Introduction to Natural Language Processing

Lecture 4. Parsing

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Two approaches to grammar modeling

- Constituency grammar
- Dependency grammar

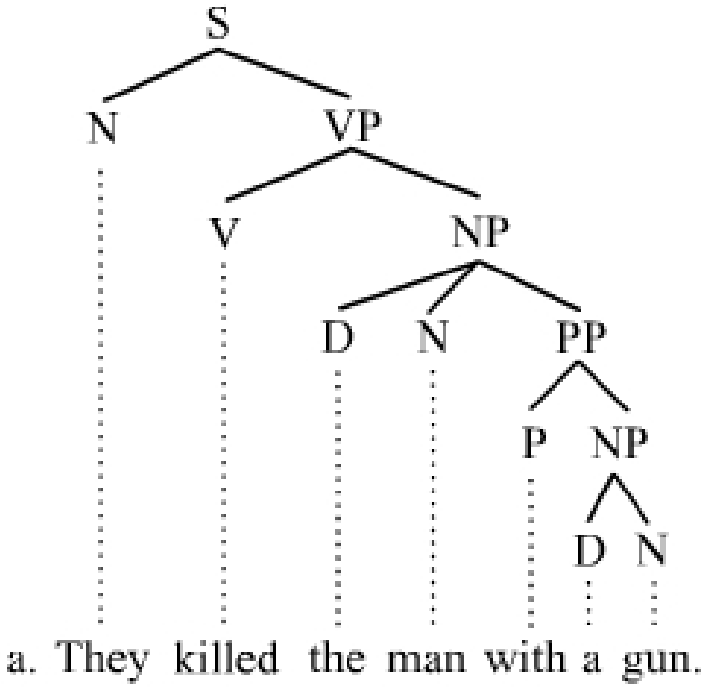
Constituency grammar [Martin, Jurafsky, 2000]

Phrase structure organizes words into nested constituents

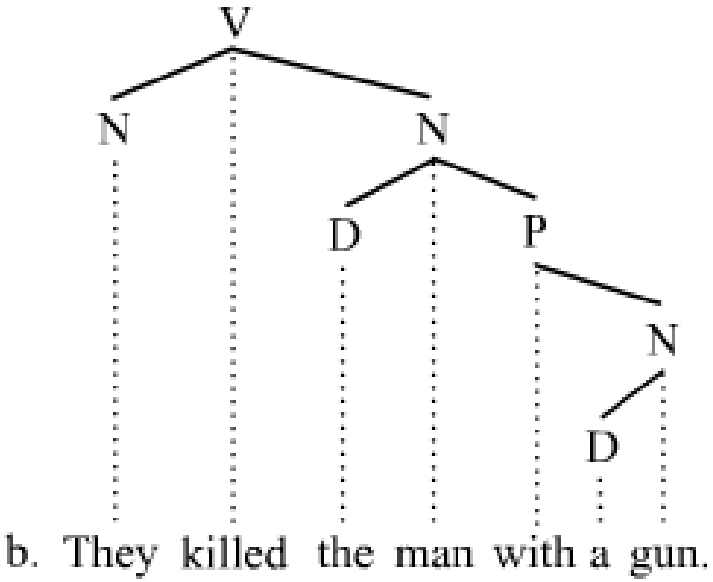
Dependency grammar [Martin, Jurafsky, 2000]

Dependency structure shows which words depend on (modify or are arguments of) which other words.

Constituency VS dependency grammar (1)

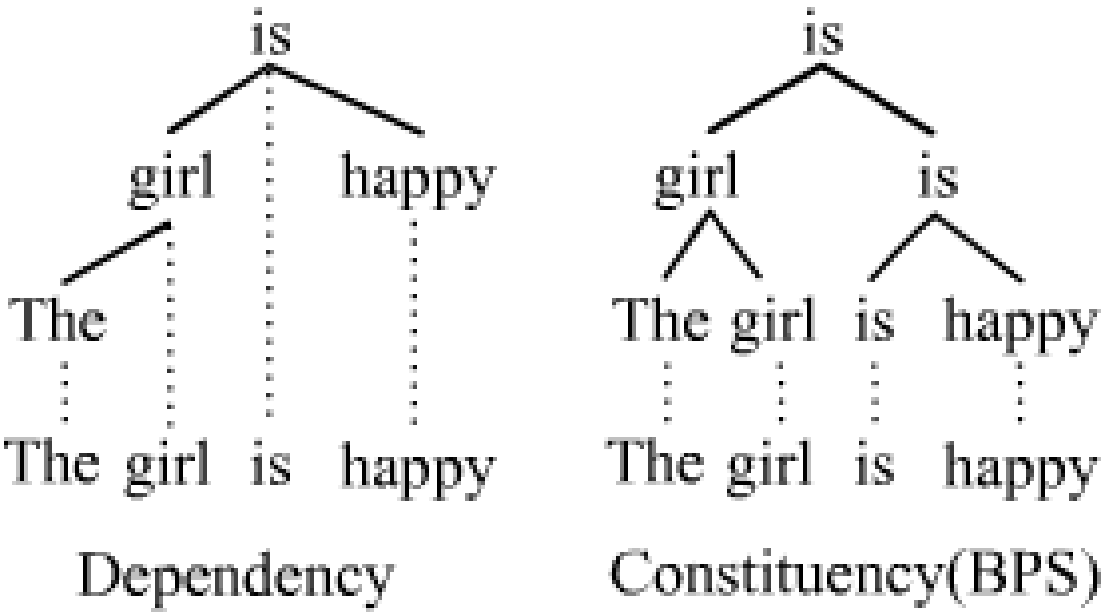


Phrase structure grammar



Dependency grammar

Constituency VS dependency grammar (2)



Exercise 4.1

Construct constituency and dependency trees for the sentences:

- "Susan wants to marry Lary."
- "They saw a man with the telescope."
- "Why do we say that the earth moves around the sun?"

Demos

- Berkley Tomcat constituency parser `http://tomato.banatao.berkeley.edu:8080/parser/parser.html`
- Stanford CoreNLP dependency parser `http://nlp.stanford.edu:8080/corenlp/`
- ARK dependency parser (Carnegie Melon) `http://demo.ark.cs.cmu.edu/parse`

Reference

1. Martin, James H., and Daniel Jurafsky. "Speech and language processing." International Edition (2000).