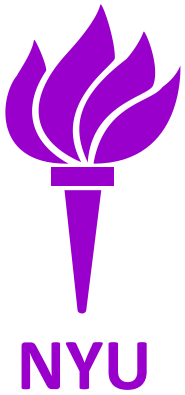


Using the Parser

CSCI-GA.2590

Ralph Grishman

Ever Faster

- Change from CKY and graph-based parsers to transition-based parsers has led to large speed-ups
  - with little loss of performance
  - making full-sentence parsing viable for large corpora

Dependency Parsers

Parser	LAS	UAS	Speed
Yara (arc eager – beam)(2015)	92.3		45 sent/sec
Stanford (NN)(2014)	90.7	92	1000 sent/sec
Yara (arc eager)(2015)	88	89.3	4000 sent / sec

Constituent Parsers

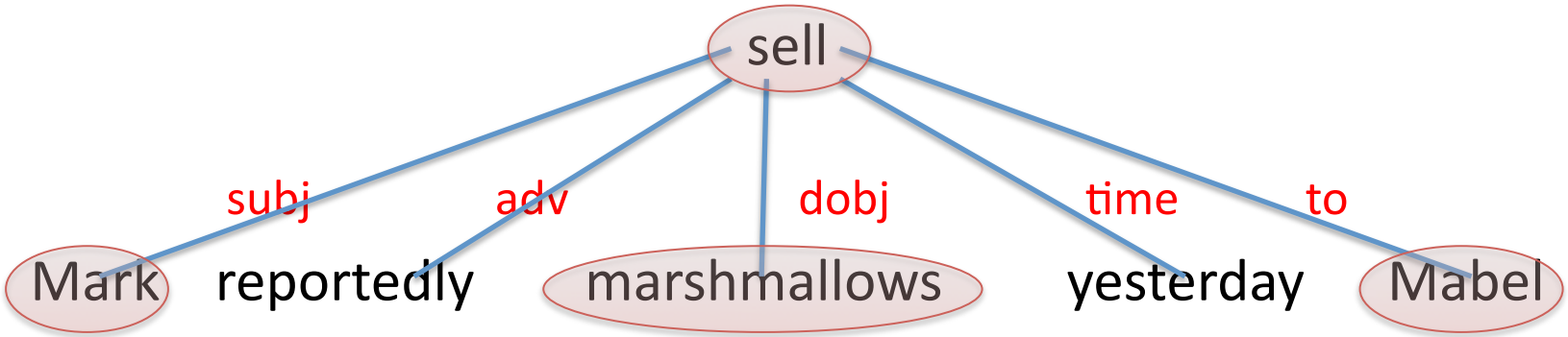
Methods developed to speed dependency parsers also applied to constituent parsers.

Parser	F	speed
Charniak (2000)	89.5	5.7 sent / sec
Northeastern (China)(2013) (shift reduce)	91.3	100 sent / sec

Using the Parses

- partial parse approach: match sequence of chunks
- full parse approach: match parse subtree

sell (subj *person*) (dobj *object*) (to *person*) → …



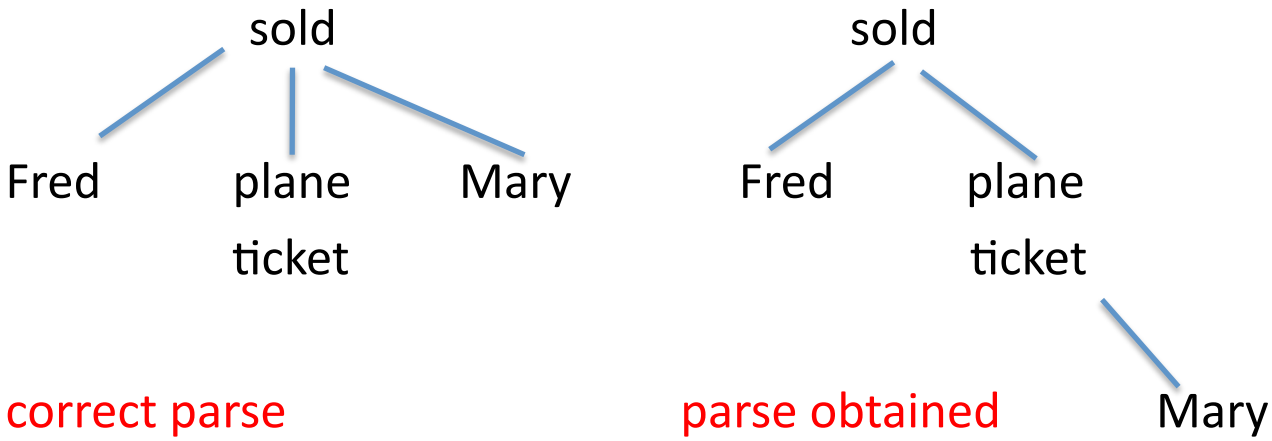
Benefits of Parsing

- parsing captures head-argument-modifier relations directly
  - with a partial parser, must explicitly account for and skip over all irrrelevant modifiers
  - Mary Smith, who last week announced the discovery of a new species of salamander, was named head of research.

Downside of Parsing

- Parsing errors may lead to missed extractions

Fred sold the plane ticket to Mary.



correct parse

parse obtained

Parse obtained will not match a rule of the form

sell (subj *person*) (dobj *object*) (to *person*)

Dual Approach

- To recover from some parsing errors, combine results of partial-parse and full-parse systems.