Syntactic Analysis: constituency and dependency

1 Immediate Constituent Analysis

- Functional labels:
  - Subject (S)
  - Verb (V)
  - Object (DO)
  - Adverb (Adv)
- Units may be built up:
  - S+V: The dog + is running
  - S+V+DO: The man + saw + a cow
  - S+V+DO+IDO: The man + gave + a book + to John
  - S+V+A: The rose + smells + sweet
- Languages vary in how they mark the different functions
- English = word order, Latin and Greek = morphology
- Japanese marked by special particles

kodomo ga tomodachi no inu ni mizu o yaru
child SUBJ friend GEN dog IDO water DO gives
'The child gives water to the friend's dog'

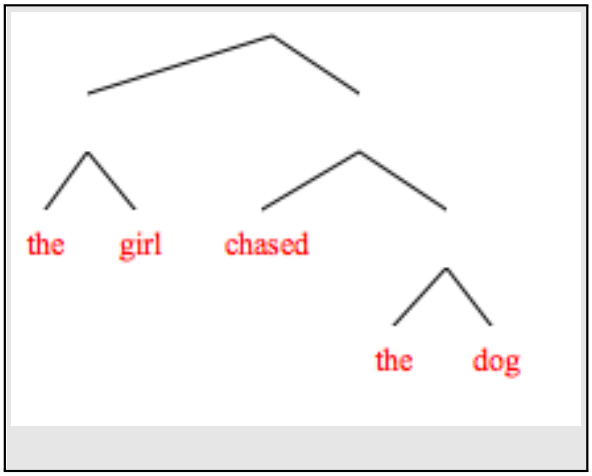
2 Some terminology

- Complements = all those entities that need to be present in order to make the predication syntactically and semantically complete.
- Different verbs have different valency
  - go = valency of 1: 1-place verb
  - necare = valency of 2: 2-place verb
  - dare = valency of 3: 3-place verb
- Adjunct = optional extra
  - Marcus heri canem necabat
- Modifier = further definition of the complements
  - He likes food which tastes peppery

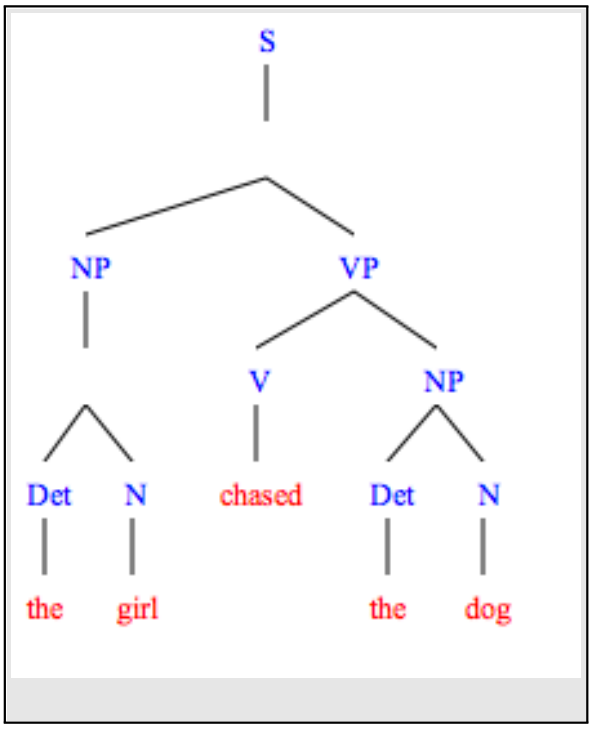
3 Constituency

- Group together units within sentence:
  - Hilary couldn't open the window
- Hilary couldn't open = verb phrase (VP), the window = noun phrase (NP)
- Phrases can be seen of as extensions of a central element (head)
  - cars
  - big cars
  - the big cars
  - all the big cars in the garage
- Phrases combine into clauses, which may combine into sentences:
  - 'Hilary opened the window, and David opened the doors'

- Identify the major components
  - (The girl)(chased the dog)
  - (The girl)(chased (the dog))
  - ((The) (girl))(chased ((the)(dog)))
- Can be represented by a tree diagram
  phpSyntaxTree: drawing syntax trees made easy: http://ironcreek.net/phpsyntaxtree/



- Phrase structure: label the constituents



- Leads to a grammar of the possible combinations of phrases:

S → V + NP: Leave the meat
S → V + NP + PP: Leave the meat in the kitchen
NP → Det + N: the meat
NP → Det + N + PP: the meat in the kitchen
PP → P + NP: in the kitchen

- NB S → S: complex constructions (usually involving complementiser (C))

4 Dependency

- Defines the exact nature of the relationships more closely
- Heads govern the rest of the phrase
- Represented by arrows
- Problem: can't explain all relationships e.g. coordination

5 Syntactic theories

5.1 Transformational Grammar

- Sentences of different syntactic types are related
  - It tastes nice
  - How nice it tastes
  - Does it taste nice?
- Regular change of form correlates with regular changes of meaning

5.2 Generative Grammar

- The rules that generate a tree structure for individual languages
- These rules are recursive
  - This is the house that Jack built
  - This is the malt that lay in the house that Jack built
  - This is the rat that ate the malt that lay in the house that Jack built

Contact details: jcw25@cam.ac.uk - - www.jowillmott.co.uk