

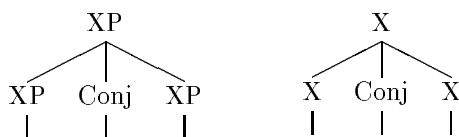
# Asymmetry of Coordination

Hal Daumé III  
Ling530 - Generative Syntax  
18 December 2001  
Final Paper

*The standard syntactic analysis of coordination gives equal value to both conjoined elements, and treats both elements equivalently. Nonetheless, in many languages (even English), coordination is much more than simply taking two constituents of the same type (or possibly not) and putting a conjunction between them, yielding a trinary branching node. In this paper I begin with an analysis of coordination in general, present cross-linguistic arguments in its favor, and finally discuss how this structure can account for otherwise unexplained raising data.*

## 1 Introduction

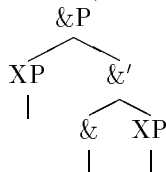
Standard analysis of conjunction results in phrase structures like the following:



These structures are less than desirable for a number of reasons:

- 1.They are not binary branching.
- 2.They do not conform to X-Bar theory.
- 3.They imply syntactic and semantic equality between the two conjoined elements.
- 4.They do not extend well to  $n$ -ary conjunction (for  $n \geq 3$ ).

Issues 1 and 2 are well known in the literature. One attempt to solve them, given in (Munn, 1993) was to propose the following structure:



Unfortunately, this structure has problems of it's own. Somehow, we would like to know what type of structure the &P is (for instance, in the case of coordinating two DPs, we would like to treat the &P like a DP). It is also not theoretically clear why one XP should be the specifier and the other the complement of the head. This is, of course, analogous to the original treatment of verbs: having an internal argument sitting in complement position and an external argument sitting in specifier position, an approach which has since been abandoned.

Moreover, in languages where coordination of different types is driven by different lexical conjunctions – Japanese, for instance – it is unclear why the head of an &P could select for different complements, depending on what exactly the head is. For languages where this differentiation does not exist, we simply have multiple conjunctions in the lexicon, all of which are phonetically identical (since we're now strict lexicalist, this is reasonable).

Other proposed structures include the following:

[<sub>XP</sub> [<sub>XP</sub> and <sub>XP</sub>] [<sub>XP</sub> and <sub>XP</sub>] [<sub>XP</sub> and <sub>XP</sub>]]  
 (Lakoff and Peters, 1969)

[&P <sub>XP</sub> [&' [& and] [&P <sub>XP</sub> [&' [& and] <sub>XP</sub>]]]  
 (Johannessen, 1998)

[&P [&' & <sub>XP</sub>]] [&P [&' [& (and)] <sub>Mary</sub>] [&P [&' [& and] <sub>XP</sub>] (too)]]  
 (Collins, 1998)

[<sub>XP</sub> <sub>XP</sub> [&P & [<sub>XP</sub> <sub>XP</sub> [&P [& and] <sub>XP</sub>]]]]  
 (Munn, 1993)

[&P <sub>XP</sub> [&P & [&P <sub>XP</sub> [&P [& and] <sub>XP</sub>]]]]  
 (Kayne, 1994)

[<sub>DP</sub> [<sub>DP</sub> [<sub>DP</sub> [<sub>DP</sub> (they)] [&P & <sub>DP</sub>]]] [&P & <sub>DP</sub>]] [&P & <sub>DP</sub>]]  
 (Munn, 1993) (Progovac, 1996)

[<sub>TP</sub> <sub>XP</sub> [<sub>T'</sub> [<sub>T</sub> and] [<sub>TP</sub> <sub>XP</sub> [<sub>T'</sub> <sub>T</sub> [<sub>VP</sub> saw the movie]]]]]  
 (Camacho, 1997)

## 2 An Analysis of English Conjunction

I will present a brief analysis of conjunction at the NP, DP, VP and IP levels. This is easily extended to other projections with no additional ramifications.

I must first note common data and the issues raised by it:

### 2.1 Introductory data

The most frequently cited data related to coordination has come to be known as Ross' Effects (Ross, 1967):

- (1) a. John<sub>i</sub> left, and he<sub>i</sub> didn't even say goodbye.
- b. John<sub>i</sub> left. And he<sub>i</sub> didn't even say goodbye.
- c. \*John<sub>i</sub> left and. He<sub>i</sub> didn't even say goodbye.

This data goes to show that the conjunction forms a constituent with the conjunct immediately following it, and not the one preceding it.

- (2) a. John read a book yesterday, and the newspapers.
- b. \*John read the newspapers yesterday, the book and.

This shows conjoined-phrase extraposition. We see that this evidence further supports the conclusion that the conjunction and the following conjunct form a constituent. Finally:

- (3) a. I bought jam, bread, etc.
- b. \*I bought jam, bread, and etc.

These data show that "etc" replaces the last conjunct and its conjunction together, yet more evidence that these two form a constituent.

A more controversial issue is that of c-command. Most theories of coordination show some sort of c-command relationship between conjuncts (usually a conjunct c-commands all the conjuncts that follow it). The first piece of evidence in favor of c-command is the

following:

- (4) a. John<sub>i</sub>'s dog and he<sub>i</sub>/him<sub>i</sub> went for a walk.  
 b. \*He<sub>i</sub>/him<sub>i</sub> and John<sub>i</sub>'s dog went for a walk.

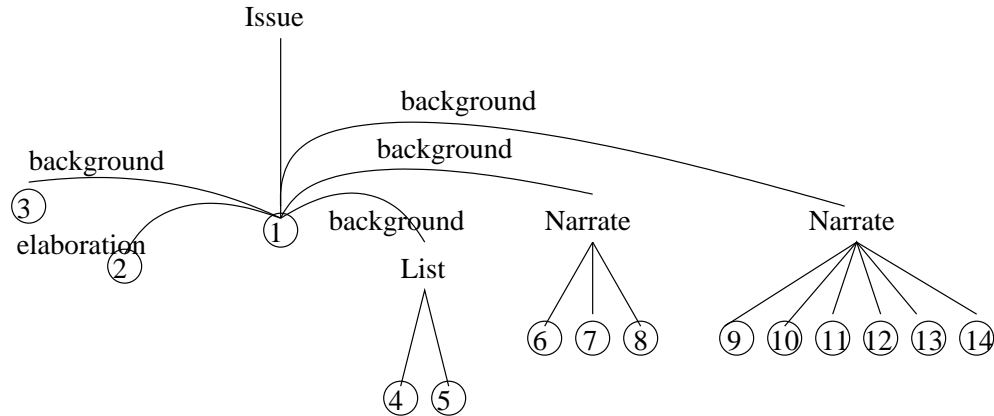
The latter is said to be ungrammatical because it incurs a Condition C violation. Proponents of no-c-command (see, for example, (Progovac, 1998)), however, have pointed out that the same effect can be seen across two sentences. Since syntactic relations like c-command cannot apply across sentence boundaries, something other than Condition C must be used to explain these ungrammaticalities and, whatever this thing is, could explain the ungrammaticality of the above two sentences (so the argument goes). A relevant sentence is:

- (5) \*He<sub>i</sub> finally arrived. John<sub>i</sub>'s dog went for a walk.

However, Progovac's analysis seems to miss a few important points. First of all, to say that c-command cannot apply across sentence boundaries is not entirely true. A more accurate statement would be: c-command is *ill-defined* across sentence boundaries. If an appropriate definition (by appropriate I mean, of course, that the definition should conform to our existing intuition of c-command and also be empirically valid) could be found, it is not unreasonable to be able to have cross-sentence Condition C violations. For instance, though not directly related, in her work on discourse structure, Fox has noted (see (Fox, 1987)) that the use of pronouns versus R-expressions gives strong evidence for hierarchy in the discourse structure. She notices, for example, that when an R-expression is first used, subsequent references to that referent are done using pronouns or other anaphora. However, it is common that at some point the R-expression is used again, for no syntactic or semantic reason. She has found a very strong correlation between the reuse of the R-expression with the beginning of a more highly adjoined discourse unit. Consider, for example, the following text:

- [<sub>1</sub> James S. Albertson has been appointed acting academic vice president by the Regents following President Saxon's recommendation.]  
 [<sub>2</sub> The appointment is effective from March 1 until a permanent academic vice president is named.]  
 [<sub>3</sub> Academic Vice President Donald C. Swain earlier was named president of the University of Louisville.]  
 [<sub>4</sub> Albertson will be responsible for academic planning and program review, student affairs, . . . , policies and UC Press.]  
 [<sub>5</sub> He is also responsible for UC Extension, summer sessions, . . . , and the California Post-secondary Education Commission.]  
 [<sub>6</sub> Albertson has been special assistant to Swain since 1978.]  
 [<sub>7</sub> For four years prior to that he was assistant academic vice president.]  
 [<sub>8</sub> He joined UC in 1973 as director of analytical studies.]  
 [<sub>9</sub> Albertson is a graduate in classics at St. Louis University.]  
 [<sub>10</sub> He earned his M.A. in philosophy there in 1953]  
 [<sub>11</sub> and received the Ph.D. in physics in 1958 at Harvard.]  
 [<sub>12</sub> He joined the faculty at Loyola University of Los Angeles in 1962]  
 [<sub>13</sub> and became chairman of the department before he left in 1968 to join the faculty of the University of Santa Clara as professor of physics.]  
 [<sub>14</sub> He was also academic vice president at Santa Clara. (*University Bulletin*, March 23, 1981)]

The structure she gives for this text is:



In this structure, we can see that the reuse of the R-expression occurs in units 4, 6 and 9, all of which represent segments not dominated by a node in which the expression has already been introduced. In fact, Fox found that in 93% of the cases where a full R-expression is used, that R-expression is in a new rhetorical unit; only 7% of the R-expressions used are in rhetorical units already containing the R-expression (these percentages based on 83 texts – for a more comprehensive analysis, see (Dan Cristea and Tablan, 1999) which further backs up this argument). Thus, a perhaps reasonable extension of the definition of *c-command* would be something like the following:

**C-Command:**  $\alpha$  *c-commands*  $\beta$  iff

$\alpha$  and  $\beta$  fall in the same sentence and  $\gamma$  dominates  $\beta$  where  $\gamma$  is the lowest branching node dominating  $\alpha$ .

or  $\alpha$  and  $\beta$  fall in different sentences and the sentence containing  $\beta$  is a descendant (in the discourse tree) of the sentence containing  $\alpha$ .

This redefinition may or may not turn out to be appropriate; however, it is important to note that such a definition is easy to make and is a simple extension of the prior definition (for  $\alpha$  and  $\beta$  in the same sentence, this definition is equivalent to the standard definition of *c-command*). The point is that just because *c-command* *hasn't* been defined over multiple sentences doesn't mean it cannot reasonably be. And under such a definition<sup>1</sup>, we can explain the ungrammaticality of “\*He<sub>i</sub> finally arrived. John<sub>i</sub>'s dog went for a walk.”

Returning to arguments for *c-command*, perhaps the strongest evidence comes from quantifier binding, which is known to require *c-command*:

- (6) a. Every<sub>i</sub> boy and his<sub>i</sub> dog went for a walk.  
 b. \*His<sub>i</sub> dog and every<sub>i</sub> boy went for a walk.

The argument here is that in order for “his” to be bound by “every” in (6-a), “every” must sit in a *c-commanding* position. The prototypical analysis of this type of coordination is that the quantifier moves up so as to be in a *c-commanding* position. However, the quantifier cannot move all the way out of the conjoined phrase; otherwise (6-b) would also be acceptable. Progovac (in (Progovac, 1998)) argues against this on two accounts, first citing some data from (Hornstein and Weinberg, 1981) about anaphoric epithets and secondly on possessive-reflexives.

<sup>1</sup> If I haven't made it sufficiently clear, I'm *not* claiming the above is the correct definition of *c-command*, or even that it's a good one. My only point is that such a definition can be made and is empirically motivated – for further empirical evidence, again, see the corpus analysis done in (Dan Cristea and Tablan, 1999).

- (7) a. John criticized every senator<sub>i</sub> in private while praising the bastard<sub>i</sub> in public.  
 b. \*Bill<sub>i</sub> expected that the bastard<sub>i</sub> would win.

The argument based on this data is that the epithets can function as bound variables but this is only possible if the quantifier c-commands the epithet from an A' position, but that its trace doesn't c-command the epithet from an A position. However, there are two problems with this analysis. First of all, most speakers I spoke with thought (7-a) was marked (one even suggested that if "every" were replaced by "the" it would be okay, but that of course would defeat the purpose of the exercise). Moreover, if (7-b) were changed to something and given appropriate context, it is rendered fully acceptable (or at least as fully acceptable as the prior):

- (8) He knew he could perform the duties of mayor better than anyone else. Bill<sub>i</sub> knew that the most deserving candidate<sub>i</sub> would win.

The second argument from Progovac is based on data from Serbo-Croatian (but also exists in English):

- (9) \*Jovan i svoja zena su stigli.  
 John and self's wife are arrived  
 "John<sub>i</sub> and his<sub>i</sub> wife have arrived."  
 (10) \*Either John<sub>i</sub> or a picture of himself<sub>i</sub> will suffice.

The first piece of data isn't relevant, as the possessive reflexive needs an accessible subject, which "Jovan" isn't, in this structure. The ungrammaticality of the English sentence is questionable at best. Many speakers find it marginal, but not terrible. Moreover, it is well known that so-called Picture-NPs tend to behave differently than normal NPs when it comes to binding (for instance, "John saw a picture of himself." versus "\*John saw a brother of himself."), which means there's more to be said about *them*, not coordination.

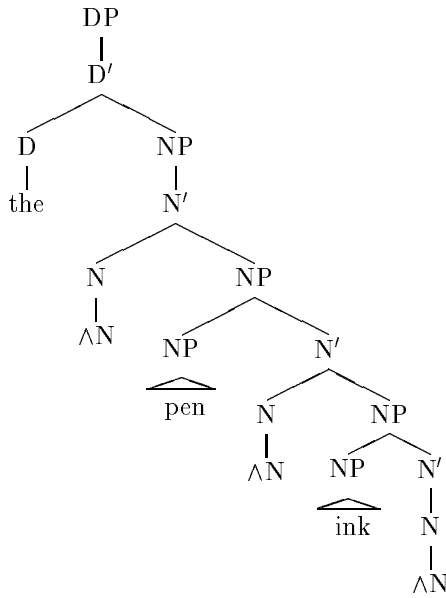
## 2.2 NP coordination

Consider the phrase "The pen and ink." This would traditionally have the structure: [<sub>DP</sub> The [<sub>NP</sub> [<sub>NP</sub> pen] and [<sub>NP</sub> ink ]]]. We propose that, in English, there is a lexical element "∧N" (pronounced "and") which is a noun. This noun has the (somewhat unique, at least for nouns) property that it selects for a noun phrase as a complement<sup>2</sup> and another noun phrase as a specifier<sup>3</sup>. According to this analysis, the NP under consideration would have the following structure:

---

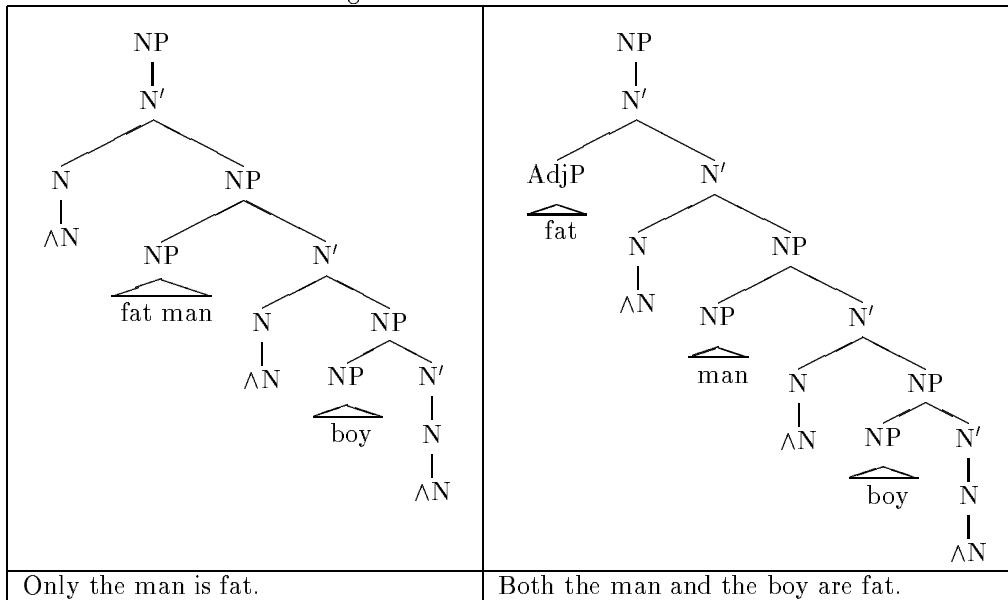
<sup>2</sup> moreover, this is an NP that's headed by another such conjunction

<sup>3</sup> some English speakers don't like NP coordination – to accommodate those speakers we simply say they don't have the appropriate lexical item "and" as a noun



In this structure, the c-command properties observed above still hold, yet we have the DP selecting for an NP as we would expect. This is very much like the VP-shells we have seen for handling arguments to verbs<sup>4</sup>. In English, when we go to PF, only the final “and” feature gets pronounced. However, in a language like Japanese, they would all be pronounced (more on this later).

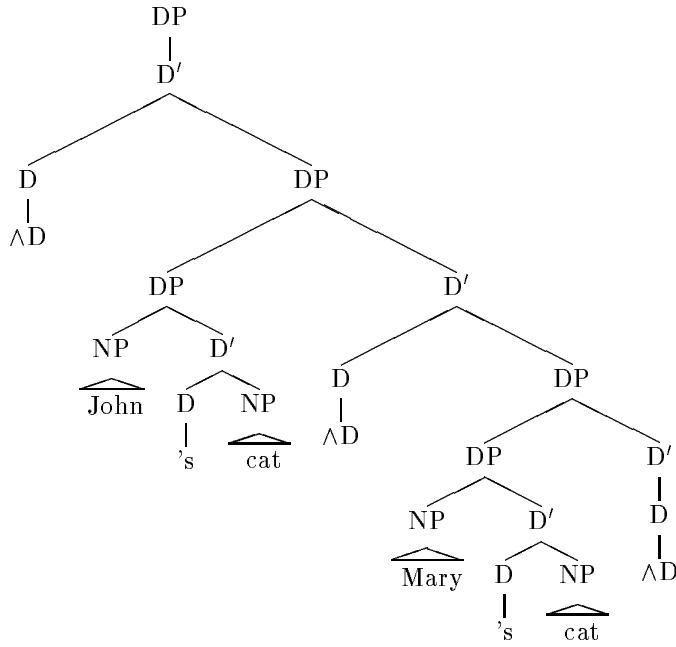
To accommodate a phrase like “(the) fat man and little boy” we simply posit that “fat” is an adjunct to “man” and “little” is an adjunct to “boy” in a structure isomorphic to the above. However, in a phrase like “the fat man and boy”, wherein it is structurally ambiguous whether the boy, too, is overweight, our structure provides a nice solution. We have either of the following structures:



<sup>4</sup> This similarity is not accidental: semantically, the various conjoined elements are (often) arguments of an *And* predicate.

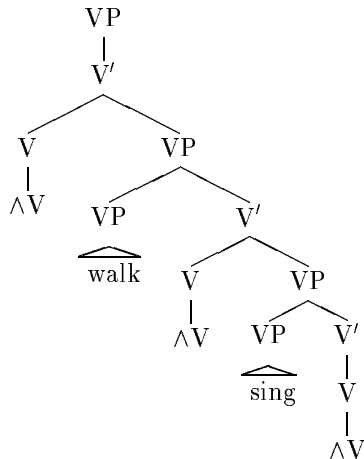
**2.3 DP coordination**

We can apply the same analysis to coordinated DPs. To be sure our structure is as resilient as possible, we will show an analysis of DPs with both specifier and complement filled. Our phrase of choice is “John’s cat and Mary’s dog.” Note that here the  $\wedge D$  element sitting in the  $D^0$  positions is not the same as the  $\wedge N$  one sitting in the  $N^0$  positions above (though they both get pronounced as “and”).

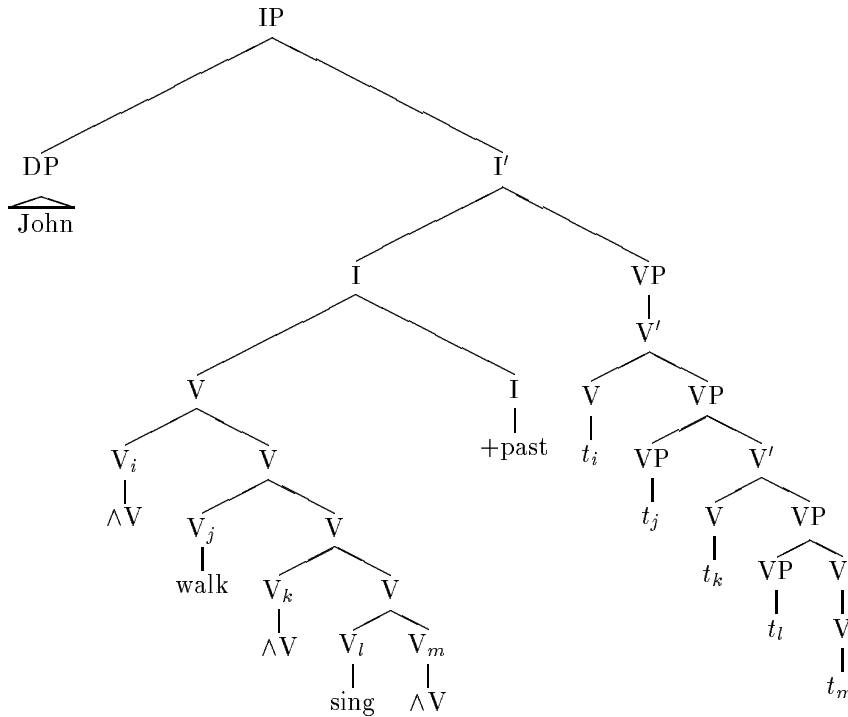


**2.4 VP coordination**

Coordinated VPs can be structured identically, for a phrase like the VP in the sentence “John -ed [walk and sang].”



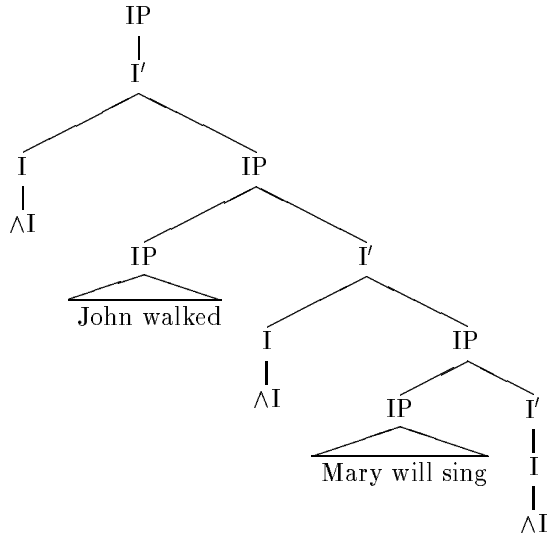
This presents an obvious issue: if  $V^0$  needs to move up to  $I^0$  to get tense, how does that happen here. The solution is to change nothing and simply stipulate that all  $V^0$  heads move as before, yielding a structure like the following:



This may seem like a highly awkward structure. However, it does serve to explain some otherwise unexplained data with respect to shared internal arguments. I will discuss this more in section 7.

**2.5 IP coordination**

And finally, IPs can be structured like this for full-sentence coordination: “John walked and Mary will sing.”



One way to tell whether a verbal coordination happens at the VP- or IP-level (when the tense is the same) is to try to use the conjunction “then” instead of “and.” If “then” is acceptable, the coordination is probably at the VP level:

- (11) a. Bill left and went to the store.

- b. Bill left then went to the store.
- (12) a. Bill left and will come back.  
b. ?Bill left then will come back.
- (13) Bill left and then went to the store.

In other words, “and” is the phonetic realization of, among others,  $\wedge I$  and  $\wedge V$ , but “then” is only the realization of  $\wedge V$  (or at least it is dispreferred as the pronunciation of  $\wedge I$ ). More needs to be said about double coordination, like that in (13), but that is beyond the scope of this discussion for now.

### 3 An Analysis of Japanese Coordination

In addition to analysing coordination in English, I have chosen to apply my analysis to Japanese. My choice of Japanese is for a few reasons. First, coordination in Japanese is done different depending on the type of the coordinated phrases. Second, Japanese differs from English in terms of how many of the conjunctions actually get pronounced. Third, since Japanese is often considered “very different” from English, showing how easily our structure accommodates Japanese gives some credibility to the solution.

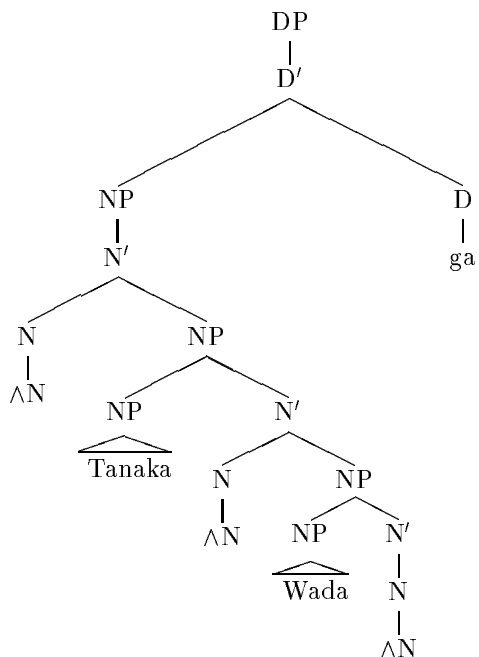
Japanese does not have DPs in the same way that English does (there is no distinction between definite and indefinite, syntactically; possession is done as nominal modification). However, it does have subject-, object- and dative-markers which can be viewed as DP heads. However, coordination cannot occur at the DP level, so I will analyze only NP, VP and IP coordination. However, since Japanese adjective coordination is markedly different from English, I will briefly touch on that.

#### 3.1 NP coordination

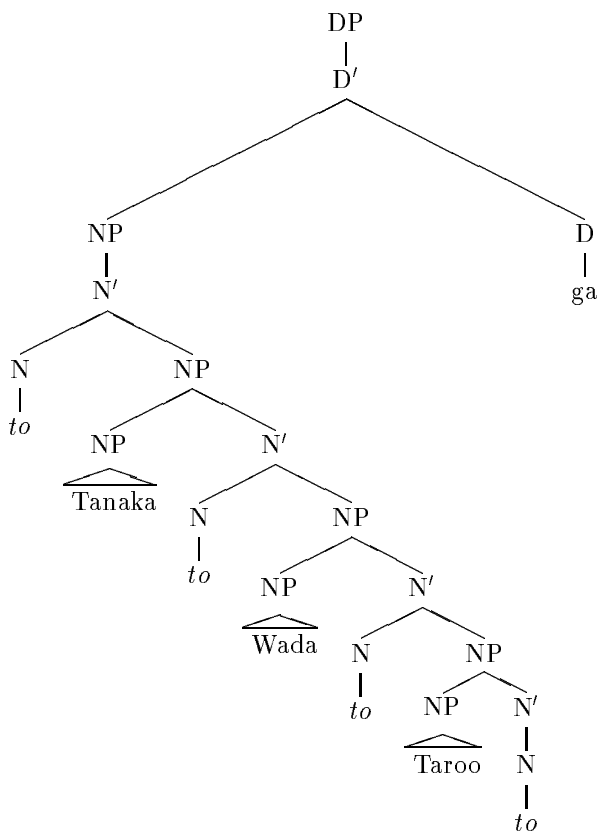
We consider first simple NP coordination:

- (14) Tanaka to Wada ga kiita.  
Tanaka and Wada *nom* came  
“Tanaka and Wada came.”

In this, the subject-marker “ga” is distributed across both conjunction. We propose the following structure:



In this structure, like in then English ones, only the middle *to* gets pronounced. However, when there are more than two conjuncts, the situation differs from that of English:



In this, the both of the middle two  $\wedge$ Ns get pronounced (as “to”). In fact, in Japanese, all but the first and last always get pronounced<sup>5</sup>.

### 3.2 VP coordination

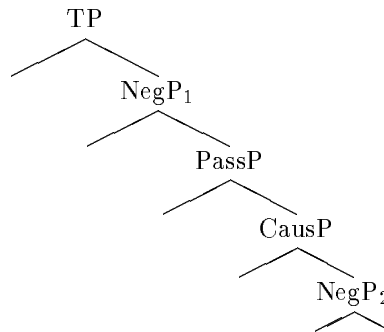
There are two basic types of verbal coordination in Japanese, one quite different from anything observed in English, the other more like English IP coordination. In fact, one of the types of verbal coordination appears to be simple VP coordination while the other is IP coordination. I will present them both here and then analyse them separately.

- (15) ocha wo non- dari soba wo tabe- tari tomodachi to hanashi- tari shi- ta.  
 tea *obj* drink  $\wedge V_1$  soba *obj* eat  $\wedge V_1$  friend to talk  $\wedge V_1$  do *past*.  
 “I drank tea, ate soba and talked to my friends (... among other things).”
- (16) ocha wo non- de soba wo tabe- te tomodachi to hanashi- ta.  
 tea *obj* drink  $\wedge V_2$  soba *obj* eat  $\wedge V_2$  friend to talk *past*.  
 “I drank tea, (then) ate soba and (then) talked to my friends.”

These two sentences differ somewhat semantically. (15) does not imply any ordering to the drinking/eating/talking events, while (16) imposes a strict order. (15) is somewhat more whimsical, listing things you did, but not necessarily everything. (16) implies at least on some level that this is an exhaustive list.

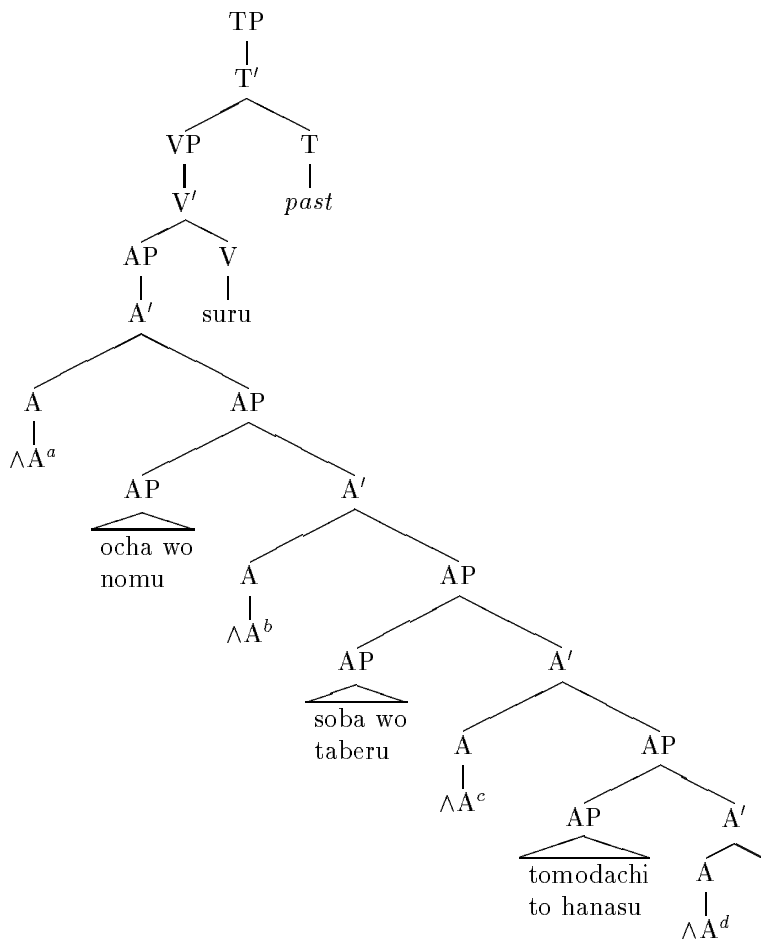
More importantly for our work, however, are the syntactic differences. In Japanese, almost everything turns out to be verbal morphology (aspect, negation, causality, passivity, hearsay, etc). In the construction shown in (16), each of the verbs may be marked in any way for these features except for aspect. The aspect of the final verb controls the interpreted aspect of the other conjoined elements. However, they can be marked for negation, causality, etc. In (15), they cannot be marked for tense, negation is usually allowed, causality, passivity, hearsay and others are only marginally acceptable, depending on the speaker. Thus, we can view (15) as a variety of AP coordination and (16) as BP coordination, where  $AP = NegP_1$  and  $BP \in \{NegP_1, PassP, CausP\}$  (depending on speaker) according to the structure shown in (17):

- (17) Japanese phrase structure:



We propose the following structure for (15):

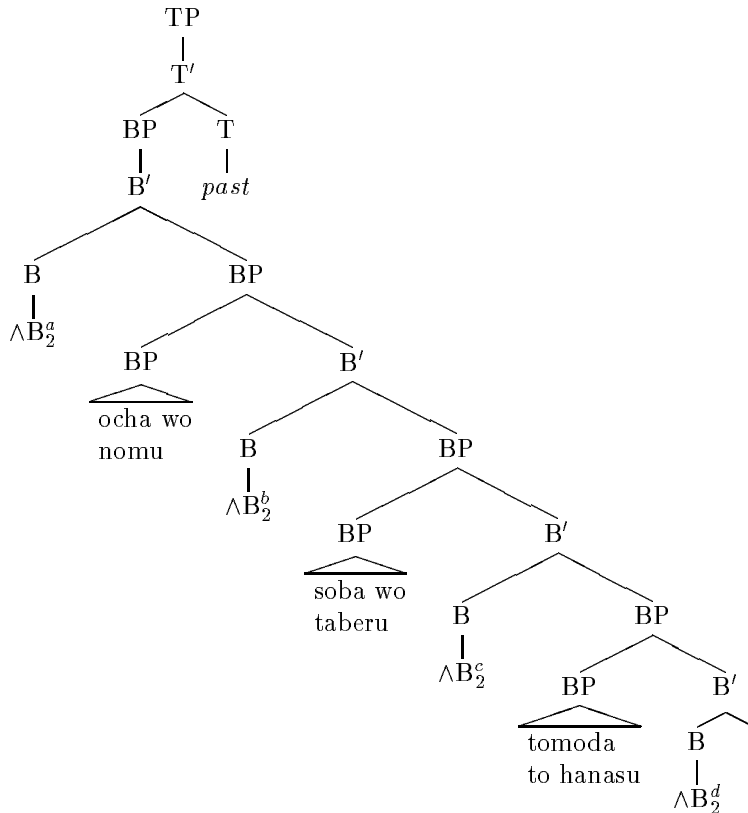
<sup>5</sup> compare “John, Mary, Bill, George and Fred will come” in English with “Tanaka to Wada to Taroo to Nakagawa to Shoji ga kiru” in Japanese



When going to PF,  $\wedge A^b$  raises to  $A^0$  of “ocha wo nomu” and the verb gets realized as “nondari.” Similarly,  $\wedge A^c$  raises up to “taberu” and  $\wedge A^d$  raises up to “hanasu.” As before  $\wedge A^a$  disappears at PF.

### 3.3 BP (IP) coordination

Analyzing sentence (16), we get the following structure:



The same raising phenomena that we observed in the previous structure happens here. Moreover, it is the final verb which raises up to  $T^0$  to get tense (as occurs in non-coordinated expressions in Japanese).

### 3.4 AdjP coordination

Adjective coordination in Japanese is quite similar to IP coordination. We have the following data:

- (18) yoku- te omoshiroku- te minshuutekina hon.  
 good  $\wedge$ Adj interesting  $\wedge$ Adj popular book  
 “The good, interesting, popular book.”

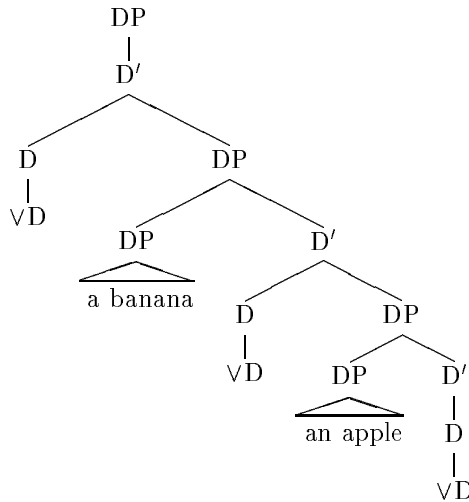
This can be analyzed to have the following structure:

[NP [<sub>AdjP</sub>  $\wedge$ Adj [i [<sub>AdjP</sub>  $\wedge$ Adj [omoshiroi [<sub>AdjP</sub>  $\wedge$ Adj minshuutekina [<sub>AdjP</sub>  $\wedge$ Adj e]]]]]]  
 hon]

where, at PF, each of the two internal  $\wedge$ As raises up to the previous  $\text{Adj}^0$  and changes “i” to “yokute” and “omoshiroi” to “omoshirokute” respectively. The other two don’t get pronounced.

### 4 Realizing the Other Conjunctions

One obvious point of contention with this theory of coordination is that we have all these extra conjunctions sitting at heads that don’t get pronounced. This, however, isn’t exactly the case. Observe the structure of the DP in “I would like [either a banana or an apple.]” (the element  $\vee$ D is analogous to  $\wedge$ D, except it corresponds to disjunction rather than conjunction):



In this, the first  $\sqrt{D}$  is realized phonetically as “either”, the second as “or” and the third is dropped. Why one should get realized as “either” and the other as “or” is, of course, a good question. However, this by itself is not sufficient evidence to proclaim this as a poor solution. For instance, in French conjunctions like the one above, both “either” and “or” are realized identically:

- (19) Je voudrais ou un banane ou une pomme.  
 I would-like or a banana or a apple  
 “I would like either a banana or an apple.”

On another note, even in English there are examples when the first conjunction gets pronounced as “and” (though some stress may be considered necessary). Consider the following conversation:

- Mary: Who came?  
 (20) Fred: John and George came.  
 John: AND Alice!

Moreover, it is not altogether uncommon to have all the intermediate conjunctions spelled out in English (for instance “John and Mary and George and Bill all came.”). It is also worth noting that the final conjunction can also be pronounced as in “John and Mary both came.” The ability to account for all of these phenomena without extending our structure is quite pleasing.

## 5 The Case of Features

The data regarding the cause/gender/number/class features coordinated noun phrases take on are confusing to say the least. There is a very long, systematic discussion of this issue in (Dalrymple and Kaplan, 2000). Even though this paper is based on the LFG framework (Kaplan and Bresnan, 1982), the data show very strange coordination effects, which deserve analysis in any linguistic framework. For instance, in Icelandic<sup>6</sup>, we have:

- (21) drengurinn og telpan eru preytt.  
 the-boy and the-girl are tired

<sup>6</sup> all data in this section taken from (Dalrymple and Kaplan, 2000)

“The boy and the girl are tired.”

- (22) maðurinn og barniðeru þreytt.  
 the-boy and the-baby are tired  
 “The boy and the baby are tired.”

- (23) ég sá á og lamb bæði svört.  
 I saw a-ewe and a-lamb both black  
 “I saw a ewe and a lamb, both black.”

In (16-18), “boy” is masculine, “girl” is feminine, “þreytt” expects a neuter subject, “baby” is neuter. “ewe” and “lamb” are both neuter, as is “svört”. From here we can establish the following general scheme for Icelandic gender agreement:

	<i>Masc</i>	<i>Fem</i>	<i>Neut</i>
<i>Masc</i>	Masc	Neut	Neut
<i>Fem</i>	Neut	Fem	Neut
<i>Neut</i>	Neut	Neut	Neut

The analysis of this data put forth in (Dalrymple and Kaplan, 2000) is that instead of simple features, sets of features are used and conjunction performs a union operation on these features. For instance, here, the masculine feature would be represented as  $\{M\}$ , the feminine feature as  $\{F\}$  and the neuter feature as  $\{M, F\}$ . If you go through the data, you can see that this works. It also makes some semantic sense. However, in Slovene, we see the agreement data, identical to Icelandic with one exception:

- (24) To drevo in gnezdo na njem mi bosta ostala v spominu.  
 that-tree and the-nest on-it to-me will remain in memory  
 “That tree and the nest on it will remain in my memory.”

In 19, “tree” and “nest” are both neither, but the verb “remain” is inflected for a masculine subject, yet the sentence is grammatical. We can establish the following analysis:

	<i>Masc</i>	<i>Fem</i>	<i>Neut</i>
<i>Masc</i>	Masc	Neut	Neut
<i>Fem</i>	Neut	Fem	Neut
<i>Neut</i>	Neut	Neut	<b>Masc</b>

This data show the agreement of two coordinated neuter phrases, whose combined features yield masculine agreement. Kaplan and Dalrymple put for an analysis of this data in which the features of the conjoined phrase come from the union of the features of the two conjuncts together with features on the conjunction itself. The specifics of how this works are largely inconsequential – the two conclusions are:

- the features of a coordinated phrase come from a combination of the features on each of the conjuncts together with features on the conjunction itself
- the feature behavior of conjoined phrases is very language specific

Assuming our structure, we can easily accommodate these two points. Because the conjunct and its associate conjunction always sit in a Spec/Head configuration, case assignment/valuation can be done as we have always done it in the past.<sup>7</sup>

<sup>7</sup> Dalrymple and Kaplan also note some unusual data in French:

- (i) La personne avec la barbe et Marie sont idiots/\*?idiotes  
 the person with the beard and Marie are idiots  
 “The person with the beard and Marie are idiots.”

## 6 Unlike Constituent Coordination

The issue of unlike constituent coordination has long been discussed in the literature, often with subsatisfactory solutions<sup>8</sup>. It should first be noted that unlike constituent coordination is not always allowed. For instance, it can be observed that when a theta role is assigned to the coordinated element, semantics must allow this theta role to be assigned to both:

- (25) a. John ate spaghetti with [a fork]<sub>instrument</sub>.  
 b. John ate spaghetti with [his friends]<sub>location</sub>.  
 c. \*John ate spaghetti with [a fork and his friends]<sub>???</sub>.

Moreover, when particle verbs are involved (see, for instance, (Fraser, 2000)), coordination of the objects is not allowed if one interpretation of the verb is with a particle, the other is with a full PP:

- (26) a. Bill picked up the phone.  
 b. Bill picked up his sister.  
 c. \*Bill picked up the phone and (\*up) his sister.

Lastly, as would be expected, structural position must be identical between the two conjoined elements:

- (27) a. I found a friend of Mary's handbag.  
 b. I found the manufacturer of Mary's handbag.  
 c. \*I found a friend of and the manufacture of Mary's handbag.

Thus, since like constituent coordination is not allowed under these circumstances, we should not expect unlike constituent coordination to be allowed either. We will thus focus on other examples:

- (28) John is [an American]<sub>NP</sub> and [proud of it]<sub>AdjP</sub>.

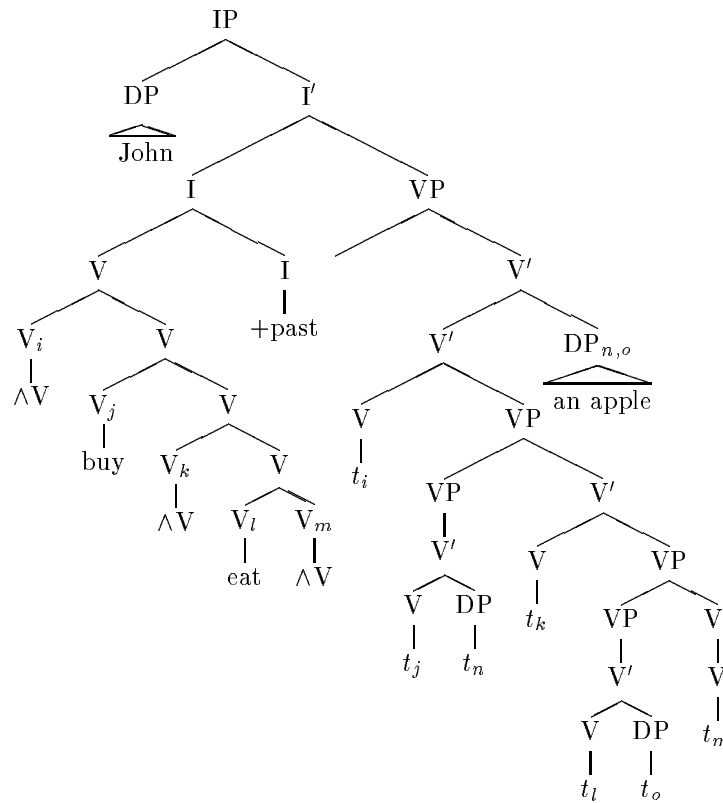
We propose the following structure for the object in (28).

---

Here we can see that the gender agreement between the conjoined phrase and the adjective is actually semantically based (the adjective is masculine, even though both conjuncts are marked feminine – the hypothesis is that a person with a beard must be a man and thus the agreement is semantic); such agreement is beyond the scope of this discussion as, to keep this paper of a somewhat reasonable length, we aren't talking about semantics.

<sup>8</sup> this discussion will focus exclusively on English, as unlike constituent coordination is not possible in Japanese: I hypothesize this is due to the fact that the conjunctions in Japanese differ depending on the type of element coordinated – this is backed up by observing that in Korean, which shares the same diversity of conjunctions as Japanese, and also does not allow unlike constituent coordination.





It should be noted that even though we have chosen to analyse this as VP coordination, it could also be IP coordination but with the same  $I^0$ . That it makes a difference is shown by the following data:

- (29) a. \*John bought with his allowance and ate an apple.  
 b. ??John bought with his allowance and will buy an apple.

Example (29-a) could either be VP or IP coordination, whereas (29-b) must be analyzed as IP coordination. Since in general we want to coordinate as little as possible (so as to have minimal duplication of structure), and since the first one is definitely terrible while the second one is only marginally bad (according to most speakers), we consider it VP coordination. Why this coordination would be bad returns us to the discussion we introduced when first discussing VP coordination. Presumably the movement of the  $V^0$  heads up to  $I^0$  is somehow blocked by the intervening PP. Consider, additionally, the following data:

- (30) With his allowance, John bought and ate an apple.

This suggests that when the PP has been fronted, whatever barrier existed has somehow been removed. Exactly why this should be the case has yet to be shown and, to constrain the length of this paper, shall not be discussed here, beyond the fact that it is possible that somehow the PP fronting forces the coordination to occur at the IP level:

- (31) ?With his allowance, John bought then ate an apple.

## 8 Conclusion

In this paper, we have presented a unique structure for coordination and argued in its favor, based on an involved analysis of c-command and various data taken primarily from English and Japanese. We have shown how the same structure can accommodate NP, DP, VP, IP and AdjP coordination in both of these languages. We've shown how features can percolate across this structure in a manner with which we are already comfortable, explained how unlike constituent coordination occurs (or, rather, why it does *not* occur in some languages), and given a brief discussion of shared internal arguments.

### Acknowledgments

The author would like to thank Kenji Yamada, Yuko Nakagawa and Yukiko Wada for Japanese grammatical judgments; Rob Pierry, Katherine Kurinsky, Alexander Fraser and Ryan Barrett for help with English grammatical judgments; Katherine Kurinsky also for French data; Alexander Fraser for answering questions on a few occasions; and Roumyana Pancheva for several enlightening discussions of the material.

### References

- Camacho, José. 1997. *The Syntax of NP Coordination*. Ph.D. thesis, University of Southern California.
- Collins, Chris. 1998. Alternative analysis of conjunction. Manuscript.
- Dalrymple, Mary and Ron Kaplan. 2000. Feature indeterminacy and feature resolution. *Language*.
- Dan Cristea, Nancy Ide, Daniel Marcu and Valentin Tablan. 1999. An empirical investigation of the relation between discourse structure and co-reference. *The 18th International Conference on Computational Linguistics COLING '2000*.
- Fox, Barbara. 1987. Discourse structure and anaphora. *Cambridge Studies in Linguistics*.
- Fraser, Alexander. 2000. The syntactic representation of particle verbs in modern english. Unpublished.
- Hornstein, Norbert and Amy Weinberg. 1981. Case theory and preposition stranding. *Linguistic Inquiry*.
- Johannessen, Janne Bondi. 1998. Coordination. *In Press. Oxford: Oxford University Press*.
- Kaplan, Ron and Joan Bresnan. 1982. Lexical-functional grammar: A formal system for grammatical representation. In *The Mental Representation of Grammatical Relations*.
- Kayne, Richard S. 1994. The antisymmetry of syntax. *Cambridge: MIT Press*.
- Lakoff, George and Stanley Peters. 1969. Phrasal conjunction and symmetric predicates. In *Modern studies in English: Readings in Transformational Grammar*. Prentice-Hall.
- Mann, William and Sandra Thompson. 1988. Rhetorical structure theory: Toward a functional theory of text organization. *Text*.
- Munn, Alan. 1993. *Topics in the Syntax and Semantics of Coordinate Structures*. Ph.D. thesis, University of Maryland.
- Progovac, Ljiljana. 1996. (and) coordination, and coordination. Paper Presented at LSA Annual Meeting, San Diego.
- Progovac, Ljiljana. 1998. Structure for coordination (parts i and ii). *Glott International*.
- Ross, John R. 1967. *Constraints on Variables in Syntax*. Ph.D. thesis, MIT.