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The Syntax of Coordinate Constructions

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Abstract This paper investigates the syntax of coordinate structures and some theoretical analyses describing them within the mainstream of current syntactic theory. In particular, we summarize and weigh up descriptions concerning coordinate structures proposed, in Munn, Kayne, Zoerner, and, in addition to other related issues. We will show how analyses presented, in Kayne, Zoerner, and, for describing coordinate constructions need amendments. We will also show that data from Arabic clearly confirm the description proposed in Munn. Therefore, we propose a modified account that takes into consideration the following points: right node adjunction, subcategorization requirements of individual coordinators and the features encoded in the minor-category. The analysis proposed here accommodates various points concerning the structure of coordination, and the active functional feature that establishes coordinate relationships between conjuncts.
Key words: Coordination, &P, coordinator, conjunction, right-node adjunction, LCA-based analysis.

(I) Introduction

The traditional conception of coordinate structures is understood as having sister-sister relationships. The orthodox view concerning structures involving coordinated categories may look like the following:

(1) ... ... **X** ... **COCJ** ... **Y** ... ...

The flat structure in (1) does not meet the terms of X-Bar theory, and is therefore rejected in Munn [1]. In recent syntactic research, the structure of coordination has been handled through two different theories: a theory barring Right Node Adjunction like LCA-based analysis (Linear Correspondence Axiom) of Kayne [2], and a theory utilizing adjunction rules like most theories within the principles and parameters approach. In the LCA, the specifier (created by left-adjunction in this theory) is fixed in initial position as sister to X-bar (that includes the head X and its complement). Since LCA theory forbids right-node adjunction altogether, some constructions requiring right-node adjunction need to be explained; by assuming some properties of a minor category (phonetically nil in most languages) for linking say, adverbial or coordinate constructions to their contextual structure in Shell-like configuration. [1]

[1] Here we are only concerned with coordinate structures. Other adjunction structures will be left out for future investigation.

This is why Kayne [2] and Zoerner [3] claim that the first conjunct, which they place in (spec, XP), is licensed by a minor category. One of the major difficulties facing these descriptions is the fact that in coordinate structures, the coordinating head does not license the first conjunct. The first conjunct is not within the domain of the coordinating head simply because it is selected by a higher category prior to the coordinating head and its complement, the second conjunct. Moreover, the role of the minor category in the licensing process is not sufficiently explained.

In a theory utilizing right-node adjunction, Munn [1] recognizes the coordinating element (the coordinator or &°) and the second conjunct as representing an autonomous unit equivalent to X-double bar (XP) attaching to the first conjunct via right-node adjunction rule.[2] In this theory, a complement rule expands X° into X-bar, and an adjunction rule expands X-bar into X-bar. A specifier always expands X-bar into X-double bar. Specifiers are similar to adjuncts in that they are both sisters to X-bar; but they are different in that specifiers are daughters to X-double bar while adjuncts are daughters to X-bar (see [4, 4.4]). These relationships can be illustrated by the following structures in accordance with Radford's views concerning adjunction structures proposed in Radford [4, 4.4]:

(2) $[_{XP}$ specifier $[_{X'}$ X COMP]] "COMP expands X into X-bar"

(3) $[_{XP}$ specifier $[_{X'}$ $[_{X'}$ X COMP] ADJUNCT]] "An ADJUNCT expands X-bar into another X-bar" [4, 4.4].

This article investigates the syntax of coordinated structures and theoretical proposals describing them within the mainstream of current syntactic theory. In section II, we give a short exposition to coordinate structures. In section III, we summarize and examine descriptions concerning coordinated structures proposed in Munn [1], Kayne [2], Zoerner [5], and Zoerner [3], in addition to other related ideas. Section IV includes comments on the relevant proposals in the analyses offered in Kayne [2], Zoerner [5] and Zoerner [3] for coordinate constructions. Section V deals with Arabic coordinate structures. We show that data from Arabic clearly confirm the analysis proposed in Munn [1]. Therefore, descriptions proposed in Kayne [2], Zoerner [5] and Zoerner [3] have to be modified to accommodate the facts of the nature of adjunction, subcategorization of the individual coordinators and the features encoded in them. Sections VI and VII deal with some coordinate phrases other than noun phrases, and coordinate clauses respectively. In section VIII, we offer a short summary outline of the analysis suggested for manipulation of coordinate structures.

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(II) Coordinate constructions: an overview

Coordinate constructions can be classified either according to their structures or according to meanings encoded in the coordinating elements. For example, coordinators encode at least four meanings: (a) cumulative meaning (adding); (b) alternative meaning (offering a choice); (c) adversative meaning (expressing a contrast or a difference); (d) illative meaning (drawing an inference) [6, p. 143]. The following examples illustrate some of these meanings extracted from Nesfield [6, p. 143].

(4) Classification according to meanings:

(i) The sun rose with power, *and* the fog dispersed. (*Cumulative*)

(ii) Either he must leave the house, *or* I (must leave the house). (*Alternative*)

(iii) He called at my house, *but* I did not see him. (*Adversative*)

(iv) He came back tired, *for* he had walked all day. (*Illative*)

Other meanings implied in coordination elements are discussed in Quirk and Greenbaum [7, pp. 257-61] and similar references.

According to their structures, coordinate constructions are classified into two types: **Clausal coordination** and **Phrasal coordination**. [7, pp. 253-75].[3] Now, consider the examples from Quirk and Greenbaum [7, p. 254].

(5) Clausal Coordination:

(i) John plays the guitar *and* his sister plays the piano. (Linking two main clauses)

(ii) I wonder whether you should speak to him personally about the matter *or* whether it is better to write to him. (Linking two subordinate clauses)

(iii) John might take them by car, Mary might go with them by bus, *or* I might order a taxi for them. (Linking more than two clauses)

(6) Structural description:

(i) S → clause & clause "where & represent a coordinator"

(ii) VP → clause & clause

(iii) S → clause & clause & clause.

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There are two observations noted in Quirk and Greenbaum [7]. First, a clause coordinator is restricted to initial position in the second conjunct clause, [7, p. 254]. In structures with multiple conjuncts, coordinators may only introduce the final conjunct clause. The second observation is that some constituents in the second conjunct clause may be omitted if identical with their equivalents in the first conjunct clause, such as the subject and/or auxiliaries, the predicates, etc. (see [7, pp. 261-64]). Of special concern to the description at hand, is that the subject of the second conjunc conjunct clause may be omitted if identical with that of the first conjunct clause. An exception to this is that when another element separates the subject and the coordinator, the subject cannot be omitted, as it is clear from the following examples from Quirk and Greenbaum [7, p. 261].

(7)

(i) Peter ate a cheese sandwich and (Peter) drank a glass of beer.
(ii) She didn't tell him the bad news because he was tired and because *(he) looked unwell.

In (7b) above, the word (*because*) intervenes between the coordinator (*and*) and the subject (*he*); therefore the latter cannot be omitted. This observation has some implication on the configurational structure of coordinate structures. A possible explanation is that in (7a) the structure following (*and*) is an IP, whereas in (7b) it is a CP. Whatever explanation we adopt in such structures, the deletion of elements can be assumed as PF phenomena up to recoverability.

The same coordinators used for linking larger units can also be used for linking coordinate phrases, as constituents of clauses. For instance, the standard DP can be made complex via the process of coordination, by coordinating any of its constituents, within head of DP or NP, pre-head modifiers or post-head modifiers (qualifiers) [8, ch. 10]. Moreover, other phrases can also be linked to similar phrases via coordinators to create more complex structures (Cf., [8, ch. 10]; and [7, p. 239]). For example, prepositional phrases can be coordinated to other prepositional phrases, adverb phrases to adverbs phrases, and predicative/ attributive adjective phrases to similar structures, etc. Now, consider the following examples from Quirk and Greenbaum [7, pp. 268- 70].

(8) Phrasal Coordination:

i. *You and they* were there.
ii. *These and those books* are mine.
iii. *The boys and (the) girls* ...
iv. *Peter and John* were there.
v. I wrote articles for *newspapers and magazines.*
vi. *Old (men) and young men* were invited. / *Old, young men ...
vii. *Honest and clever students* usually succeed. / *Honest, clever student* usually
viii. He wrote to them *politely but firmly.*

ix. He climbed *up and over the wall.* / He climbed *up the wall and over.*
x. *His clear and forceful* delivery impressed the audience.
xi. She is *young and beautiful.*

(9) Structural descriptions: "where & represent a coordinating conjunction"
i. DP → DP &DP "the man and the sea"
ii. DP → D &D N "these and those books"
iii. DP → N & N & N "Peter (&) John & Bill"
iv. PP → P NP & NP "for newspapers and magazines"
v. DP → Adj & Adj N "honest and clever students"
vi. DP → Adj & Adj N "old and young men"
vii. PP → P & P NP/ P NP & P "up and over the wall/ up the wall and over"
viii. PredP → V ... Adv & Adv "politely but firmly"
ix. PredP → Adj & Adj " is young and beautiful"

The verb phrases can also be linked via coordinators; but this process is most likely be thought of as linking two clauses with the second conjunct clause has an elliptic subject. Consider the following examples from Quirk and Greenbaum [7, pp. 268- 70].

(10) VP Coordination:
(i) The envious human beings would rejoice *and* triumph 'from [8]'
(ii) John comes *and* goes. [9, p. 557]
(iii) The speaker arrived *and* was applauded. [9, p. 558]
(iv) John met Bill *and* liked him. [9, p. 560]

(III) Previous Analyses

(A) **Munn's Analysis**:

Munn [1] considers a coordinator as head of its own phrase.[4] The second conjunct of the coordinate constituent is the complement of the coordinator element. The entire phrase containing the coordinator (as the head of the phrase) and the second conjunct, is adjoined to the first conjunct of the structure, yielding a structure as in (11):

(11) NP→ $[_{NP1}$ **X** $[_{\&P}$ e $[_{\&'}$ **and** $[_{NP2}$ **Y**]]]] "[1: 20][5]

In (11), X and Y are projections of the heads of the conjoined constituents, the first and the second conjuncts respectively. He generally assumes that X and Y are of the same category and bar level. The head and its complement, the second conjunct, form the maximal projection &P (BP in [1]). The specifier is left empty to serve as a landing site for the null operator [1, p. 19].

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Munn provides some pieces of evidence showing that the coordinator and the second conjunct form a constituent; first, intonation pauses are only possible between the first conjunct and the coordinator. The coordinator and the first conjunct never form a constituent; see example 37 [1, p. 19]. Second, some coordinators cliticize into the second conjunct in languages like German; see example 38 [1, p. 19]. Third, the coordinator and its complement the second conjunct form a constituent; the second conjunct can be extra-posed, while the first may not. Extra-position of the first conjunct and the coordinator is ruled out, because they do not form a constituent; see example 39 [1, p 19].[6]

Finally, based on pieces of evidence from the binding theory and the Right Node Raising (RNR), Munn argues for a hierarchic structure of coordinate constructions, where the first conjunct c-commands the second but not vice versa. The RNR applies to coordinate structures as well as to adverbial clauses such as those involving (*before*) and (*after*).[7] According to Munn, the coordinator and its complement (the second conjunct) optionally adjoin to the right of the first conjunct as right-node adjunction. The coordinator and second conjunct, project to (an X-double bar level) with an empty specifier. He regards the phrase [*and* NP_2] to be right-node adjunction of the first conjunct NP_1, a proposal incompatible with the LCA theory, which prohibits all right-node adjunctions.

(B) **Kayne's analysis**:

Kayne [2, ch. 6] proposes an analysis for coordinate constructions compatible with his LCA theory: LCA-based structure. He rejects analyses utilizing right-node adjunction, such as Munn's analysis. Kayne, like Munn, argues that the coordinator and the second conjunct form a constituent (One-bar level); but in his analysis, the first conjunct occupies the specifier position of the maximal projection of coordinate structure. He argues that the first conjunct is licensed by an abstract category X°. As in the following structure:

(12) I saw John, Bill and Sam. [2, p. 57]

(13) [John [X° [Bill [and Sam]]]]

He points out two instances that indirectly confirm the idea that (*and*) heads the phrase [*and* DP_j]. The first instance is that there are languages such as French in which (*and*) can appear before each conjunct.[8]

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(14) Jean connait **et** Paul **et** Michel. [2: 58][9]
The second instance is the fact that some languages, head final languages, allow (*and*) to appear after each conjunct, as noted for Japanese by Kuno [10, ch. 8]. For example:
(15) John **to**$_1$ Mary **to**$_2$ ga kekkonsita. [2, p. 58]
John **and** Mary **and** ga married

Kayne analyzes the constituent structure of (14) above as, [**et** [*Paul* [**et** *Michel*]]], where the first (*et*) takes as its complement the phrase headed by the second (*et*) (cf. 14, above). For the Japanese example in (15) above, Kayne assumes initial structure as, [*to*$_1$ [*John to*$_2$ *Mary*]], which then undergoes leftward movement to produce a structure compatible with his LCA hypothesis.[10] Alternatively, he speculates that [*John to*$_2$ *Mary*] moves leftward to (Spec,to$_1$), but that the complement (*Mary*) of the (head to$_2$) actually remains unmoved.

(C) **Zoerner's Analysis**:

Zoerner [5], like Munn [1], recognizes coordinators as heads of their own coordinate phrases, which he gives the term (&). He adopts Kayne's analysis in which the coordinator (the head of the phrase) and the second conjunct (the complement) form X-one bar level, whereas the first conjunct occupies the specifier position. In order to accommodate multiple conjuncts, Zoerner permits a single (&) to project more than one layer of &P-structure, corresponding to the Larsonian Shell-structure proposed in Larson [11; 12]. Such structure allows for a single base-generated coordinator to link any number of conjuncts. The following structures illustrate this analysis (cf., [5, pp. 1, 12, 19]

(16) Single &P-Structure:
&P → [$_{spec,\ \&}$ conjunct1 [$_{\&'}$ &°= coordinator [$_{comp}$ conjunct2]]]
(17) Multiple &P-Structure:
&P → [$_{spec,\ \&}$ conjunct1 [$_{\&'}$ &°=e [$_{\&P}$ conjunct2 [$_{\&'}$ &°=and/ … [$_{comp}$ conjunct3]]]]
A two-termed head-initial coordination such as the English (Robin and Kim) therefore appears as:
(18) &P [$_{spec}$ Robin [$_{\&'}$ &° Kim]] [3, p. 211]

In (18) above, [$_{\&'}$ &° Kim] forms a constituent. This division reflects the prosodic structure of the form; an intonation break can always precede an &' (hence 'Robin, and Kim' but not *'Robin and, Kim'). He claims that &' always bears out to be the relevant constituent with regard to the adjunction to VP under discussion there; in (20) and (21) below, an (&') has been extraposed [3, p. 212-13].

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For a multi-termed coordination, Zoerner assumes a single base-generated (generally overt) &° projects multiple layers of &P-structure; the spirit of this proposal parallels Larson's [11; 12] VP-Shell analysis. For example, a three-termed coordination has an underlying covert &° position at PF:

(19) &P [$_{spec}$ *Robin* [$_{&'}$ &° [$_{spec}$ *Kim* [$_{&'}$ **and** Pat]]]] "from [3, p. 212]"

(20) XP [$_{spec}$ John [$_{X'}$ X° [$_{spec}$ Bill [$_{&'}$ **and** Sam]]]] "modified)from [2, p. 57]"

(21) XP [John [X° [Bill [**and** Sam]]]] "from [2, p.57]"

Kayne [2] argues that a covert (X°) license the first conjunct, where (X°) is taken as (&°) in Zoerner's terminology. Zoerner does not say anything about selection of the first conjunct but only states that it is the specifier of &P. The final conjunct represents the complement of &-zero element. His &P-analysis does not show an independently base-generated coordinator between each conjunct. The non-final NPs form the checking domain of (&°), whereas the final NP constitutes its complement domain. In other words, he assumes that the coordinator forms Spec-head relation with the first conjunct (which translates in Chomsky's terminology as the checking domain of the head that falls into an "elsewhere" category, [13, p. 172], and forms a head-complement relation with the head (which falls within Chomsky's concept of head-head local relation (selection) where the head s-selects the head of its complement [3, p. 213].

Zoerner [3], holds on to the same ideas while describing the case of &'-Adjunction to VP. He argues that the Coordinate Structure Constraint (CSC) of Ross [14, p. 89] that forbids extraction from coordination can be systematically violated. He provides examples showing conjuncts systematically stand disjoint in the Southern Numic languages of Tumpisa and reports the following example from [15, p. 341]:

(22) nuu isapaippua {t} punikkappuhantu [$_{&P}$ tunga kammuttsi(a)] [3, p. 211]
I coyote-OBJ saw and jackrabbit(-obj)
"I saw a coyote and a jackrabbit"

He also reports a famous example from Munn [1, p. 19], who points out the possibility of extracting a coordinator and the second conjunct in English, as in the following example:

(23) John bought [a book t_i] yesterday, [*and a newspaper*]$_i$. [3, p. 211]

Zoerner [3] argues that (&°) receives the ability to assign Case, through a head-to-head relation, from an external Case-assigner. The (&°) directly Case-marks only the complement of (&°) term. Other conjuncts may surface with Case as they wish; the LF feature-checking mechanism will filter out ungrammatical Case selections.[11]

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There are at least three instances on which Zoerner's analysis needs further reconsideration. First, the categorical type of &-elements and &Ps is inadequately stated. Second, the placement of the first conjunct in (spec,&) is not in every respect satisfactory; except for the fact that it is compatible with LCA. Third, the assumption that the specifier of (&P) determines its categorical type is quite unusual in syntactic description. Normally, the features encoded in the head of (X) determine the categorical type of XP: most certainly not the features of the head of the phrase occupying its specifier position.[12] The relationship between the first conjunct and the coordinator, taken as the head of the phrase, does not seem to be consistent with the conditions of spec-head relation. For example, in structures like the one below, V selects (&P); therefore, the categorical status becomes (+N) if conjunct 1 in (spec, &) is a noun.

(24) $V \rightarrow \&P \rightarrow [_{spec}$ conjunct1 $[_{\&'}$ $\&^{\circ}$ conjunct2]]

(IV) Critique and some suggestions

(A) Critique of Kayne's theory: Kayne claims that X° (empty $\&^{\circ}$) licenses the first conjunct. But this is difficult to receive, because the first conjunct is licensed by s-selection from the dominating transitive V° in Kayne's sentence containing coordination: (*I saw Robin, ...*). The verb (*saw*) does not select &P but selects DP and its lexical head N. To overcome this difficulty, assume that spec,& is empty and X° (an empty $_{\&}{}^{\circ}$) is a minor category immediately dominating &P. The first conjunct is outside this structure and therefore does not occur within the domain of the head of &P. The following example illustrates the minor and major &-structure:

(25) $X \rightarrow Y$ &P $[_{spec,\,\&}$ e $[_{\&'}$ $_{\&}{}^{\circ}$=*minor* $[_{spec,\,\&}$ e $[_{\&'}$ $\&^{\circ}$=*and/ or/* ... W]]]]

X is a dominating category that selects Y. Y and W represent the first and second conjuncts respectively. &P adjoins to some bar-level of Y, say Y' as suggested by Radford [4] for adjunction structures. This is also compatible with structures suggested in Munn [1]. In other words, we have to recognize right-node adjunction in order to make use of the constructive insights in Kayne's theory.

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(B) Critique of Zoerner: The &P-shell analysis as suggested by Zoerner for multi-termed coordination is also inappropriate. In such structure the first conjunct is placed in the highest (spec,&); and all other conjuncts occupy specifier positions. The last conjunct occupies the comp position of (&°), i.e. non-terminal conjuncts occupy spec positions and the final conjunct occupies complement position. The empty (&°) undergoes Form-Chain operation at LF. This structure has three shortcomings: first, the placement of first conjunct in (spec,&), reciting Kayne. He reports similar examples provided in Kayne [2], and therefore they suffer the same shortcoming. As described above, the first conjunct is licensed by a dominating category independently of the coordination phenomenon. The adjunction process yielding &P-structure must follow the s-selection process producing the first conjunct. These two processes are constructed via two different processes, i.e., selection and adjunction.

Secondly, &P-shell structure does not represent multi-termed coordination, but a recursive &P-structure does, as pointed out by Munn [1]. Munn's description may not be in great detail but he has sufficiently illustrated that with every conjunct added to the first conjunct there must be &-head before it of which it serves as a complement.

There are abundant data in favor of this conclusion. In particular Arabic examples show that the coordinator appears recursively with each conjunct added to the first; and this is the rule rather than the exception.

Thirdly, Zoerner claims that coordinators exhibit both functional and lexical characteristics [5,pp.13-14]. In this, coordinators are similar to prepositions and subordinating conjunctions, which in addition to their functional properties as linkers encode meanings like for example, *addition*, *alternation*, etc. Therefore, it is appropriate to consider (&°) similar to complementizers and other categories, in that they have a dominating $_{\&}$-minor category encoding categorical features of (&P) and serves as a link between the first conjunct and &-structure (cf., [13; 16; 17]).

These observations make it necessary to interpret the empty (e-&°) in multi-termed coordination, as a sort of ellipsis (deletion) happening at PF. (Overt-&°) enters into LF, excluding Form-Chain operation as Kayne and others have estimated.

(V) Arabic data

Arabic has an extended coordination-system that does not seem to support structure (1) suggested for coordinate structures in particular. The following list includes some common coordinators (cf., [18, pp. 436-43]):

(26) **wa** (*and*), **fa** (*and*), **thumma** (*and then*), **aw** (*or*), **am** (*or*), **imma** ... **aw** (*either* ... *or*)[13]

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The element (*wa*) is frequently used for loose connection, in a manner similar to the English (*and*). The elements (*fa*) and (*thumma*) are used to express 'subsequent/ consequent events' and 'longer sequence' respectively. Consider the following sentences: [14]

(27) Ja'a Saeed *wa* Ahmed = Ja'a Ahmed *wa* Saeed. (NP & NP)
Came Saeed and Ahmed = Came Ahmed and Saeed
"Saeed *and* Ahmed. = Ahmed and Saeed arrived" (Sequential order is not emphasized)

(28) ja'a Ahmed *wa* thahaba Saeed = thahaba Saeed *wa* ja'a Ahmed. (Clause & Clause)
Went out Saeed and came Ahmed/ came Ahmed *wa* went out Saeed
"Ahmed arrived and Saeed left out" ((Sequential order is not emphasized)

(29) Dakhala Saeed *fa* kharaja Ahmed ≠ kharaja Ahmed fa dakhala Saeed.
Entered Saeed and went out Ahmed ≠ went out Ahmed and entered Saeed
"Saeed entered and Ahmed went out" (consequent / subsequent order is emphasized)

(30) Dakhala Saeed-un *thumma* kharaja Ahmed-un.
Entered Saeed and then went out Ahmed
"Saeed entered and then Ahmed went out" (longer subsequent order is emphasized"

The above examples show that, the element (*wa*) is normally used for loose connection, as it does not necessarily enforce any consequent or subsequent order. The element (*fa*) implies that the second conjunct occurs or happens immediately subsequent to or is a direct resultant of the first conjunct. The element (*thumma*) emphasizes a longer chronological sequence between the first and second conjuncts. Notice that all of elements (*wa*), (*fa*), and (*thumma*) can be used in two-termed as well as multi-termed coordination, maintaining the respective meaning each element encodes (cf., [14, pp. 436-43]). The following examples illustrate these elements in multi-termed coordination: [15]

(31)
(i) Thahaba Saeed-un *wa* Ahmed-un *wa* Ali-un ila almadrasati. (Listing)
"Saeed, Ahmed, and Ali went to school"
(ii) Thahaba Saeed-un *fa* Ahmed-un *fa* Ali-un. (Sequential order)
"Saeed, Ahmed, and Ali went away"
(iii) Thahaba Saeed-un *thumma* Ahmed-un *thumma* Ali-un. (Longer sequential order)

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These examples highlight two observations; first, the coordinator is overtly placed before each extra conjunct added to the first. Second, subsequent conjuncts always display a morphological case ending identical to the first conjunct.[16] According to parameter (17) of Zoerner [3, p. 215],[17] the Arabic (&°) element (as in Spanish) encodes 'standard' Case duties and therefore does not filter out the Case but transmits it to all conjuncts. The general coordinate structure in (31) will look like the following, in Zoerner's analysis:

(32) &P [$_{spec,\&}$ Saeed-un [$_{\&'}$ &°=(*wa/ fa/ thumma*) &P[$_{spec,\&}$ Ahmed-un [$_{\&'}$ &°=(*wa/ fa/ thumma*) Ali-un]]]]

Zoerner [3, p. 214] claims that (&°) has no inherent Case to assign; it receives Case from an external Case-assigner via percolation through (&P) and (&'). The head (&°) directly Case-marks only the conjunct in their complement position [3, p. 217]. Other conjuncts are to remain unexplained in this analysis;[18] all conjuncts in Arabic coordinate structures must display the same Case.

In an analysis utilizing right-node adjunction, as in Munn [1], all conjuncts subsequent to the first will appear in complement positions of (&°) heads. The first conjunct will receive Case from a Case-assigner category external to (&P). Then, (&P) adjoins to some bar-level of the first conjunct, X-one bar.[19] (&P) contains only &°-head and its complement, the second conjunct.

(33) N'[$_{N'}$ Saeed-un] &P1 [$_{spec,\&}$ e [$_{\&'}$ &°=(*wa/ fa/ thumma*) [Ahmed-un] &P2 [$_{spec,\&}$ e [$_{\&'}$ &°=(*wa/ fa/ thumma*) [Ali-un]]]]]

In this structure, there are two processes going side by side; the first is the adjunction process (recursively) allowing (&P) to adjoin to X under X' (cf. [4]). This process looks a lot like embedding an NP in PP as a complement of the preposition and a PP in an NP structure as a post-head modifier of the head N (cf. [8, p. 137]) The second process is the one concerning 'copy-Case' allowing a noun phrase in (comp,&°) to copy the Case features of the preceding conjunct, i.e., agree with it in morphological case ending.

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17 Here we are only concerned with coordinate structures. Other adjunction structures will be left out for future investigation.

18 Here we are only concerned with coordinate structures. Other adjunction structures will be left out for future investigation.

19 Adjunction to X'; sister to X'', [[$_{X'}$ [$_{X'}$ X] XP (=conjunct)]].

Now, since the second conjunct always displays morphological case ending identical to that of the first conjunct, we only have to find out how this Case is assigned to the second; does it percolate to the second conjunct by transmission/ percolation from an external Case-assigner via &°? Or does it get to the second conjunct from the first via copy-Case feature? Suppose that a minor category dominating adjunction structures, like (&P), adverbials, etc., encodes a feature serving as a link between the first and the following conjunct. The mechanism of copy-case is one way of identifying syntactic relations, or establishing visibility of syntactic relation at PF (cf. [19]);[20] [20];[21] and many others). Consider the following illustrative structures:

(34)

(i) N'$[_{N'}$ Saeed-**un**] &P$[_{spec,\&}$ e $[_{\&'}$ &°=minor $[_{spec,\&}$ e $[_{\&'}$ &°= *wa* [Ahmed-**un**]

(ii) N'$[_{N'}$ Saeed-**un**] &P$[_{spec,\&}$ e $[_{\&'}$ &°= wa_i $[_{spec,\&}$ e $[_{\&'}$ &°= t_i [Ahmed-**un**]

In (34a), the minor category (&°=minor) encodes the feature (+COORDINATE) that permits this category to functionally subcategorise for (&P), and activates feature copying mechanism once the coordinator (e.g., *wa*) moves to the minor category, as illustrated in (34b) above. The (&P) includes (*wa* + the second conjunct); prior to Spell-Out, the coordinator moves to &°-minor to check the feature (+COORDINATE) in that position, and activate the feature copy-Case by this means. The coordinate relationship is then made visible at PF when the second conjunct, (and subsequent conjuncts in multi-termed coordination), display(s) morphological case ending identical to that of the first conjunct. In other words, morphological Case agreement holding between the first and subsequent conjuncts represents the visibility mechanisms realized at PF that identify the coordinate relation in this structure. The feature (+COORDINATE) encoded in &°-minor represents one of the functional categories, like TNS, AGRs, AGRo.

To explore more examples on this point, recall that if the coordinate structure occurs functionally as object to the verb (*see*), so that we say:

(35) (a) I see John **and** Mary.

(b) ra?aytu John **wa** Mary. "I saw John and Mary"

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[20] Here we are only concerned with coordinate structures. Other adjunction structures will be left out for future investigation.

[21] Here we are only concerned with coordinate structures. Other adjunction structures will be left out for future investigation.

The verb (*see*) selects NP and specifies its functional and categorical status as an object, (*John*) in this particular case. The structure (***and*** *Mary*) adjoins to the NP as an adjunct both dominated by an NP. The internal structure of (&P) complies with the X-bar schema; that is, the head of the phrase is the coordinator (*and*). As there are two structures involved in coordination, only the second conjunct is selected as complement of the &°-head. The first conjunct (*John*) is not within the domain of (&°); both phrases, (*John*) and (***and*** *Mary*), appear under NP. The following structures illustrate this point:
(36)

(i) [XP [**XP** (conjunct 1)] **&P** [**&**= *and/ or*, … **YP** (conjunct 2)]]
(ii) [NP [**NP** (John)] **&P** [**and** **NP** (Mary)]]

This assumption is drawn from the fact that coordinators like (*and*), do not govern all conjuncts, as they do not dominate the first coordinate structure XP, for example. In other words, (*and*) dominates YP as its complement; but does not govern nor select the element XP. Otherwise, structures, like (37) below, would generate:
(37)

(i) *[***and*** [conjunct1+conjunct2]]
(ii) *[***and*** [John + Mary]]

In structures, such as (*imma … aw*), '*either … or*', the element (*aw 'or'*) is the head of (&P) as (*wa 'and'*) in (36).[22] The element (*aw 'or'*), as a coordinator, behaves similarly to (*wa 'and'*). That is to say that the elements (*aw*) and (conjunct 2) adjoin to (conjunct 1), as illustrated in (36). The element (*imma 'either'*) is perhaps better treated as an adjunct adverb to (conjunct 1) in (36). Notice, that (*imma 'either'*) can be deleted without significantly affecting the grammaticality of the sentence. The following examples from Arabic and English illustrate that (*imma, 'either'*) are optional elements:
(38) (a) SaliH (**imma**) yuthakiru druusa-hu **aw** naayim fi ghurfati-hi.
Salih (**either**) studying lessons-his **or** sleeping in room-his
"Salih is (**either**) studying his lessons **or** sleeping in his room"
(a) Hal SaliH yuthakiru druusa-hu **am** naayim fi ghurfati-hi?
Q Salih studying lessons-his **or** sleeping in room-his
"Is Salih studying his lessons **or** sleeping in his room?"

In both Arabic and English the words (*imma 'either'*) do not appear in interrogative sentences. In Arabic, the element (*am 'or'*) replaces (*aw 'or'*) in interrogative sentences.

[22] Based on examples like these, Cormack and Beheny [26, p. 54], suggest that there are two operator heads involved in coordination. Their idea 'the two head idea' they say, is based on Gazdar et al. [27]. Here, I would like to argue that a 'one head operator' applies to coordinated structures.

Recall that the positive and negative forms '*either ... or*', and '*neither ... nor*', have the equivalent Arabic positive and negative forms (*imma ... aw*) and (*la ... wa la)*, i.e., (NEG conjunct 1, *wa* NEG conjunct 2). This translates into English as (*not X and not Y*), where X and Y represent conjunct 1 and conjunct 2 respectively. In English, the negative form '*neither ... nor*' will have the same structure as the non-negative form of '*either ... or*' with the negative meaning remains the only difference. In Arabic declarative sentences, the form (*la ... wa la)* conveys negative meanings; notice the following example:

(39) ma ra?aytu **la** John **wa la** Mary. "I saw neither John nor Mary"

In Italian for example, there are only the negative particles with no overt conjunction. Consider the following example from Italian (from [21, p. 36]):

(40) Non e **ne** nero **ne** grigio. "It is neither black nor gray"

Based on these observations we conclude that coordinators have unified 'underlying' structures. Meanings of distinct elements such as, (*and/ or*), will be specified individually on the relative entry of each element listed on the lexicon.

(VI) Other Coordinate Structures

Turning now to prepositional, adjective and, adverb phrases, the general assumption is that categories optionally allow right-node adjunction branching. That is to say, the feature (+COORDINATE) establishes a structural relation with a dominating category of the following type:

(41) Coordinate structures:

(i) → Before Spell-Out $[_{x}$ X $[_{\&\text{-minor}}$ &-minor (+CO.) $[_{\&P}$ **&°** Y]]]

(ii) → After Spell-Out $[_{x}$ X $[_{\&\text{-minor}}$ **&°** $_{i}$ $[_{\&P}$ t_{i} Y]]]

(iii) → **X &° Y** "The structure (X and Y) is uniform"

We assume that both (X) and (Y) are of the same category type[23] and bar level.[24] The categorical status of the phrase (&° Y) differs from the categorical status of the complement of &°. Zoerner [5, p. 23] claims that (&P) has no a priori categorical status of its own, but assumes the status of the node dominating it. Here, I would like to argue that the category (&°), representing a set of words almost present in every human language, has a categorical status with the features [-N, -V] like prepositions and complementizers, etc. Coordinators are in my opinion very similar to prepositions and particles.[25] They project from the lexicon as heads of (&P). The internal structure of (&P) is a different matter. Following Munn [1], we assume that the spec position of this phrase is empty.[26] The head position is filled by any word of the set of coordinators providing that its subcategorization requirements are to be satisfied. The coordinator element (&) subcategorises for various categories as its complement. The following structure illustrates some of the subcategorization frames for (&):

(42) The subcategorization frames of (&):

(i) And/ or: X [$_{\&P}$ ___ D(P)] "this or that boy/ this boy and that girl"

(ii) And/ or: X [$_{\&P}$ ___ N(P)] "John and Mary/ large cars and beautiful homes"

(iii) And/ or: X [$_{\&P}$ ___ V(P)] "... buy and sell .../ were drinking and playing "[27]

(iv) And/ or: X [$_{\&P}$ ___Adj(P)] " ... hot and humid/ taller and more beautiful"[28]

(v) And/ or: X [$_{\&P}$ ___Adv] " slowly but surely/ more wisely and less fearfully"

---

[23] The idea that coordinated structures must be of the same category types is a traditional assumption that goes back to Chomsky [28, p. 36]. Sag, I. et al. [22] attempt to weaken this generalization within the GPSG. My personal intuition is that there are many examples such as (*Pat is either stupid or a liar*) in which elliptic elements are not adequately accounted for. For example, this particular example does not exemplify coordinate [AP or NP] structures as Sag et al claim; more appropriately, it should be analysed as [VP or VP], e.g., (*Pat is either stupid or (is) a liar*). Coordinate structures that include deleted elements such as this sentence, have undergone a process of Conjunction Reduction, [3, p. 226, fn. 1]. For more examples of ellipsis in coordination, see [7, ch.9].

[24] Here we are only concerned with coordinate structures. Other adjunction structures will be left out for future investigation.

[25] Here we are only concerned with coordinate structures. Other adjunction structures will be left out for future investigation.

[26] Here we are only concerned with coordinate structures. Other adjunction structures will be left out for future investigation.

[27] Coordinate verbs are two bar levels, (i) $V^{\circ} \rightarrow [V^{\circ} + V^{\circ}]$; (ii) [VP + VP]. The latter is most likely to be reduced coordinate clauses.

[28] It is most likely that coordinate adjectives occurring as predicates represent reduced coordinate clauses.

(vi) And/ or: X [$_{\&P}$ ____P(P)] "on and over the table/ in the shed or behind the barn"
And/ or: X [$_{\&P}$ ___ modal] "...can and should ..."[29]
wa, (and): X [$_{\&P}$ ___ Neg] "...lam wa lan"[30]
(vii) And/ or: X [$_{\&P}$ ___ CP] "John arrived and Ali went out"
(viii) And/ or : X [$_{\&P}$ _____ * Ø] I saw John *and.

In the above frames, X represents the first conjunct that can be of any category and bar level; (&P) represents the coordinate phrase, containing the head and the second conjunct. The coordinator must have a complement of the same category and bar level as the first conjunct; the structure is ungrammatical if the complement of (&°) fails to project, as in (42j) above. The minor category ($_{\&}$P) dominating (&P), encodes the feature (+COORDINATE) that copies the appropriate features necessary for establishing coordinate structures. Notice that ($_{\&}$°) copies categorical and (Case) features, but not other features such as person, number and gender:

(43)
The boys and their sister are playing.[31]
(i) Thahaba al-awlad-u wa al-bint-u ila almadrasati.
Went-pl the-boys-nom and the-girl-nom to school
"The boys and the girl went to school"
(ii) I saw John and Mary/ *clever/ *the/ *in the house.
(iii) John looks happy and healthy/ *writing/ *in the library/ *wisely/ *a teacher.

In (43a), The first and second NP-conjuncts differ in the features number and gender, yet the structure is grammatical. In the Arabic example (43b), the first and second NP-conjuncts agree in Case, but differ in number and gender. (43c and d) illustrate that the second conjunct must copy the category type of the first conjunct; otherwise the structure is ungrammatical. Notice that the agreement between conjuncts in coordinate structures differs from the type of agreement between nouns and their modifying adjectives, in languages that overtly display this type of agreement. Compare the following two Arabic examples:

(44)
(i) al- ?ibn-u al-muTiiG-u [NP +AdjP as modifier]
the-son-nom the obedient-s,m, nom "The obedient son"

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[29] Here we are only concerned with coordinate structures. Other adjunction structures will be left out for future investigation.

[30] Here we are only concerned with coordinate structures. Other adjunction structures will be left out for future investigation.

[31] Here we are only concerned with coordinate structures. Other adjunction structures will be left out for future investigation.

(ii) al- ?ibnat-u al-muTiiGat-u [NP + AdjP as modifier]
the-daughter-s,f,nom the-obedient-s,f,nom "The obedient daughter"
(iii) al-?ikhwan-u wa al-?akhawat-u [NP & NP]
the-brothers-nom and the-sisters-nom "the brothers and sisters"

Structures (44a and b) show that adjectives agree with the nouns they modify in number, gender, Case and definiteness, whereas in coordinate structures (44c), the first and second NP-conjuncts display agreement in Case and category type. From these examples, we work out that although modification and coordination are created by adjunction rules, they signal different functional relations. Different functional relations in adjunction structures, are most certainly to be due to the nature of the active feature encoded in the functional minor-category dominating the modifying (AdjP) and the coordinate (&P); namely the features (+MODIFY) and (+COORDINATE) respectively. These two features trigger different functional relations in adjunction structures.

(VII) Coordinate clauses

Turning now to coordinate clauses, we will employ structure (36a) and will replace XP and YP with CP in the following manner:

(45) [CP [CP (co-clause 1)] **&P** [**&** **CP** (co-clause 2)]]

This structure for coordinate clauses is perhaps descriptively adequate but not explanatory adequate. In order to achieve explanatory adequacy we have to explain how coordinate structures come about in any grammars. Recall that in the previous sections we resort to features that are encoded in (minor) or functional category in order to generate phrasal coordinate structures. To employ this idea for coordinate clauses, let us assume that CP in (45) is dominated by a minor category of the same type, i.e., cP, (see [13], [16], and [17]). Suppose that any coordinate structure is dominated by a minor projection of the type (xP) that takes coordinate structures, (in this case CP), as its complement in the following configuration:

(46) xP[$_{spec,x}$ e [$_{x\text{-}bar}$ **x** (+&) **CP**[**CP** (co-clause 1)] **&P** [**&** **CP** (co-clause 2)]]]]

The minor category (x) ranges over the array of major and (functional) categories. This category obligatorily subcategorises for coordinate structures iff it encodes the feature (+COORDINATE). In the same time, the minor category (x) must encode the categorical status of the structure it dominates, CP in this particular case, but could be of any other type, NP, VP, PP, ...etc. In this analysis, coordinate clauses are self-explanatory because they only generate when demanded by the relevant feature (+COORDINATE) encoded in the minor category, and satisfy the subcategorization requirements of the coordinator.

(VIII) Conclusion

In this article, we have dealt with the structure of Coordination. Two approaches have been explored: First, we have discussed an analysis utilizing Right Node Adjunction; namely, Munn [1]. Second, we have discussed LCA-based analyses described in Kayne [2], Zoerner [3], and Zoerner [5]. In both approaches, coordinators are established as heads of their own projections. Munn's approach realizes a coordinate phrase (not including the first conjunct) an adjoined structure to the first conjunct via a Right Node Adjunction. The specifier of the coordinate phrase is left empty. The analyses presented in Kayne [2] and Zoerner [3], [5] are different from Munn's analysis in two ways; first, they incorporate a shell-hypothesis: by assuming a minor phase (xP) to dominate (&P) in a shell-like structure. Second, the first conjunct occupies the specifier position of the minor category and is licensed by its head. These analyses have been applied to two- and multi-termed coordinate structures.

We have offered critique discussions to these analyses. Based on a number of points, we conclude that the shell-structure, as presented in Kayne and Zoerner's analyses, is untenable. In particular, the first conjunct should not be included as a constituent (in spec position) of the &P. Furthermore, the LCA-based analyses are untenable for reasons pertaining to the following facts; first, the first conjunct is s-selected by a dominating category, not licensed by a feature encoded in the minor category. For example, in coordinate NP-structure, the first NP-conjunct is in many cases an argument of some category such as a verb. The coordinator is most certainly does not behave like transitive verbs that license an argument in (spec,v) and an argument in (comp,v). Second, the relationship between a coordinator (&) and the first conjunct does not resemble standard spec-head relationships. It is very similar to the relationship between a preposition heading a peripheral adverbial PP and a main verb, in a sentence like "*John put the dinner on the table **at five o'clock***". The preposition phrase (*on the table*) is selected by the verb (put), but not in the same way (***at five o' clock***) is selected. Third, coordinators and their projections belong to an identifiable set of categories encoding the features [-N, -V].

We have argued for a modified version of Munn's analysis combined with the shell-based analysis in which a minor-$_{\&}$ encodes the active feature (+COORDINATE). It has been argued that the feature (+COORDINATE) establishes the link between the conjuncts following (&) and the first conjunct, once (&°) moves to ($_{\&}$°) after Spell-Out. One of the functions of the feature (+COORDINATE) is that it activates the copy-feature mechanism that identifies syntactic relations in coordinate structures.

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تراكيب العطف

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ملخص البحث . هذا البحث " تراكيب العطف ،" هو دراسة نقدية – تحليلية – وصفية لتراكيب العطف والنظريات التي تناولتها بالوصف و التحليل و ذلك ضمن إطار نظرية النحو الحالية.يلخص البحث كل من تحليلات كين و زوبرنر حول توصيف و تنظير تراكيب العطف ، ويقدم تقييم نقدي لكل تحليل على حده.

أظهرت الدراسة أن نماذج العطف باللغة العربية ترجح صحة ما انتهجه في تحليله؛ لذلك اقترح الباحث تحليل مع بعض التعديلات التي تأخذ بعين الاعتبار ,RNA والخصائص السياقية لعناصر العطف، و الخصائص الكامنة في الصنف الفرعي، بحيث يتم استيعاب هذه النقاط، و إظهار الخاصية الوظيفية الكامنة في الصنف الفرعي و التي بها تقوم العلاقات بين أطراف تركيب العطف.