

# Knowledge Requirement for Machine

- **Phonetics and Phonology**: knowledge about linguistic sounds
- **Morphology**: knowledge of the meaningful components of words
- **Syntax**: knowledge of the structural relationships between words
- **Semantics**: knowledge of meaning
- **Pragmatics**: knowledge of the relationship of meaning to the goals and intentions of the speaker
- **Discourse**: knowledge about linguistic units larger than a single utterance

# Phonetics and Phonology

- **Phonetics and Phonology**: knowledge about linguistic sounds
- The study of:
  - language sounds      systems of discrete
  - how they are          sounds, e.g. languages'
  - physically formed;   syllable structure

dis-k&-'nekt

disconnect

# Morphology

- **Morphology**: knowledge of the meaningful components of words
- The study of the sub-word units of meaning

disconnect

“not” “to attach”

Even more necessary in some other languages,

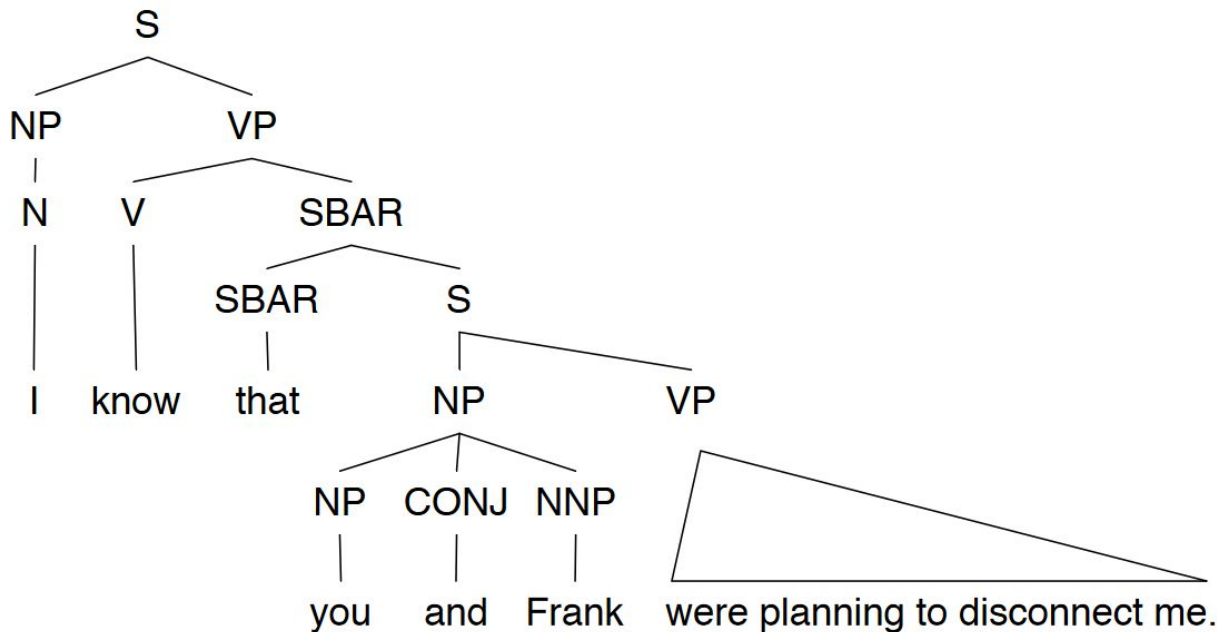
e.g. Turkish:

uygarlastiramadiklarimizdanmissinizcasina

uygar las tir ama dik lar imiz dan mis siniz casina

# Syntax

- **Syntax**: knowledge of the structural relationships between words
- The study of the structural relationships between words
  - I know that you and Frank were planning to disconnect me.



# Semantics

- **Semantics**: knowledge of meaning
- The study of the literal meaning
  - I know that you and Frank were planning to disconnect me.
  - ACTION = disconnect
  - ACTOR = you and Frank
  - OBJECT = me

# Pragmatics

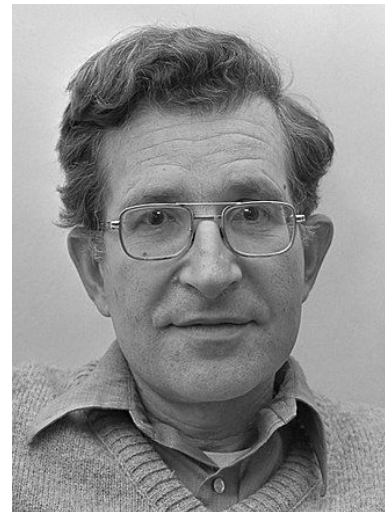
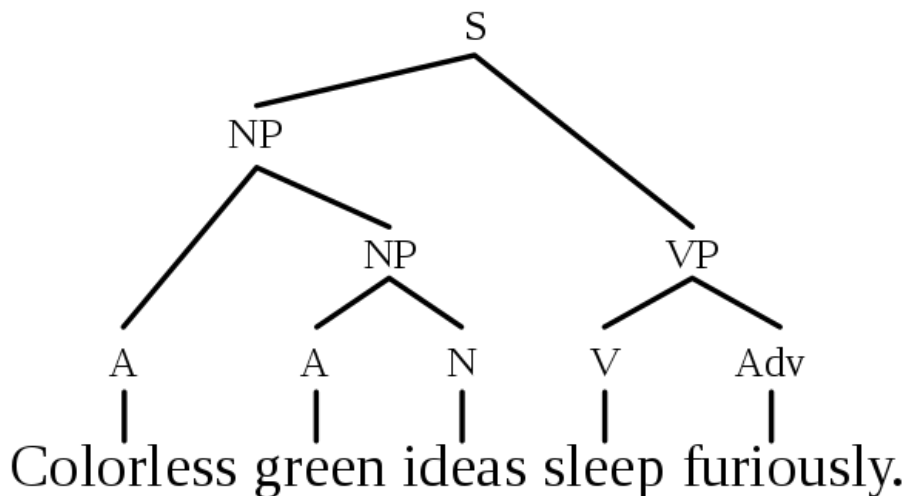
- **Pragmatics**: knowledge of the relationship of meaning to the goals and intentions of the speaker
- The study of how language is used to accomplish goals
  - What should you conclude from the fact I said something?
  - How should you react?
    - I'm sorry Dave, I'm afraid I can't do that.
    - Includes notions of polite and indirect styles

# Discourse

- **Discourse**: knowledge about linguistic units larger than a single utterance
- The study of linguistic units larger than a single utterance
- The structure of conversations:
  - turn taking, thread of meaning

# Syntax vs. Semantics

Colorless green ideas sleep furiously.  
(example by Noam Chomsky 1957)



Noam Chomsky  
The most cited person alive

# Semantics vs. Pragmatics

What does "You have a green light" mean?

- ☐ You are holding a green light bulb?
- ☐ You have a green light to cross the street?
- ☐ You can go ahead with your plan?

