Polish coordination as adjunction*

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This paper aims to determine whether Polish coordination has an adjunction structure rather than a complementation structure. We discuss Zhang's (2010) arguments for the complementation structure of coordination and identify some problems with these arguments. In support of the adjunction structure of Polish coordination, we point to certain similarities between traditional Polish adjuncts and Polish *and*-phrases. An attempt to apply Hornstein's (2009) theory of Decomposed Merge to Polish coordination is made for patterns of verbal agreement with coordinate subjects and the apparent movement phenomenon inside the coordinate complex. We conclude that, although Polish coordination appears to have the adjunction structure, analyzing it under the theory of Decomposed Merge produces inconclusive results.

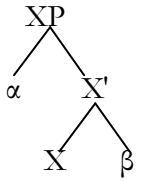
Keywords: *adjunction, agreement, coordination, Decomposed Merge, Polish*

1 Introduction

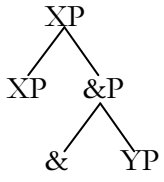
Coordination seems to be one of those syntactic constructions whose structure, despite attracting a lot of linguists' attention, has not as yet been established conclusively. What appears to be generally accepted is that coordination has a binary structure (as opposed to the previously assumed flat structure, e.g. Chomsky 1965, Dik 1968, among others) and that the coordinator is a head and forms a constituent with the second conjunct.

However, there are two major competing approaches to analyzing the basic structure of coordination. One of them treats the first conjunct as a specifier of the head coordinator and the second conjunct[1] as a complement of that head (e.g. Zoerner 1995, Johannessen 1998, Zhang 2010; see (1a)). The other one treats the *and*-phrase (the coordinator and the second conjunct) as adjoined to the first conjunct (e.g. Munn 1993, Larson 2010, 2012; see (1b)).

(1) a.



b.



Since presenting these two approaches in detail is beyond the scope of this paper, the discussion is limited here to two more recent "embodiments" of these approaches, namely to Zhang (2010), who advocates the complementation structure of coordination,

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[1] The term 'second conjunct' refers to the final conjunct in a coordination of two conjuncts.

and to Larson (2010, 2012), who adopts Munn's (1993) adjunction analysis of coordinate complexes.

The goal of the paper is twofold. Firstly, we demonstrate that it is more plausible to treat the structure of Polish coordination as adjunction rather than complementation. Secondly, we attempt to determine whether Polish coordination, just like adjunction, can be analyzed under Hornstein's (2009) theory of Decomposed Merge (DM).

First, we present Zhang's (2010) arguments for the complementation structure of coordination she proposes and identify certain problems with these arguments.[2] We start with the immobility of *and*-phrases, then briefly discuss interactions between coordinators and second conjuncts, and compare the solution Zhang (2010) puts forward for the problem of categorial make-up of coordinate complexes to the one offered by the advocates of the adjunction analysis.

The next part of the paper is devoted to the discussion of an adjunction structure of Polish coordination. First, we point to some similarities between traditional Polish adjuncts and Polish *and*-phrases (*i*-phrases). Next, we present an overview of Hornstein's (2009) theory of DM and then discuss the application of this theory to Polish coordination, focusing on (apparent) movement phenomena and coordinate subject-verb agreement.

2 Complementation structure of coordination

As mentioned above, Zhang (2010) is one of the linguists who advocate the complementation structure of coordination, as illustrated in (1a). In (1a), α is the first conjunct, β is the second conjunct and X is the head coordinator which projects to XP. In other words, α and β are the respective specifier and the complement of X, which heads the maximal projection XP, i.e. the coordinate complex.

In the following three sections, we examine three of Zhang's (2010) arguments supporting her complementation structure of coordination, namely, immobility of *and*-phrases, head-complement interactions between coordinators and second conjuncts, categorial make-up of coordinate complexes, and provide some critique of these arguments.

2.1 Immobility of *and*-phrases

In the complementation structure of coordination, the *and*-phrase is an intermediate projection. As illustrated in example (2b), *and*-phrases cannot be moved to the left because this results in an ungrammatical sentence.

(2) a. [Tall and slim]$_i$ though Helen is $\__i$, …
b. *[And slim]$_i$ though Helen is [tall $\__i$], … (Postal 1998:191)

In (2a), the whole coordinate complex *tall and slim* can be moved to the left but the constituent *and slim* cannot be moved on its own, i.e. without the first conjunct (as in (2b)).

[2] The problems under discussion pose difficulties for analyzing the structure of coordination as adjunction in general and are not specific to Polish coordination.

Zhang (2010) argues that the immobility of *and slim* can be explained if one assumes that this constituent is an intermediate projection and that movement of intermediate projections is prohibited (Chomsky 1994, 1995). According to her, the immobility of the *and*-phrase cannot be accounted for in the adjunction analysis. In the adjunction analysis, the constituent formed by the coordinator and the second conjunct is an adjunct, which means that it is a maximal projection and, at least in theory, is free to move, which seems not to be the case in (2b).

However, Munn (1993) claims that *and*-phrases can move. The ability of *and*-phrases to move (as in (3)) has been used by Munn (1993) to show that they are not intermediate but maximal projections, which supports his adjunction analysis of coordination.

(3) John bought a book yesterday, and a newspaper. (Munn 1993:15)

Zhang's (2010) analysis does not allow not only leftward movement of *and*-phrases but also rightward movement of these constituents. She offers an alternative analysis of the data in (3) by resorting to stripping which is "a rule that deletes everything in a clause under identity with corresponding parts of a preceding clause, except for one constituent" (Hankamer and Sag 1976:409), as illustrated below:

(4) John bought a book yesterday, and [[a newspaper]$_i$ ~~he also bought t$_i$ yesterday~~]. (Zhang 2010:25)

Zhang claims that the possibility of the stripping analysis weakens Munn's (1993) account involving movement. However, note that the stripping analysis is also possible if we assume the adjunction structure of coordination. The fact that an *and*-phrase in an adjunction analysis is a maximal projection and free to move, does not mean that it has to move. The sentence in (3) can be a result of stripping under either the complementation or adjunction analysis of coordination.

In section 3.3, we discuss an alternative analysis involving the adjunction structure of coordination and the theory of DM, and compare it with the stripping analysis.

2.2 Coordinator–second conjunct interactions

In support of her complementation analysis of coordination, Zhang (2010) also points to interactions between coordinators and second conjuncts as interactions between a head and its complement. One example of such interaction comes from the Papago language where there is head raising from Inflection to the position of a coordinator.

(5) a. *'Uwi 'o cipkan*
woman is working
'The woman is working.'

b. *'A:ñi 'añ ko:s*
I am sleeping
'I am sleeping.'

c. *'Uwi 'o cipkan ñ 'a:n ko:s*
woman is working amI sleeping
'The woman is working and I am sleeping.' (Zhang 2010:26-27)

In Papago, the word order is Subject-Auxiliary-Verb (as in (5a,b)). However, when two clauses are conjoined, the order of the second clause is Auxiliary-Subject-Verb (as in (5c)). Zhang (2010) claims, after Zoerner (1995), that the word order in (5c) is a result of the Auxiliary (of the second clause/conjunct) raising from the Inflection position to the position of the coordinator which is possible only if the second conjunct is not an adjunct but a complement, "since head movement may neither launch from nor land in an adjunct" (Zhang 2010:27).

However, in both the complementation and the adjunction structures, the coordinator is a head and the second conjunct is a complement of this head and, therefore, in both cases, certain interactions between coordinators and second conjuncts are expected. If we assume the adjunction structure of coordination, when Infl in Papago launches from within the second conjunct and lands in the position of a coordinator, it launches from within a complement and lands in a head position and the fact that the *and*-phrase is an adjunct is irrelevant in this situation. The space within which the raising takes place is a phrase that consists of a head and a complement and there is no adjunct inside that space. Hence, such interactions constitute no support for the complementation structure.

2.3 Categorial make-up of coordinate complexes

Zhang (2010) observes that, since coordinators are heads and since, in principle, heads are responsible for projecting categorial features onto their phrases, a coordinator should project its categorial features onto its coordinate complex. However, coordinators such as *and* in English or *i* in Polish do not display any categorial features that could be projected further. Bearing this in mind and that "all grammatical operations in natural languages are category-based" (Radford 1997: 29), Zhang (2010) proposes that there is a feature percolation, first from the first conjunct (specifier) onto the coordinator (head) and, from there, onto the whole coordinate complex.[3]

Zhang (2010) observes that it is first conjuncts that are c-selected by heads with which coordinate complexes are merged. For example, when coordinate complexes are merged as complements of prepositions, for instance, *on* (as in (6)), the first conjunct may be a DP but not a tensed clause, whereas the second conjunct of the merged complex is not so restricted.

(6) a. You can depend on my assistance and that he will be on time.
b. *You can depend on that he will be on time.
c. *You can depend on that he will be on time and my assistance.
(Zhang 2010:50)

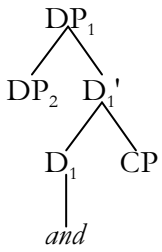
[3] Zhang (2010) observes that the categorial feature percolation from the first conjunct (specifier) that she proposes is similar to, for instance, the percolation of negation feature in sentences like the one in (i) below:

(i) Nobody's car would I borrow. (Zhang 2010:56)

In (i), the subject-modal inversion is a result of sentential negation which is obtained by percolation of the negation feature out of the word *nobody* in the specifier position of the possessive DP (Zhang 2010:56).

The data indicate that "first conjuncts (…) must satisfy the category requirements that are imposed on the whole coordinate complex" (Zhang 2010:51), but the categorial features of the second conjunct are syntactically invisible to the c-selecting requirements of the head merging with the coordinate complex. The grammaticality of (6a) and the ungrammaticality of (6c) suggest that the categories of coordinate complexes headed by coordinators like *and* should be the same as the categories of their first conjuncts (Zhang 2010:54). According to Zhang's (2010) analysis, since the first conjunct in the grammatical sentence is a DP, this means that the head is a D lexicalized with a coordinator, and the whole coordinate complex is a DP, as illustrated in (7) below.

(7)



As has been already mentioned, this categorial make-up of a coordinate complex is achieved by the percolation of categorial features from the first conjunct onto the head and from the head onto the phrase the head projects. However, the proposal that a terminal node has a completely different label from the category of a word with which the node is lexicalized is hardly acceptable. The gist of Zhang's (2010) analysis is that coordination does not involve any coordination-specific phenomena, i.e. that all the phenomena present in coordination can be found in other syntactic constructions. Nevertheless, the situation described above (where feature percolation results in a terminal node with a label of a certain category being lexicalized with a word of a different category) is not found in any other structure.

On the other hand, the solution to the question of the categorial make-up of coordinate complexes offered by the adjunction approach appears to be much less problematic.

Similarly to Zhang (2010), Munn (1993) and Larson (2010, 2012) point to the fact that only first conjuncts are c-selected and the category of second conjuncts plays no role in c-selection. In the adjunction structure, the head of the first conjunct is the head of the coordinate complex. In this analysis, there exists a coordination-specific category. The head coordinator labelled, for example, &, projects to its own maximal projection (&P) and this maximal projection adjoins to the first conjunct (also a maximal projection) but does not influence its category. In this respect, *and*-phrases are like traditional adjuncts, i.e. the category of the phrase to which the adjunct/*and*-phrase adjoins is the same as the category of the output structure.

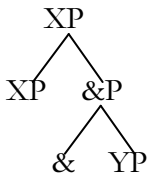
This solution to the question of the categorial make-up of coordinate complexes appears more straightforward and less problematic than the one proposed by Zhang (2010). First of all, the category of the coordinate complex is the same as the category of its head, i.e. the same as the category of the first conjunct. At the same time, the terminal node that hosts the coordinator is labelled &, and lexicalized with an *and*-like (i.e. featureless) coordinator and cannot or does not need to be filled with a word of any other category, which is expected. Secondly, since only the first conjunct is c-selected, and not a featureless coordinator or the second conjunct, the maximal projection that

adjoins to the first conjunct can be an &P and does not have to be a projection of any traditionally recognized category.

3 Adjunction structure of Polish coordination

One of the most influential works advocating the adjunction analysis of coordination is Munn (1993) where the following structure is proposed for coordination:

(8)



In this structure, the *and*-phrase is adjoined to the first conjunct. As in the complementation structure, the coordinator is a head but, here, it is a head of its own maximal projection and not of the whole coordinate complex.

The discussion in sections 3.1-3.4 is devoted to the adjunction structure of Polish coordination. First, we point to certain similarities between traditional adjuncts and Polish *i*-phrases. Next, we present an overview of Hornstein's (2009) theory of Decomposed Merge (DM). Then, we discuss the application of this theory to Polish coordination focusing on (apparent) movement phenomena and patterns of verbal agreement with coordinate subjects.

3.1 Similarities between adjuncts and *i*-phrases

Strong support for the adjunction structure of coordination is offered by Larson (2010), who points to similarities between the properties of traditional adjuncts (as observed by Hornstein and Nunes 2008) and those of *and*-phrases. These resemblances can also be found between Polish adjuncts and *i*-phrases, as discussed and illustrated below.

Lack of influence on the host phrase
Adjunction does not affect the category of the host phrase, i.e. the category of the phrase to which the adjunct adjoins is the category of the output structure (in the case of coordination, the category of the coordinate complex is that of the first conjunct and is not influenced by the category of the second conjunct), as illustrated in (9) and (10):

(9) [$_{VP}$ [$_{VP}$ [$_{VP}$ *śpiewa* *piosenkę*] [$_{AdvP}$ *głośno*]] [$_{PP}$ *na scenie*]]
sings song loudly on stage
'S/he sings a song loudly on the stage.'

(10) *te drzewa kwitną* [$_{DP}$ [$_{DP}$ *jesienią*] [$_{\&P}$ i [$_{PP}$ *na wiosnę*]
these trees bloom autumn and in-spring
'These trees bloom in the autumn and in the spring.'

Iterativity
Adjuncts are iterative, i.e. there is no restriction on the number of adjuncts in a structure (in the case of coordination, the number of &Ps in a structure is unrestricted).

(11) *Jan oglądał telewizję w domu kolegi po południu od 17.*
Jan watched TV at friend's-house in-afternoon from 5 p.m.
'Jan watched TV at his friend's house in the afternoon from 5 p.m.'`

(12) *Gosia i Magda i Ania i Kasia oglądały telewizję.*
Gosia and Magda and Ania and Kasia watched TV
'Gosia, Magda, Ania and Kasia watched TV.'

Optionality
Adjunction is optional, i.e. the absence of an adjunct from a structure does not influence its grammaticality (in the case of coordination, the absence of &P does not influence the grammaticality of the sentence).

(13) *Jan oglądał telewizję (w domu kolegi).*
Jan watched TV at friend's-house'
'Jan watched TV (at his friend's house).'

(14) *Jan obejrzał horror (i komedię).*
Jan watched horror and comedy
'Jan watched a horror (and a comedy).'

Lack of hierarchical organization
The structure of multiple adjunction is flat, i.e. there is no hierarchical organization in adjunction (in the case of multiple coordination, all &Ps have equal status), as illustrated in (11) and (12).

Permutability
Adjunction is permutable, i.e. the order of multiple adjuncts can be reversed[4] (in the case of multiple coordination, the order of &Ps can be reversed).

(15) a. *Jan oglądał telewizję w domu kolegi wczoraj.*
Jan watched TV at friend's-house yesterday
'Jan watched TV at his friend's house yesterday.'
b. *Jan oglądał telewizję wczoraj w domu kolegi.*
Jan watched TV yesterday at friend's-house
'Jan watched TV yesterday at his friend's house.'

(16) a. *Gosia i Magda i Ania oglądały telewizję.*
Gosia and Magda and Ania watched TV
'Gosia, Magda and Ania watched TV.'
b. *Gosia i Ania i Magda oglądały telewizję.*
Gosia and Ania and Magda watched TV
'Gosia, Ania and Magda watched TV.'

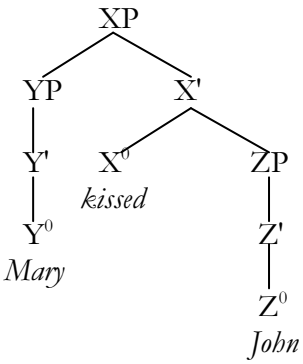
[4] Since the category of the adjunct does not influence the category of the host phrase to which it adjoins (as mentioned above), the order of multiple adjuncts can be reversed which does not affect labels of any constituents, e.g. in (15), the VP *oglądał telewizję* remains a VP regardless of the category of the adjuncts that are adjoined to it (whether the adjunct is a PP *w domu kolegi* or a DP *wczoraj*.)

These properties shared by traditional Polish adjuncts and *i*-phrases imply that the structures of adjunction and coordination resemble each other, which makes it possible to analyze them by means of the same tool. The tool employed in this paper (first used for coordination by Larson 2010) is Hornstein's (2009) theory of Decomposed Merge.

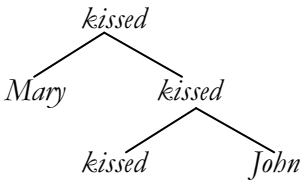
3.2 Overview of Hornstein's (2009) theory of Decomposed Merge

The Bare Phrase Structure (Chomsky 1994) remodels the traditional representation of *Mary kissed John* in (17a) into the one in (17b):

(17) a. X-bar Theory



b. Bare Phrase Structure



In short, what is most relevant for the present discussion is that, in the Bare Phrase Structure, there is only one maximal projection per head which poses some problems for the analysis of adjunction, and for the adjunction structure of coordination.

In the traditional structure of adjunction, both *worked* and *worked on Friday* are maximal projections and as such each can serve as an input for certain operations. For example, VP-ellipsis can be applied to either the inner VP, as in (19a) or the outer VP, as in (19b):

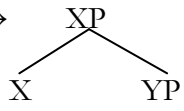
(18) Mary [$_{VP}$ [$_{VP}$ worked] on Friday]

(19) a. …and Sue did so on Saturday.
b. …and Sue did so, too.

However, in the Bare Phrase Structure, what was an inner VP in the traditional structure is no longer a maximal projection and, hence, it cannot be operated on, i.e. if we want to apply VP-ellipsis, the only thing we can elide is the whole *worked on Friday* because it is the only maximal projection here (there are no means to apply VP-ellipsis to just *worked*).

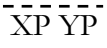
(20) Mary [$_{VP}$ [$_{V}$ worked] on Friday]

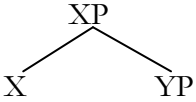
To solve this problem, Hornstein (2009) proposes to decompose the Merge operation into Concatenate and Label. Chomsky's (1995) Merge combines two elements and one of them projects as the Label of the combination:

(21) Merge(X,Y) →  [$_{XP}$ X YP]

(Larson 2012:16)

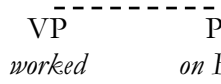
Hornstein's (2009) Decomposed Merge consists of Concatenate (in (22a)), which combines two atomic syntactic units and Label (in (22b)), which makes one of the concatenated units serve as a Label. Concatenate followed by Label makes the complex of two atomic units an atomic unit itself.

(22) a. Concatenate(X,Y) →  [XP YP]

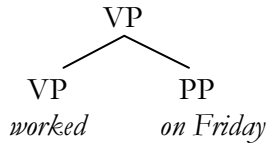
b. Label(X,[XP,YP]) →  [$_{XP}$ X YP]

(Larson 2012:17)

According to Hornstein (2009), adjuncts can undergo only Concatenate or Concatenate and Label with the host phrase. If they undergo only Concatenate (as in (23)), adjuncts are, so to say, untouchable to these operations that target their host VPs. This is because, before Label, they are somewhat outside the targeted phrase and not ready to take part in any operation that applies to that phrase. Adjuncts that have undergone both Concatenate and Label with their host phrases are ready to be operated on (as in (24)):

(23) a. 
worked *on Friday*

b. Mary worked on Friday and John did so on Saturday.

(24) a. 
worked *on Friday*

b. Mary worked on Friday and Sue did so, too.

If the adjunct and its host VP have undergone just Concatenate, the ellipsis that targets the whole phrase applies only to the VP *worked* (without the PP *on Friday*) with the result of only *worked* being elided. On the other hand, when the adjunct and its host VP have undergone both Concatenate and Label, the ellipsis that targets the whole phrase applies to the whole VP (*worked on Friday*) with the result of the whole phrase being elided.

3.3 'Movement' inside the coordinate complex and the DM analysis

As mentioned in section 2.1, in support of his adjunction analysis of coordination, Munn (1993) claims that *and*-phrases are maximal projections and, as such, can move which can be seen when some element, e.g. an adverbial, separates the first conjunct from the *and*-phrase. On the other hand, Zhang (2010), who advocates the complementation structure of adjunction, claims that *and*-phrases are intermediate projections and, hence, cannot be moved and even if they appear to be moved, this, in fact, represents stripping, not

movement. It has also been observed that, although *and*-phrases in the adjunction structure are maximal projections and are free to move, they do not have to move, and that the possibility of stripping is not restricted to the complementation structure, it can be applied to the adjunction structure as well.

However, if one adopts the adjunction structure of coordination and the theory of DM, another possibility emerges which assumes the immobility of *and*-phrases and the ability of the first conjuncts to move.

(25) a. *Jakkolwiek Iza by nie była* [*wysoka i piękna*], *nigdy nie zostanie*
however Iza would not be tall and beautiful never not become
modelką.
model
'However tall and beautiful would Iza be, she'll never become a model.'

b. *Jakkolwiek* [*wysoka i piękna*]$_i$ *Iza by nie była* $\__i$, *nigdy nie zostanie*
however tall and beautiful Iza would-not-be never not become
modelką.
model

c. *Jakkolwiek* [*wysoka*]$_i$ *Iza by nie była* [$\__i$ *i piękna*], *nigdy nie zostanie*
however tall Iza would not be and beautiful never not become
modelką.
model

d. **Jakkolwiek* [*i piękna*]$_i$ *Iza by nie była* [*wysoka* $\__i$], *nigdy nie zostanie*
however and beautiful Iza would-not-be tall never not become
modelką.
model

(26) a. *Iza płakała* [*głośno i długo*].
Iza cried loudly and long
'Iza cried loundly and for a long time.'

b. [*Głośno i długo*]$_i$ *Iza płakała* $\__i$.
loudly and long Iza cried

c. [*Głośno*]$_i$ *Iza płakała* [$\__i$ *i długo*].
Loudly Iza cried and long

d. *[*I długo*]$_i$ *Iza płakała* [*głośno* $\__i$].
and long Iza cried loudly

Sentence in (25a) does not exhibit any movement. In (25b) and (25d), the *i*-phrases and the first conjuncts have undergone both Concatenate and Label and, as a result, the *i*-phrases can move together with the first conjuncts (hence the grammaticality of (25b)) but not on its own (hence the ungrammaticality of (25d)). According to Hornstein (2009), "the Label prevents the insides of the Labelled elements from being targets of movement" (Hornstein 2009:91). In other words, after Label, only the whole coordinate complex can be a target of movement because Label makes two atomic units (the first conjunct and the *i*-phrase) an internally inaccessible atomic unit itself.

Similarly, the first conjuncts and *i*-phrases in (26b) and (26d) have undergone both Concatenate and Label which made them an atomic unit. The elements of such an atomic unit cannot be separated by a movement operation and, therefore, the *i*-phrase moves together with the first conjunct to which it is adjoined (as in (26b)) but is forbidden to move on its own, i.e. without its host phrase (as in (26d)).

On the other hand, the *i*-phrases and the first conjuncts in examples (25c) and (26c) have undergone just Concatenate and, therefore, the *i*-phrases can be stranded. Without Label, when the whole coordinate complex is targeted by a movement operation, the only element to which the movement operation can apply is the first conjunct, the second conjunct is invisible to the operation. According to Hornstein (2009), "when adjuncts don't move with the elements they modify, it is because they are not members of the Labelled concatenate that has moved" (Hornstein 2009:91).

However, if we compare this account to the stripping analysis, stripping appears to be more successful in accounting for the apparent displacement of *and*-phrases. Firstly, examples in (25c) and (26c) can be both derived by means of stripping, as shown in (27):

(27) a. *Jakkolwiek wysoka Iza by nie była i* [[*piękna*]$_i$ ~~*jakkolwiek*~~
however tall Iza would-not-be and beautiful however
~~*Iza by nie była*~~ t$_i$].
Iza would not be

b. *Głośno Iza płakała i* [[*długo*] ~~*Iza płakała*~~].
loudly Iza cried and long Iza cried.

Secondly, the DM analysis cannot account for the following example:

(28) a. *Janek kupił chomika w sklepie i klatkę.*
Janek bought hamster in shop and cage
'Janek bought a hamster in the shop and a cage.'

b. *Janek kupił chomika i klatkę w sklepie.*
Janek bought hamster and cage in shop
'Janek bought a hamster and a cage in the shop.'

In (28a), the first conjunct and the *i*-phrase are separated but the first conjunct is in its base position (as in the sentence in (28b) which do not exhibit any movement) and not in a derived position, which should be the result of the DM analysis (cf. (25) and (26)).

Even if one attempts to derive (28a) from (28b) by moving the *i*-phrase to the right, it is not possible to do so with structurally similar sentences in (29) and (30):

(29) *Janek kupił aspirynę w aptece i chomika.*
Janek bought aspirin in drugstore and hamster
'Janek bought some aspirin in the drugstore and a hamster.'

(30) *Janek kupił aspirynę i chomika w aptece.*
Janek bought aspirin and hamster in drugstore
'Janek bought some aspirin and a hamster in the drugstore.'

If (29) is derived by moving the *i*-phrase to the right, it would mean that the sentence prior to movement is the one in (30), which does not seem to be the case. The sentence in (30) implies that both items, i.e. aspirin and the hamster, were bought in the drugstore, which is at least improbable. The sentence in (29) carries no such implication, i.e. aspirin was bought in the drugstore but the hamster was bought in a different place. Consequently, the sentence in (29) cannot be derived from the one in (30) simply by moving the *i*-phrase to the right.

Therefore, stripping appears to be superior to the DM analysis or the one involving movement of *i*-phrases since it accounts for more data.

3.4 DM analysis of Polish coordinate subject-verb agreement patterns

Zhang (2010) excludes the issue of agreement from her analysis[5] by claiming that in the syntax of coordination "agreement is affected by multiple factors, not all of which are syntactic" (Zhang 2010:54).[6] However, for languages with rich inflectional morphology that employ overt morphological agreement markers, like Polish, it seems necessary to incorporate agreement facts into the analysis.

Polish is an SVO language (with an alternative VSO word order)[7] with different patterns of coordinate subject-verb agreement.

When a coordinate subject appears before a verb, the verb is plural[8], as in (31):

(31) *Jan i Marek przyszli/ *przyszedł.*
Jan and Marek came-PL/came-SG
'Jan and Marek came.'

However, when a coordinate subject appears after a verb, the verb may be either plural or singular[9], as in (32):

(32) *Przyszli/ Przyszedł Jan i Marek.*
came-PL/ came-SG Jan and Marek
'Jan and Marek came.'

Since Polish allows singular agreement with post-verbal coordinate subjects it makes it similar to Arabic.[10] The Arabic patterns of agreement with coordinate subjects discussed in Larson (2012)[11] are the same as the Polish ones described above, i.e.:

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[5] Nevertheless, other analyses of the complementation structure of coordination do not avoid the issues connected with agreement, for instance, see Citko (2004), Marušić et al. (2007), Bošković (2009), É. Kiss (2012).

[6] For further discussion, see Zhang (2010:21).

[7] In fact, Polish displays all six possible word orders (e.g. Szczegielniak 2001).

[8] In the literature, the possibility of the Last Conjunct Agreement with abstract pre-verbal subjects in Polish is noted (see Buttler 1971:333-334, Ruda 2010), for example:

(i) *Ból i miłość zmieniła go.*
pain-MASC and love-FEM changed-SG,FEM him
'Pain and love changed him.'

In these cases, singular agreement is dependent on the type of the coordinated NPs (abstract or inanimate nouns) and is, therefore, irrelevant for the present discussion. Conjunct-sensitive agreement is also possible in disjunctive coordination but, again, is irrelevant for the present discussion.

[9] If the first conjunct of the post-verbal coordinate subject is singular, the verb is singular, if it is plural, the verb is plural, regardless of the number of the second conjunct (First Conjunct Agreement).

[10] One of the most prominent (although rather irrelevant for the present discussion) syntactic differences between Polish and Arabic is the fact that Polish is an SVO language with an alternative VSO word order, whereas Arabic is a VSO language with an alternative SVO word order.

A. plural agreement with pre-verbal coordinate subjects:

(33) *Omar w Karim mšaw/*mša*
Omar and Karim left-PL/left-SG
'Omar and Karim left.'

B. plural or singular agreement with post-verbal coordinate subjects:

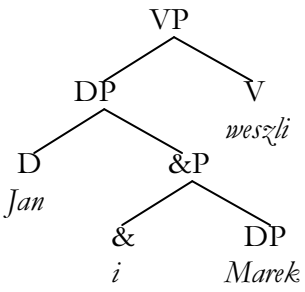
(34) *ža/ žaw Omar w Karim*
came-SG/ came-PL Omar and Karim
'Omar and Karim came.'

As already mentioned, assuming the theory of DM and the adjunction structure of coordination, it is possible for the first conjunct and the *i*-phrase to undergo either Concatenate or both Concatenate and Label. The optionality of Label allows Larson (2012) to account for Arabic patterns of agreement with coordinate subjects. Here, the theory of DM will be employed to account for the Polish agreement patterns with coordinate subjects.

The most problematic for the analyses of both languages has been the possibility of a singular agreement with post-verbal coordinate subjects because the default plural agreement with a coordinate subject stems from the actual plurality of the extralinguistic entities the subject denotes and, hence, is expected. The structure of the sentences in (35)[12] is the one in (36):

(35) a. *Jan i Marek weszli (do pubu).*
Jan and Marek entered-PL (to-pub)
'Jan and Marek entered the pub.'
b. *(Do pubu) weszli Jan i Marek.*
(to-pub) entered-PL Jan and Marek
'Jan and Marek entered the pub.'

(36)



[11] Arabic examples in (33) and (34) are adopted from Larson (2012).

[12] Representations in (36) and (38) are very simplified. For the present discussion, we assume that, in order to derive the VS order, the verb moves to a higher position above the subject but we do not determine the precise position of the verb. In this analysis, we assume, after Wiland (2009:59), that functional heads in Polish have the sequence as in (i) and that the base position of the subject is in SpecVoiceP.

(i) …[$_{AgrP}$ Agr^{o} [$_{TP}$ T^{o} [$_{NegP}$ Neg^{o} [$_{VoiceP}$ Voice^{o} [$_{vP}$ v^{o} [$_{\sqrt{P}}$ $\sqrt{}^{o}$ …

If one assumes a single one-step Merge operation, it is rather tricky to account for the possibility of both plural and singular agreement with coordinate subjects,[13] like in the sentences in (37). However, if we adopt the theory of DM, where the Merge operation consists of two steps, namely Concatenate and (optional) Label, we are equipped with two ways to approach the problem with the same tool.

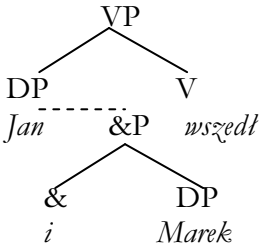
(37) a. *(Do pubu)* *weszli* *Jan* *i* *Marek.*
(to-pub) entered-PL Jan and Marek
'Jan and Marek entered the pub.'

b. *(Do pubu)* *wszedł* *Jan* *i* *Marek.*
(to-pub) entered-SG Jan and Marek
'Jan and Marek entered the pub.'

The structure of (37a) corresponds to the one in (36). Under the DM analysis, the agreement in (37a) is plural because the first conjunct and the *i*-phrase have undergone both Concatenate and Label, which makes them an internally inaccessible atomic unit with a plural number feature.[14]

On the other hand, the structure of the sentence in (37b), where the agreement with the coordinate subject is singular, is the one in (38) below:

(38)



Here, (as suggested by Larson 2012 for Arabic) the first conjunct and the *i*-phrase have undergone only Concatenate. The coordinate complex *Jan i Marek* has not undergone Label and thus, as a whole, it is not a targetable atomic entity and, as such, cannot serve as an external argument to a verb (it cannot be a subject). On the other hand, the DP *Jan* can serve as an external argument because it is a targetable atomic entity (it is a maximal projection and, in order to at least Concatenate with the *i*-phrase, must have undergone Label). The head V moves to a higher position above the subject (which results in a VS order) and T agrees with the DP *Jan* as the only element in its c-command domain available to agree with because the *i*-phrase and its contents are

[13] For more discussion on the plural/singular variation in such sentences, see, for example, Larson (2012:2-10), Lorimor (2007:20-60) and Bhatia (2011:76-214), who provide an overview of some of the possible analyses of the phenomenon.

[14] Here, we assume that the plural number of the coordinate complex is a sum of two singular features of the conjuncts. However, this simple solution is far from perfect. As observed by Büring (2002), a plural coordinate complex that consists of two singular conjuncts, e.g. DPs, cannot always be treated as a typical plural DP. For instance, *one of* can be followed by a plural noun or pronoun (a plural DP) but not by a coordinate complex (which is supposed to function as a plural DP):

(i) a. One of them entered the pub.
b. *One of Jan and Marek entered the pub.

invisible to T. In other words, the only element in (37b) that can be Merged (Concatenate + Label) with the verb is the singular DP *Jan*, which results in a singular number on the verb.

4 Conclusions

To conclude, none of Zhang's (2010) arguments discussed is strong enough to effectively support the complementation structure of coordination. Firstly, the immobility of *and*-phrases does not prove that they are intermediate projections, they may as well be adjuncts (maximal projections). Secondly, interactions between coordinators and second conjuncts only prove that the coordinator is the head and the second conjunct is a complement, which is the case in both structures. Finally, feature percolation as Zhang's (2010) solution to the problem of the categorial make-up of coordinate complexes seems hardly acceptable.

Therefore, the adjunction analysis appears more appropriate for Polish coordination than the complementation analysis. Analyzing Polish coordination as adjunction is motivated by many resemblances in characteristics and behaviour between traditional adjuncts and *i*-phrases. Assuming an adjunction structure for Polish coordination makes it possible to analyze it under Hornstein's (2009) theory of DM, which produces rather successful results in accounting for Polish patterns of verbal agreement with coordinate subjects. However, it fails to account for the structure of sentences with coordinate complexes whose first conjunct and *i*-phrase are separated by some element. Accounting for the structure of such sentences seems to be better achieved by means of stripping.

On the whole, although Polish coordination appears to have the adjunction structure, analyzing it under Hornstein's (2009) theory of DM produces inconclusive results, calling for further research.

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