the scope of this paper, as well as the resolution of the inconsistencies in judging the data, as pointed out in section 1.6, Part I. However, the facts that standard Case can be suspended with coordination at all, and that one can predict which conjuncts will be deviant based on word order, provide strong support for a head-of-coordination-phrase analysis of conjunctions.

3.2. Conjunction Phrase (&P) with recursive specifier

Collins (1988a,b) offers the following structure for coordination, in which each conjunct is a complement in its own &P.

(131)



As opposed to the structure proposed by Johannessen or Zoerner discussed in the previous section, the location of recursion in (131) is in the specifier position. Another difference is that the specifier is to the right of &', rather than to the left, as usually assumed for English. Yet another difference concerns the number of &Ps projected per conjunct. According to (131), there are as many &Ps as there are conjuncts. This differs from Johannessen 1998, according to whom the number of &Ps is one fewer than the number of conjuncts. While for Zoerner, the number of &P projections is also one fewer than that of conjuncts, Zoerner assumes that all these projections are only layers of structure projected by a single conjunction. Collins specifically argues that each &P is headed by a distinct conjunction.

Collins does not explain why he wanted his specifiers to be to the right in (131), but I can see two reasons for this decision. First, this enables him to analyze 'too' as a specifier of &P. The basic distribution of 'too' is given below:

(132)
Tim, (and) Mary, and John, too, arrived on time.

(133)
*Too Tim, Mary, and John arrived on time.

(134)
*Tim, Mary, too, and John arrived on time.

The second reason is Collins' conclusion that the first conjunct m-commands the rest of the conjuncts, as will be discussed below.

Apart from integrating the placement of 'too,' this analysis, better than any other, captures the prosodic patterns. There is comma intonation after each head-complement grouping, as evident from (132) (see also intonation patterns for other languages discussed in section 1.5.). This intonation pattern is not captured by Johannessen's or Zoerner's analyses in which the intermediate conjunct does not form a constituent with the preceding conjunction. Also, the example (126) is captured even better in Collins' approach, since extraposition targets a maximal projection in his framework, rather than X' (this advantage is also there in Munn's and Kayne's analyses, section 3.3).

The main reason why Collins proposes an equal number of &Ps and conjunctions is his analysis of examples like (135) and (136), repeated from section 1.8, Part I:

(135)
John and **maybe** Mary went to the store.

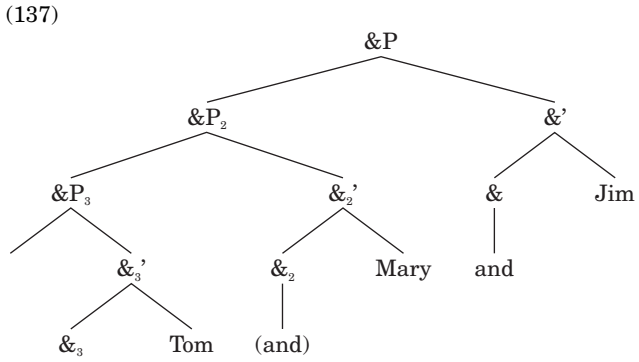
(136)
Perhaps John, **maybe** Mary, and **certainly** Bill went to the store.

The basic argument is that one can have as many conjunction adverbs as conjuncts. If, as Collins argues, these adverbs modify conjunctions, rather than conjuncts, then it must be that each conjunct is preceded by a conjunction, overt or covert. This analysis would also capture, rather elegantly, the possibility to double conjunctions in front of the first conjuncts, as in the Conjunction Doubling strategy discussed in section 1.5, Part I.

However, the distribution of overt/covert conjunctions raises a problem. It is not clear why the ultimate head of the highest &P should always be empty, at least in English, while the most embedded conjunction should (always?) be overt (but see Collins' paper for comparing this situation to that of complementizers surfacing in embedded, but not main clauses). Johannessen's analysis faces a similar question. On the other hand, Zoerner's analysis captures this elegantly. On his account, the last conjunction is the only one generated; the rest are the movement copies thereof. As pointed out in the previous section, Zoerner's analysis also provides the tools for analyzing sub-group coordination from single group coordination, while the analysis in (131) does not.

It may be worth exploring an alternative to (131), in which the (recursive) specifer will be to the left, as in:

(137)



This representation would capture the intonation patterns in (132) rather straightforwardly, but will not be able to handle Zoerner's extrapositon example in (126), since the intermediate conjunct here does not form a constituent with the last (but see Kayne 1994 for an analysis of extraposition which may be more consistent with the representation in (137) than the one in (131)). Since the ultimate head of &P is &, (137) also easily captures the fact that it is & that has to be overt, rather than $\&_2$ or $\&_3$ (this latter point is also true of Kayne's analysis, see section 3.3.) On the other hand, the alternative in (137) would not capture the placement of 'too,' as (131) does rather ingeneously.

Both (131) and (137) capture the Conjunction Doubling effects discussed in the previous sections. However, the two analyses make different hierarchical predictions. While both predict that there is no strict c-command among conjuncts, (137) predicts that the following conjunct m-commands the preceding one(s), while (131) predicts that the preceding conjunct m-commands the following ones. While Collins argues that indeed the first conjunct m-commands the second, but does not c-command it, based on examples (8–9), section 1.2, Part I,

establishes that such contrasts are handled in a way that does not invoke either c-command or m-command. This issue deserves further attention. The lack of strict c-command among conjuncts is predicted by both of these analyses; if the conclusions of section 1.2. are correct, this remains their important advantage.

However, as they stand now, neither of the two analyses is able to invoke the Spec/Head mechanism of feature sharing, which, to my mind, is the strongest achievement of Johannessen's approach. Recall that Johannessen handles subcategorization in a rather straightforward fashion: the features of the first conjunct, the specifier of &P, percolate up &P, by spec/head agreement. Her analysis predicts, correctly, that the first conjunct, but not necessarily the subsequent conjuncts, has to satisfy the subcategorization features of the governing head (see examples (127) and (128), section 3.1.).

Notice that it would not work to say that &P can be specified for more neutral features, rendering it compatible with subcategorization requirements of various heads, and that then semantics decides what can appear inside this &P. The reason is that the reverse order of conjuncts in examples like (127) is not possible:

(138)
*You can depend on [that my assistant will be on time] and [his intelligence].

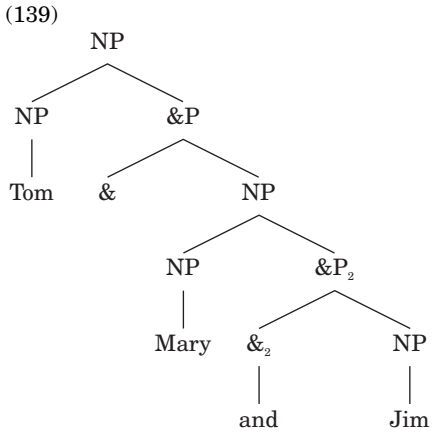
One way to keep Johannessen's spec/head solution would be to raise the first conjunct to the specifier position in (137). Notice that this option is unavailable in (131). Even if moved, the first conjunct would not c-command the following conjuncts, as desired, but it would be able to share its features with the top &P in the same way in which this is achieved in Johannessen. However, this movement would raise further questions, such as the position of 'both/either' in English, as well as the Conjunction Doubling strategy in other languages. If the first conjunct is in Spec, then the explanation for the Conjunction Doubling strategy is lost. The position of 'both/either' is not directly a problem for this approach, since their status is controversial. Although Collins suggests that they may be in the & position preceding the first conjunct, many assume that they are quantifier-like, and not conjunctions at all.

3.3. Conjuncts as adjuncts

The analyses discussed in this section share with the previous analyses the assumption that conjuncts head &Ps. They differ in that they treat at least some conjuncts as adjuncts. Munn (1993) proposes that the second conjunct right adjoins (with its &P) to the first conjunct, while Kayne (1994) argues that the first conjunct left adjoins to the &P containing the second conjunct. In addition, Munn 1993 (for semantic representation) and Progovac 1996, 1997 (for syntactic representation) advance an analysis according to which every conjunct, in its &P, is adjoined to an abstract phrase.

According to Munn (1993), the first conjunct appears in the regular position in which a single-term phrase would, while any subsequent conjuncts are complements in the &Ps, adjoined to the first conjunct (this analysis is mentioned but argued against in Collins 1988a,b). (Note that Munn uses the term BP, which stands for Boolean Phrase, instead of &P).

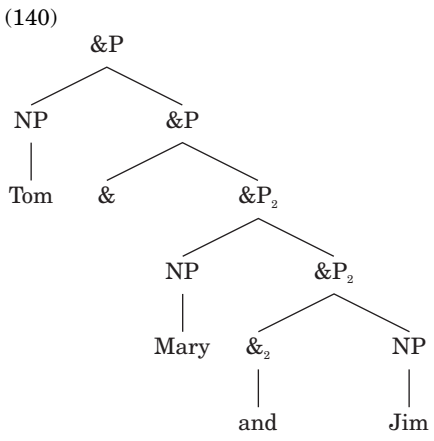
(139)



This analysis straightforwardly captures the fact that a &P involving NPs behaves like an NP, which fact must be somehow derived in the approaches in which both conjuncts are within &P. This analysis also captures the extraposition facts discussed in section 1.1. in a rather straightforward way, as successfully as Collins (section 3.2.). Case inconsistencies support this approach only part-way. Johannessen's Unbalanced Coordination effects are predicted, since the deviant Case will appear on the second conjunct, if only on one of the conjuncts. On the other hand, Johanessen's Extraordinary Balanced Coordination effects, where both conjuncts have deviant Case, are not predicted at all. The proposal in (139) would disallow the first conjunct to receive deviant Case marking, since it appears in exactly the same position in which a single-term NP would. Munn (1993) captures first conjunct agreement data, although at the expense of losing a straightforward explanation for regular agreement patterns (see section 1.4, Part I). It follows from this analysis that the first conjunct c-commands the following ones, for which Munn argues, although the additional data discussed in section 1.2, Part I, point to the contrary. Munn also addresses the issue of conjunction repetition, as discussed in section 1.5, Part I. His proposal is that the conjunction raises at LF to adjoin to the NP in (139), and that this movement can happen overtly in some languages. One empirical problem with this conclusion is that it fails to capture prosodic requirements of repeated conjunctions, pointed out in section 1.5, Part I.

Kayne (1994) adopts the spirit of Munn's analysis, but with one important difference. Since his Antisymmetry approach prohibits adjunction to the right, Kayne assumes that initial conjuncts are adjoined to the conjunction phrase, formed with the conjunction and the final conjunct (140). While in Munn's analysis, the second conjuncts are adjuncts to the first, in Kayne's analysis the first conjuncts are adjuncts to the &P containing the last conjunct.

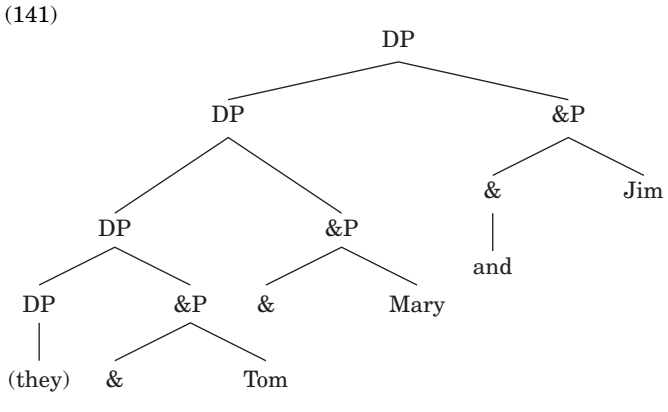
(140)



Kayne's structure is hierarchically parallel to the structure proposed in Johannessen, handling most of the data in the similar fashion. One difference is that extraposition facts are handled in a more straightforward way by Kayne, since the extraposed material is indeed a full phrase (see also the comment on Collins' and Munn's analyses in the previous sections).

There is yet another logical possibility for the adjunction analysis of conjunction, i.e., to treat each conjunct as a complement in a &P, where each &P is attached to an abstract head, the situation that resembles an appositive structure. This was proposed in Munn (1993) as a semantic representation for coordination and in Progovac (1996,1997) for syntactic representation.

(141)

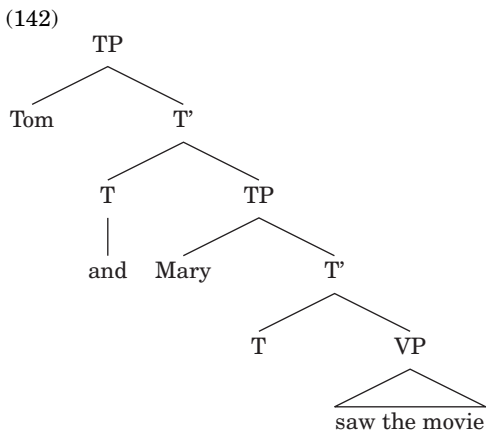


The advantages of this structure are the following: it captures the lack of c-command among the conjuncts, as established in section 1.2, Part I; it straightforwardly predicts the availability of conjunction doubling strategies, as in section 1.5, Part I; it renders all conjuncts equal in status, in spite of the existence of hierarchy; it predicts deviance in Case assignment to conjuncts, since what receives Case directly is the (null) pronominal head. However, this approach faces the following problems: it generates several &Ps, where the presence of one is felt (contrast Zoerner's analysis); it predicts that the last two &Ps cannot extrapose as a unit, contrary to the data presented in section 3.1., which seem to indicate that they do; while Extraordinary Balanced Coordination is not a problem for this approach, Unbalanced Coordination is: since the conjuncts here enjoy the same status, asymmetries in Case-assignment among conjuncts are not expected.

3.4. Conjunction: head without a phrase

Camacho (1997) proposes an analysis of coordination which treats conjunctions as heads, but not as heads of &Ps. In an attempt to capture, at the same time, the status of a conjunction as a head, and its lack of relevant features, he proposes the following analysis of coordinating subjects:

(142)



Like Zoerner's (117), the structure in (142) assumes that a head can project more than one layer of structure. Unlike the approaches outlined in sections 3.1–3.3, Camacho does not postulate the existence of a &P, and allows conjunctions to head (the second layer of) any predicational projection. This approach seems to capture the bi-sentential ring of examples with coordinated subjects since it posits two TPs with two distinct specifiers. The cameleon-like nature of a coordination phrase follows, too: there is no coordination phrase to begin with.

One potential problem is that coordinated elements are predicted not to form a constituent in this representation (i.e. *Tom and Mary* in (142)), as pointed out and addressed in Camacho. The constituency effects, such as agreement, binding, pronominal replacement, etc., therefore must be captured in some other way, which puts this analysis at an important disadvantage.

Another problem for this analysis is that the conjunction turns out to be a head with exceptional nature: first, it is a head which does not have a corresponding phrase, and, second, it is a head which can appear in the head position of any (predicational) projection. The trend in the recent research on coordination has been the opposite: to advance a theory that will render conjunctions unexceptional and comparable to other heads.

Camacho's approach makes certain predictions with respect to deviant Case assignment. For example, both NPs in (142) are in a Spec/Head relationship with T, although the instantiations of T are different. It may be argued that a conjunction in T is comparable to a non-finite element occupying T, which cannot assign nominative Case. This would predict that the first conjunct can appear in some kind of default Case, say either Accusative or Nominative. (Notice, however, that this is in contradiction to Johannessen's generalization in (130), which asserts that the second, rather than first, conjunct will be deviant in Case). For the second conjunct, Camacho's analysis proves too strong: since the second

conjunct is in the spec/head relationship with T, it seems to have no choice but to appear in the Nominative Case, although the Accusative seems widely accepted in the second-conjunct subjects.

4. Concluding remarks

While the theories of coordination are many and various, the weight of evidence seems to push to the following general conclusions: (i) conjunctions are (functional) heads that head Coordination Phrases (&Ps) cross-linguistically; (ii) the first conjunct (in VO languages) stands structurally apart from the rest of the &P, including the conjunction and the rest of conjuncts, although there is no clear evidence that the first conjunct c-commands the rest of &P; (iii) the conjunction and the non-initial conjuncts (in VO languages) form a structural unit.

It is worth emphasizing that, as far as I can see, **all** the theories of coordination have contributed to the advancement of knowledge in the area. Even if they were not the ones to propose any of the conclusions that will eventually survive, and even if they argued against such conclusions, various analyses have provided invaluable insights, hypotheses, and data without which advancement would be impossible.

Appendix: 'Economy of Conjunction Marking' and adjunction

In Progovac (in press; to appear b) I argue that the effects of the CLC are created by an Economy principle, which one can call 'Economy of Conjunction Marking.' Roughly put, the principle prohibits the use of an overt conjunction where the two phrases converge without such a conjunction (unless an increase in the event structure is available, as per discussion below). In the following examples, (a) of each pair illustrates an unacceptable instance of coordination; the (b) example offers the reason: the conjunctionless counterpart is available:

(i)
a. *John probably and unwillingly went to bed. (Gleitman 1965)
b. John probably went to bed unwillingly.

(ii)
a. ?*John ate with his mother and with good appetite. (Gleitman 1965)
b. John ate with his mother, with good appetite.

(iii)
a. *the book [that I read] and [about the war].
b. the book that I read about the war

(iv)
a. *I sat [on the couch] and [with fever].
b. I sat on the couch with fever.

On the other hand, examples of acceptable coordination in (a) below do not normally have acceptable counterparts without coordination (on the relevant reading), whether they are 'alike' or not, as given in (b):

(v)
a. the scene [$_{PP}$ of the movie] and [$_{PP}$ of the play]
b. *the scene [$_{PP}$ of the movie] [$_{PP}$ of the play]

(vi)
a. Bobby is the man [$_{CP}$ who was defeated by Billie Jean] and [$_{CP}$ who beat Margaret].
b. *Bobby is the man [$_{CP}$ who was defeated by Billie Jean] [$_{CP}$ who beat Margaret].

(vii)
a. Pat has become [$_{NP}$ a banker] and [$_{AP}$ very conservative].
b. *Pat has become [$_{NP}$ a banker] [$_{AP}$ very conservative].

(viii)
a. Pat was annoyed by [$_{NP}$ the children's noise] and [$_{CP}$ that their parents did nothing to stop it.
b. *Pat was annoyed by [$_{NP}$ the children's noise] [$_{CP}$ that their parents did nothing to stop it].

The advantage of adopting this principle is that it captures not only the effects ascribed to CLC, but also its counterexamples (see (vii) and (viii)). The principle is also independently motivated and has a wider coverage than CLC; for example, it captures the use of repeated conjunctions for a single coordination, as in (x) below.

(ix)
John, Mary and Peter brought a bottle of wine.

(x)
John, and Mary, and Peter brought a bottle of wine.

The contrast between (ix) and (x) indicates that the use of an extra conjunction affects the interpretation in that it enforces the reading of three separate events of wine-bringing (see discussion below). (I am using 'event' here as a cover term for both states and events.)

Consider now the data in (xi–xiii). The constructions differ with respect to whether or not they require the overt use of 'and' for coordination purposes. Some coordinations can be conjunctionless (paratactic/asyndetic), such as (xii–a); others cannot, such as (xi–a) and (xiii–a). However, the data below are subject to a clear pattern, formulated in (xiv) as 'Economy of Conjunction Marking.' The basic claim of the principle is that every (overt) conjunction marker is costly in that it necessarily increases the complexity of the event structure.

(xi)
a. *Mary, Peter will bring a bottle of wine.
b. Mary **and** Peter will bring a bottle of wine.
c. **Both** Mary **and** Peter will bring a bottle of wine.

(xii)
a. [$_S$ Mary fulfilled her obligation]; [$_S$ she brought a bottle of wine].
b. [$_S$ Mary fulfilled her obligation] **and** [$_S$ she brought a bottle of wine].
c. * **Both** [$_S$ Mary fulfilled her obligation] **and** [$_S$ she brought a bottle of wine].

(xiii)
a. *Mary [$_{VP}$ fulfilled her obligation]; [$_{VP}$ brought a bottle of wine].
b. Mary [$_{VP}$ fulfilled her obligation] **and** [$_{VP}$ brought a bottle of wine].
c. Mary **both** [$_{VP}$ fulfilled her obligation] **and** [$_{VP}$ brought a bottle of wine].

(xiv) *Economy of Conjunction Marking*
An extra (overt) conjunction marker signals an increase in the complexity of the event structure, according to the following formula:
Zero-coordination = one participant (one event necessarily):
(a) examples
1-coordination = two participants (one or two events):
(b) examples
2-coordination = two participants/two events: (c) examples
(The number of participants above refers to the number of conjuncts that are separate participants in the event(s).)

For example, (xii) involves coordination of clauses. The use of an overt conjunction in (xii–b) increases the complexity of the event structure: while (xii–a) implies one event (bringing wine), which (same) event is also described as fulfilling an obligation, (xii–b) is unspecified/ambiguous between implying one event (as in (xii–a)) or two (unrelated) events, one of fulfilling some obligation or other, and the other of bringing wine. In contrast, (xiii) involves coordination of two verb phrases (VPs). (xiii–b) is the most basic/economical form occuring: it is unspecified/ambiguous between one event vs. two event readings. On the other hand, (xiii–c) necessarily implies two events: the event of fulfilling the obligation is distinct from the event of bringing wine. An equivalent pattern is also attested in (xi).

As a curious result of this otherwise precise pattern, the (b) examples, involving 1-coordination, are always potentially ambiguous between one or two events, since they are only specified for the number of participants — two. (Different contextual circumstances will favor one or the other interpretation.) Zero- and 2-coordinations, on the other hand, are not ambiguous: the former, which are appositive in nature, imply one participant, and thus necessarily one event ((a) examples); the latter imply two events, and thus necessarily two participants ((c) examples).

The availability of the Economy Principle in (xiv) makes it possible to argue that adjunction of certain adverbials/adjectivals is an instance of zero-coordination, as in Progovac (in press; to appear b); (see also Haik (1985) and Williams (1990) who analyze adjuncts in parasitic gap constructions as conjuncts, thus unifying ATB extraction with coordination and adjunction; but see Postal 1994 for criticism). Some modifications of (xiv) are necessary to accommodate adverbials/adjectivals and their role in the event structure. Among other cross-linguistic curiosities, this move may explain the overt occurrence of a conjunction marker with what are normally treated as adjuncts (see also section 3.4. for a discussion of these):

(xv)
John read the book and quickly.

This analysis is in consonance with, and draws from, Davidson 1967 and subsequent extensions, such as Parsons 1980, 1990, Dowty 1989, Higginbotham 1985, and Takahashi 1994, in which adverbials are analyzed as predicates of events, which coordinate with the main predicate.

This is, of course, the direction opposite to the one taken in section 3.3., where conjuncts are analyzed as adjuncts. It is not accidental that there have been attempts to bring conjunction and adjunction under the same umbrella: both are recursive, and both seem deficient without the other. For example, adjunction is the only operation that creates a phrase without a head. If treated as coordination, adjunction phrases would be headed by zero coordination heads.

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