

# Syntactic Relations

I. In search of  
elementary units

# Elementary units of syntactic structure

- Traditional grammar operates with constructions (*ablative absolute, accusativus cum infinitivo, accusativus duplex, idāfa...*)
- These have been rehabilitated in cognitive grammar and, most explicitly, in Construction Grammar

# Structuralism

- The search for elementary units of syntactic structure (comparable to the elementary features in phonology) seems to be a preoccupation inherent to structuralism and (perhaps) a transient fashion in linguistic description.

# Two types of structural syntax

- Phrase structure syntax, introduced by Bloomfield 1935
- Dependency syntax, introduced by Tesnière 1959
- According to Mel'čuk, dependency is the basic principle underlying traditional syntax especially in Central and Eastern Europe, whereas phrase structure syntax is a specifically Anglo-Saxon 20th century invention (though W. K. Percival traces it back to the late 19th century).

# What you have always known

The principle of phrase structure is often assumed to be self-evident and intuitively clear to everybody:

“Anyone who knows English will recognize immediately that in our model sentence [*My friend came home late last night*] *last night* forms a phrase, as do *my friend* and *came home* [...] The phrases *my friend*, *came home* and *last night* are also constituents (though not ultimate constituents) of the sentence” (J. Lyons, *Generative Syntax*, in: *New Horizons in Linguistics*, Pelican Books, 1970)

# What do speakers recognize?

Others also appeal to the intuitive knowledge of the speaker without assuming it to involve the principle of phrase structure:

- “*Leo and Alan* is a phrase of English, and so is *and Alan*, while \**Leo and* is not”
- “a phrase must be perceived by speakers as existing in the language, whatever that means.” (Igor’ Mel’čuk)

# Equivalence

- Hays 1965: phrase structure grammar and dependency grammar are weakly equivalent, i. e.
  - Both models succeed in describing more or less the same facts of syntactic structure
  - Not every statement formulated in terms of one model is restatable in the terms of the other model.

# Two ends of a stick?

- “Where dependence is least problematic it is often [...] within phrases in the sense defined by Bloomfield; and it is within such sequences that arguments about dependence, or equivalently headship, have arisen”  
(Matthews 2007, 114)



# Further developments

- The notions introduced by the structuralists were inherited by post-structuralist (formal and functionalist) models of syntax. Generative grammar formalises Bloomfield's immediate constituents: “Customarily, linguistic description on the syntactic level is formulated in terms of constituent analysis (parsing)” (Chomsky 1957).

# Further developments

- Functionally or cognitively oriented theories of language often prefer dependency as the basic principle of syntactic structure (cf. Word Grammar, Hudson 1984, Functional Generative Grammar, Sgall *et al.* 1986), or ignore elementary syntactic relations altogether (Role and Reference Grammar, 1980). In parsing, dependency grammar seems to be about as popular as phrase structure grammar is.

# Monsieur Jourdain and Dependency Grammar I

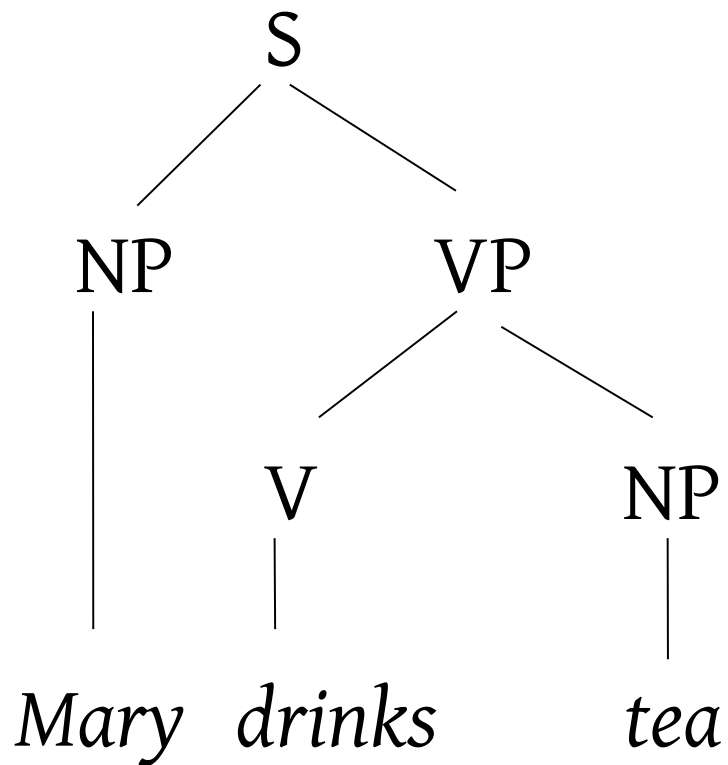
- Mel'čuk also describes as dependency-based a number of models whose authors reject constituency but do not declare allegiance to dependency grammar, e. g., Relational Grammar (Perlmutter 1983).
- In fact, these authors simply ignore elementary syntactic relations because they take more complex units – grammatical relations such as subject, object etc. – as basic and primitive units of syntactic description.

# Monsieur Jourdain and Dependency Grammar II

- It is true that grammars rejecting constituency are similar to Dependency Grammar in that
  - they do not operate with VPs,
  - they do not believe it possible to define grammatical relations (subject, object) configurationally,
  - they do not divide languages into configurational ones (with VPs) and non-configurational ones (without VP's).

# Configurationality I

Chomsky 1957, 1964:



# VP or no VP?

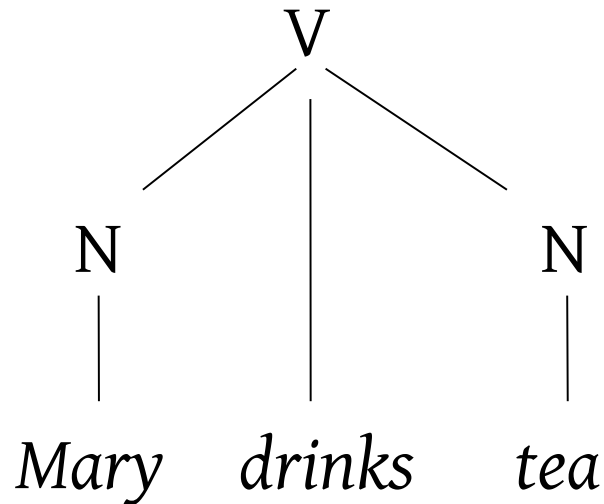
- In phrase structure grammar the syntactic relation between verb and object(s) is considered to be closer than that between verb and subject; to prove this, tests are devised which yield good results in English, French and German and markedly worse results in Warlpiri, Latin, Lithuanian etc.

# Configurational definitions of grammatical relations

- If we recognise VPs, subjects need not be defined: the subject is simply NP {S, VP}, i. e. the constituent combining with VP to yield S.
- Similarly, the object is NP {VP, V}.
- Subject, object etc. are therefore derivative notions: saying that an NP is a subject does not tell us anything more than saying that NP is defined by the configuration {S, VP}.

# Non-configurational definitions I

In Dependency Grammar, Grammatical Relations cannot be defined configurationally: in the syntactic configuration, there is no difference between subject and object:





# Non-configurational definitions II

- If one is unable to define subject and object configurationally and does not want to recognise them as primitive (undefinable) entities, one must somehow characterise them
  - functionally (in terms of semantic roles, pragmatic roles...),
  - or in terms of hierarchies (obliqueness).

# (Non-)configurational languages

- In the sense of not operating with VPs, dependency syntax makes less substantive assumptions than phrase structure syntax.
- In the generative literature, a distinction has been made between configurational (English, French...) and non-configurational (Warlpiri, Japanese...) languages (from a dependency perspective configurationality is not an issue).

# Underlying configurationality

- In recent generative literature underlying configurationality is generally assumed
- The Minimalist formalism is rich enough to offer an *ad hoc* solution to every reported instance of non-configurationality, deriving it from an underlying configurational structure (cf. M. C. Baker, The Natures of Nonconfigurationality, in Baltin & Collins, *The Handbook of Contemporary Syntactic Theory*, Blackwell 2001, 407–438)

# Where does configurationality come from?

- A conceivable source would be the principle of binary branching:  $S \rightarrow NP VP$ .
- Yet the principle of binary branching was not absolutised in early generative grammar, where  $VP \rightarrow V NP NP$  was possible. So why not  $S \rightarrow NP V NP$ ?
- So the ultimate source is probably school grammar, where sentences are divided into ‘subject’ and ‘predicate’. This was explicitly rejected only by Tesnière.

# The problem of linear arrangement

Phrase Structure Syntax promises more than Dependency Syntax. In addition to grammatical functions, it also accounts for linear order:

*[Mary [saw [that picture]]]*

Syntactic derivations can, in principle, be falsified by facts pertaining to linear structure.

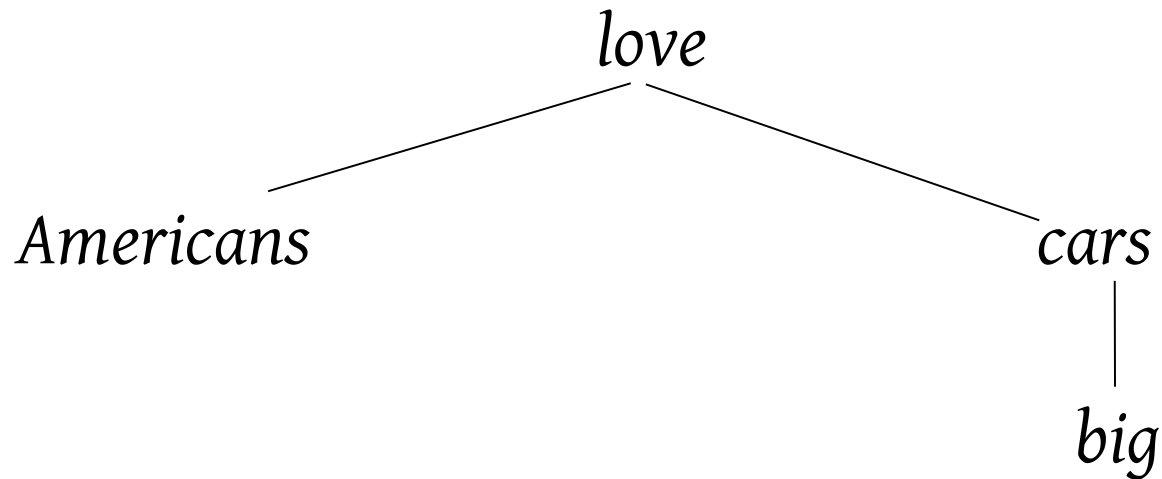
Discontinuous constituents are a problem in constituency-based syntax and must be dealt with by means of movement rules.

# Dependency and linear order

- Dependency is not assumed to be readable from linear structure;
- Linearisation must be accounted for by another component of the grammar, distinct from dependency;
- Hypotheses concerning dependency cannot, in principle, be falsified by facts pertaining to linear order (apparently a drawback).

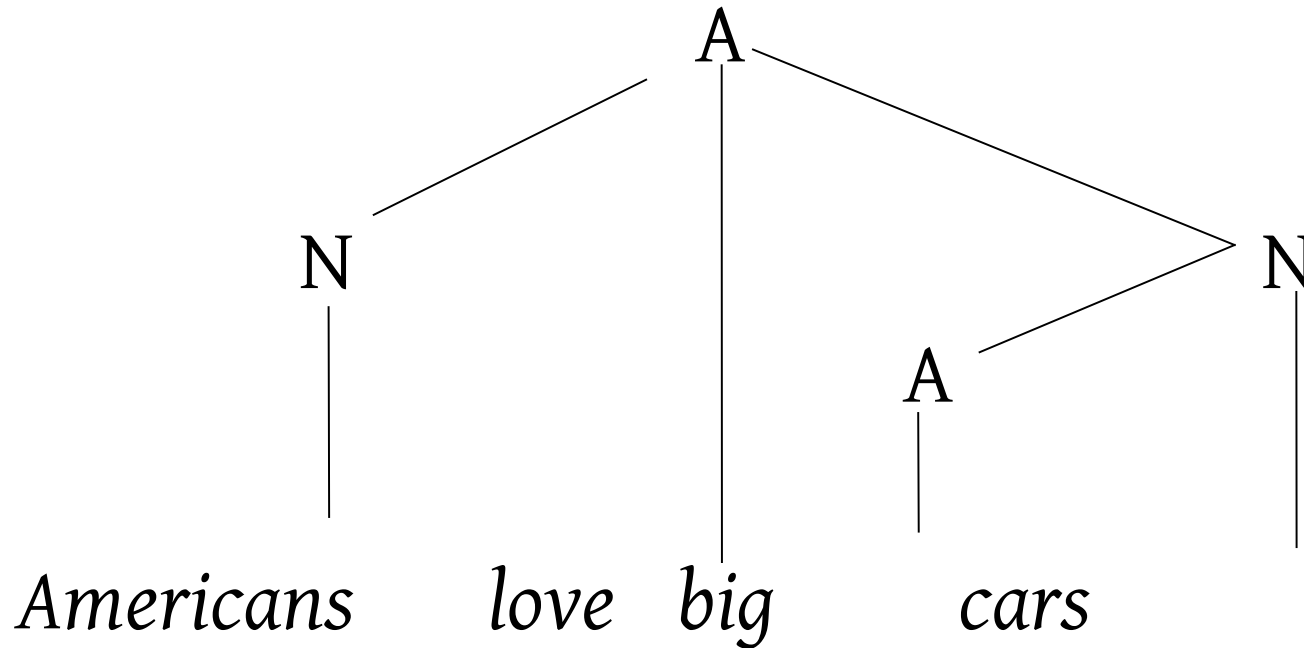
# Word order in Dependency Grammar

Tesnière's 'stemma's' do not refer to linear order:



# Projecting onto linear structure

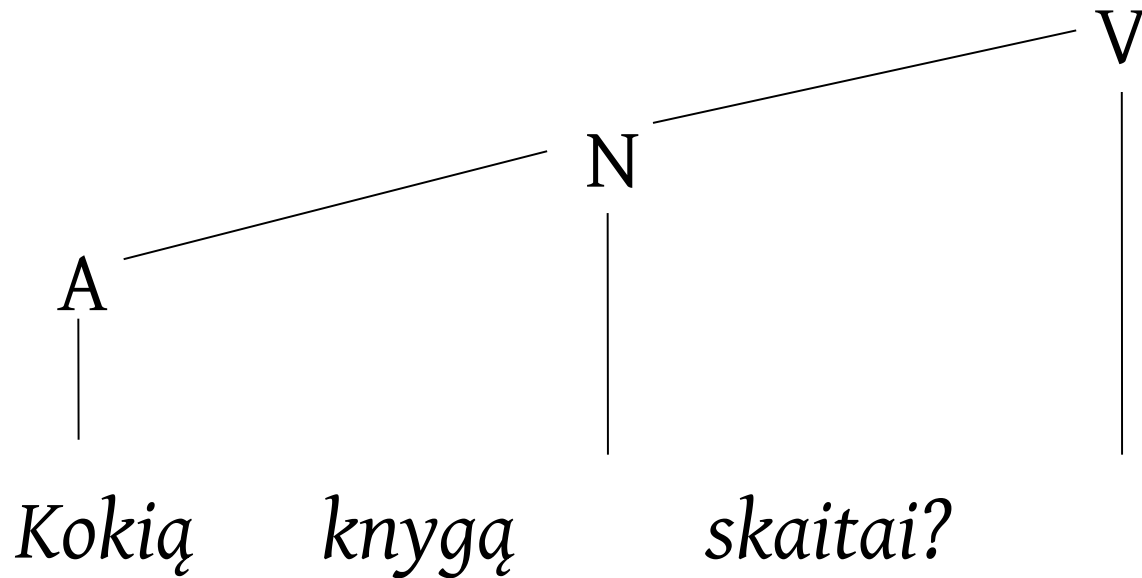
From Hays 1964 onwards, dependency trees are drawn so as to project on linear order:





# Projective structures

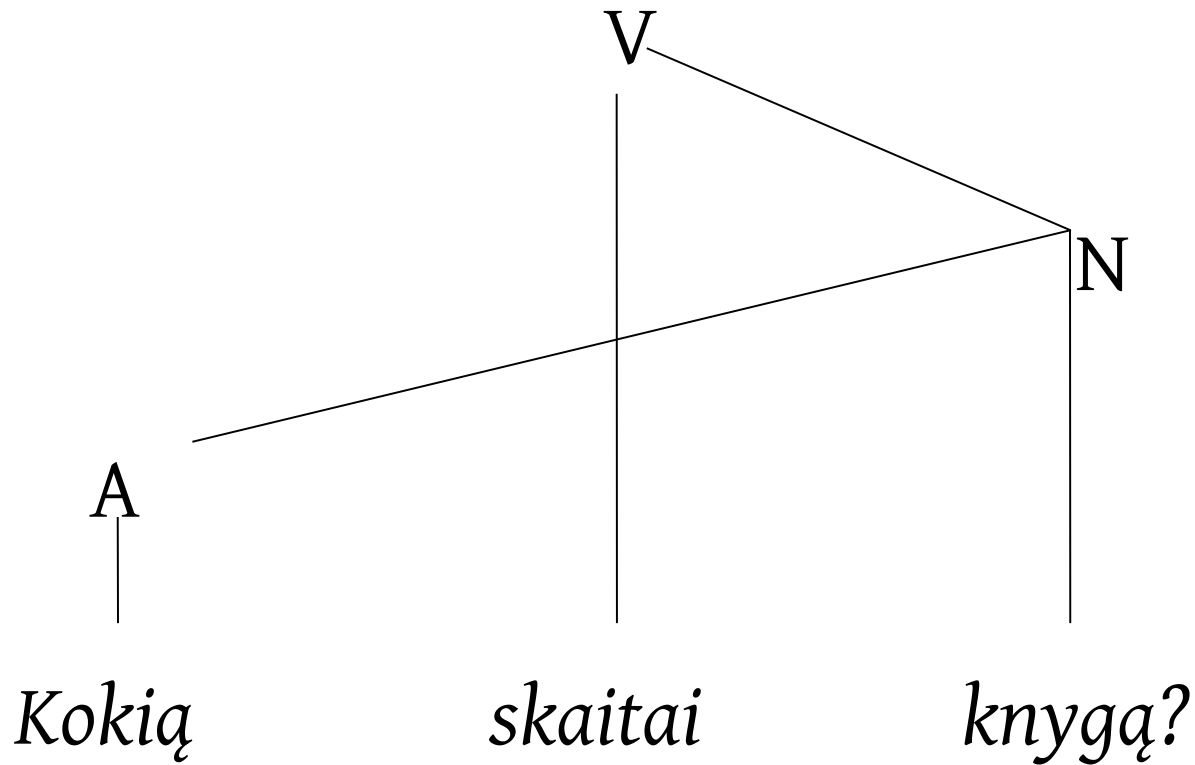
Some structures project unproblematically:



‘What kind of book are you reading?’

# Non-projective structures

Other structures don't:



# Constituency vs. dependency

- To what extent are constituency-based and dependency-based syntax internally consistent and mutually exclusive?
- Phrase Structure Syntax recognises some form of dependency within phrases in that it operates with ‘heads’.
- To what extent can Dependency Syntax dispense with phrase structure?

# Dependency in phrase structure grammar

The notion of dependency is implied by that of headedness, though representation (distributional equivalence) rather than dependency is emphasised: the head is (from Bloomfield onward) distributionally equivalent to the phrase (in Bloomfield's terms, it belongs to the same form-class as the whole phrase).

# X-bar syntax

- The importance of the notion of headedness increases with the introduction of X-bar syntax, in which every phrase is a projection of a lexical category, which is its head

# Headedness

- Headedness is a common ground for discussion between adherents of phrase structure grammar and dependency grammar, cf. Zwicky and Hudson's 1985–1993 discussion. Their discussion tacitly presupposes that there may be a common rationale for statements like
  - A is the head of [AB] (phrase structure grammar)
  - A is the head of B (dependency grammar)

# Advantages of phrase structure

Take Chomsky's *German history teacher*:

[[*German history*] *teacher*] (= teacher of German history)

[*German* [*history teacher*]] (= history teacher who is German)

Dependency grammar can capture the difference but without accounting for the closer relationship between *history* and *teacher* (though a convention can be adopted to the effect that adjacent words form closer meaning units).

# Inflexibility of phrase structure syntax

Even allowing for constructional homonymy, some constituents may be prohibited by the theory, whereas we might like to keep constituency rules more flexible, e. g.

a. [*efficient aid*] *to developing countries*

b. *efficient* [*aid to developing countries*]

The X-bar framework requires us to describe *to developing countries* as a complement of *aid*, so that (a) is disallowed.



# Cognitive Grammar

- In Cognitive Grammar, there is relatively little emphasis on elementary syntactic relations; they are conceived of as derivative, as they are a mere concomitant of the formation of complex concepts;
- Still, at least in some versions of Cognitive Grammar, elementary units of syntactic structure are recognised.

# Dependence vs. Dependency

- Langacker uses the notion of *dependence* (terminologically distinguished from *dependency*) in the sense of a word 'being conceptually dependent' on other words i.e. requiring their presence to formulate a complete concept:
  - *sees* depends on (= requires) *an elephant*
  - *(an) elephant* is conceptually autonomous

# Fluid constituency

- Langacker: constituency is fluid, i. e., a complex syntactic structure can be arrived at through different construals:

*[The arrow hit] the target.*

*The arrow [hit the target.]*

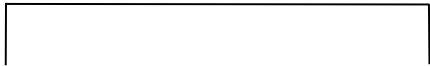
- Cf. the rigid constituent structure of GG:

*The arrow [<sub>VP</sub>hit the target.]*

# Informal constituency

Phrase-like units sometimes appear in dependency-based descriptions, e. g.

- coordination in Hudson's word grammar
- grouping in Melčuk's dependency syntax (a grouping is “a complete subtree taken as a whole”), e. g. *Bob and Dick's novels*

  
*Novels* → *Bob* → *and* → *Dick*

# Groupings

Melčuk insists his groupings are not constituents because

- (1) its elements are not linearly ordered,
- (2) dependency relations among them are explicitly shown and
- (3) there is no higher node to represent the grouping as a whole.

Still, groupings are alien elements in a dependency grammar.

# Phrases

- Melčuk also uses the notion of phrase, which, however, is not clearly defined. It can be identified prosodically, but “of course not every prosodic unit in an actual sentence is a phrase; the concept of phrase needs an elaborate definition, which is outside of my frame here, because it is a concept of the Deep-Morphological, rather than Syntactic, level. I take it to be one of my *indefinibilia* [...] However, recall that a phrase must be perceived by speakers as existing in the language, whatever that means.”

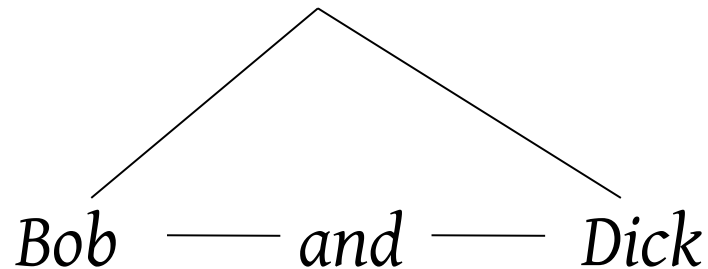
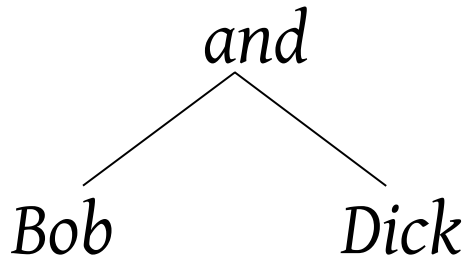
# Phrases

- Phrases are invoked, e. g., in the analysis of coordination: in *Bob and Dick* it is claimed that *and Dick* is “a phrase of English” whereas *Bob and* “is not a phrase of English; it is then stated that the whole phrase *Bob and Dick* has the passive Synt-valency of Bob, not that of *and Dick*.

*Bob* → *and* → *Dick*

# Other views of coordination

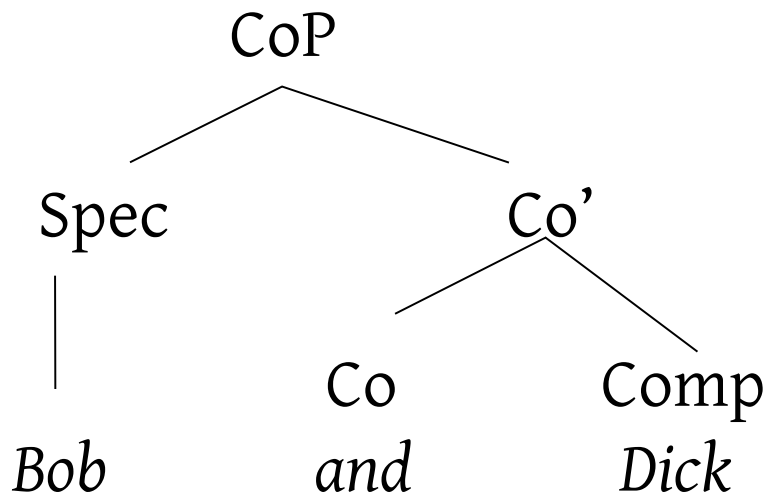
- Other ways of dealing with coordination in dependency syntax are: (a) describing the conjunction as the head, and (b) describing the conjunction as a connecting element:





# Coordination in X-bar syntax

- In X-bar syntax the treatment of coordination is quite similar to that proposed by Mel'čuk, as symmetrical conjunct phrases do not fit into the X-bar model:

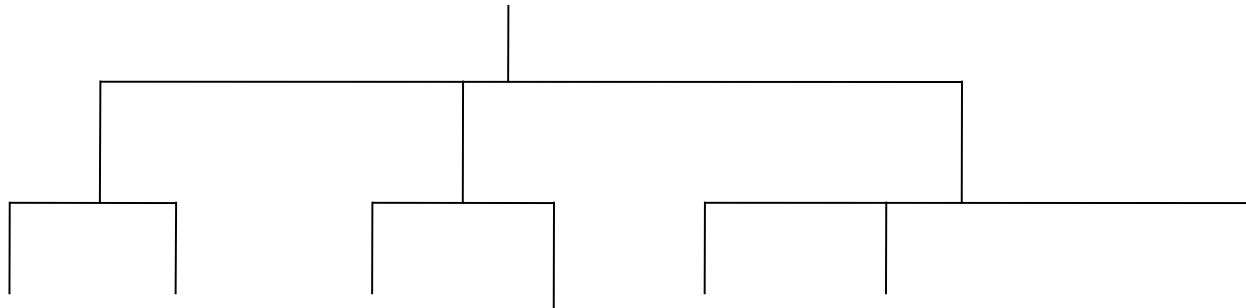


# Informal constituency

- The term phrase is often used informally, without being invoking the notion of constituency, especially when used with reference to the noun phrase (an argument of a verb is syntactically represented by a “nominal” or a “noun phrase”)
- In this sense a “phrase” seems to refer to a lexical category (noun, verb...) and the function words accompanying it (determiners, auxiliaries...)

# Minimal Bracketing

- The principle of minimal bracketing is used in Halliday's Systemic Functional Grammar: it is based on Halliday's notion of rank-based constituency:



*All students must satisfy all assessment requirements*

# Rank-based constituency

- This concept is based on a hierarchy of linguistic units comprising
  - morphemes
  - words
  - groups
  - sentences
- These units must have functions within superordinate units, e. g. a group can be an object within a clause
- A clause must directly divide into functionally labelled groups

# Conclusions

- A third principle of syntactic structure apart from dependency and phrase structure has not yet been found, but
- some (most) approaches use both concepts to some degree
- some approaches, while recognising both principles, do not use them as the most basic principles of sentence structure.