Consistency and Parsing in the Arabic Treebank

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Overview

- Two topics: Consistency and Parsing
  - Effect of treebank revisions on parsing
  - Verifying consistency of a treebank directly (i.e., without using parser)
- Quality Control and InterAnnotatorAgreement
  - What we've done so far
- Impact of completed revisions on parsing
- Quality Control and InterAnnotatorAgreement
  - Limits of approach, current/future work

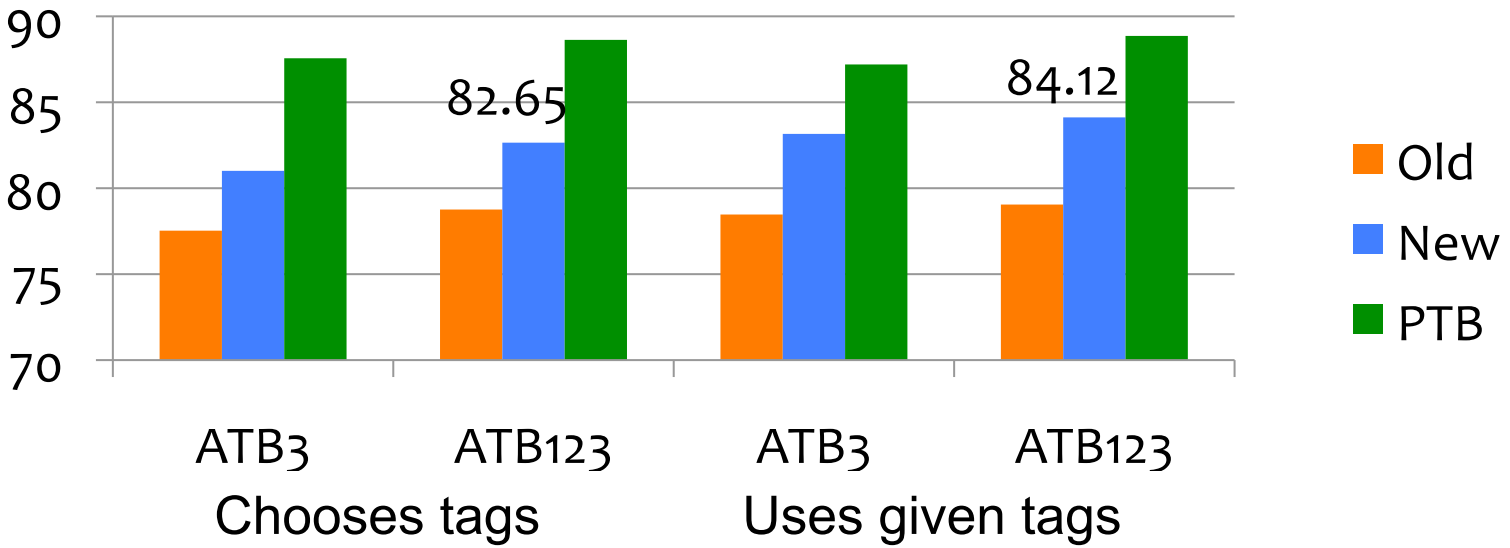
Current QC and IAA

- Local tree-fragment checking
  - Greater use of Corpus Search
  - Some additional token/pos changes based on tree
- (Limited) global word-based changes
  - Tokenization/pos revisions of "function words"
    - Two levels of annotation – source and tree tokens
    - Internal reorganization of treebank
- InterAnnotator Agreement
  - Focus on number(s) from evalb (94.3)

Parsing Experiment

- New ATB and old ATB:
  - Parsed ATB1,2,3 separately and ATB123 together
  - Mona Diab's train/dev/test split (<=40 words)
  - Using gold tokenization/tags - A serious limitation
  - Two modes
    - Parser uses its own tags for "known" words
    - Parser forced to use given tags for all words
  - LDC reduced TAG set (+DET)
- Penn Treebank
  - Made up training,test same size as ATB3, 123

Parsing Improvement

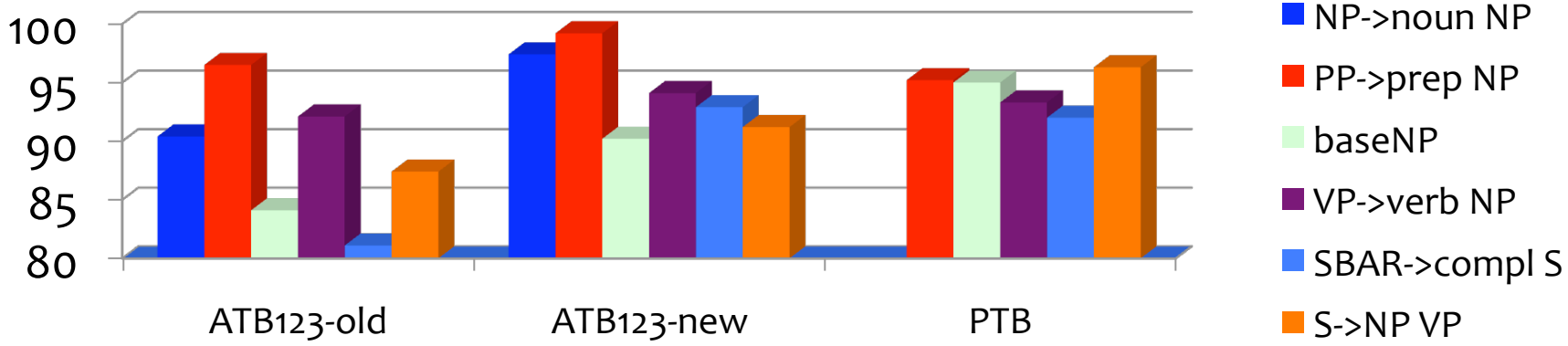


- Nice improvement, not at PTB level yet
- Results not as good for test section
- Dependency Analysis shows:
  - Improvement in recovery of core syntactic relations
  - Problem with PP attachment!

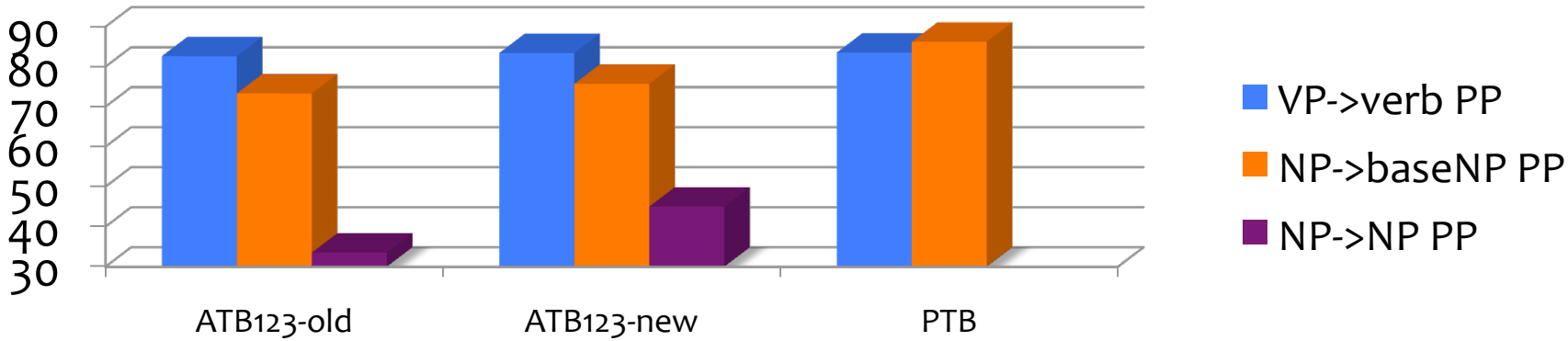
(Kulick,Gabbard,Marcus TILT 2006, Gabbard & Kulick 2008 ACL)

Parsing Analysis
Core Syntactic Relations Recovery

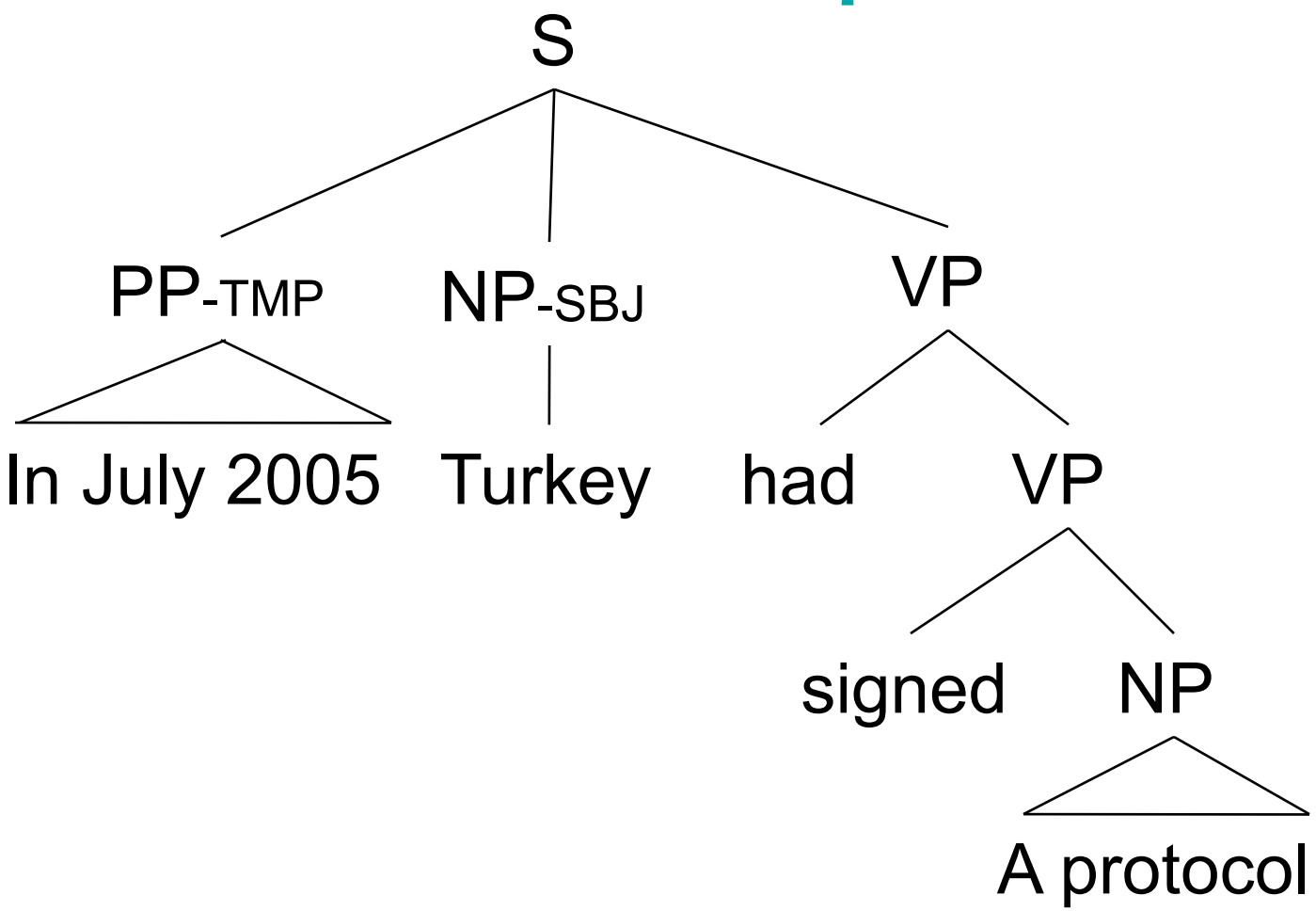
- Across the board improvement



- Attachment issues remain



(Near) Future QC and IAA – Methodology
Treebank Decomposition



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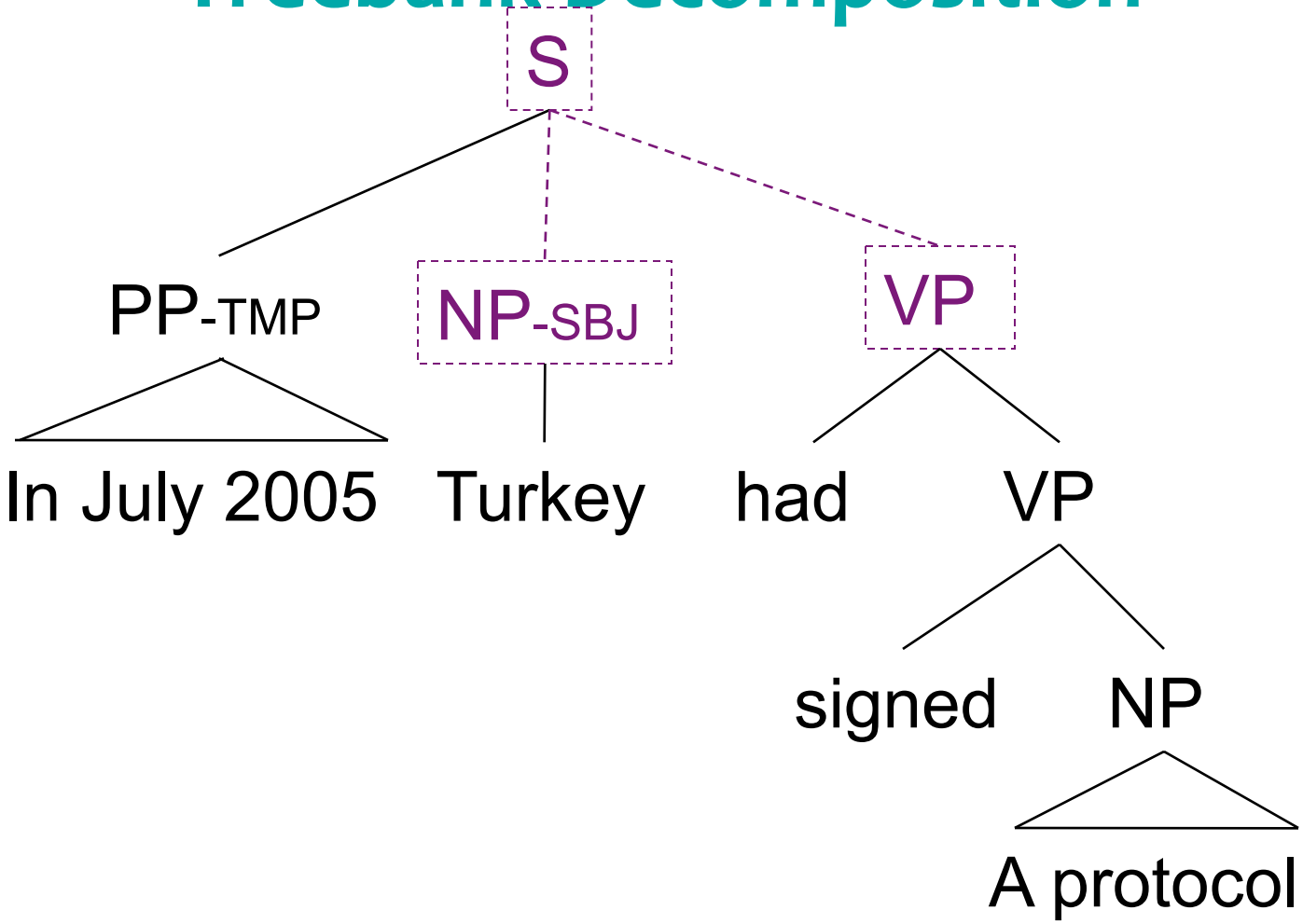

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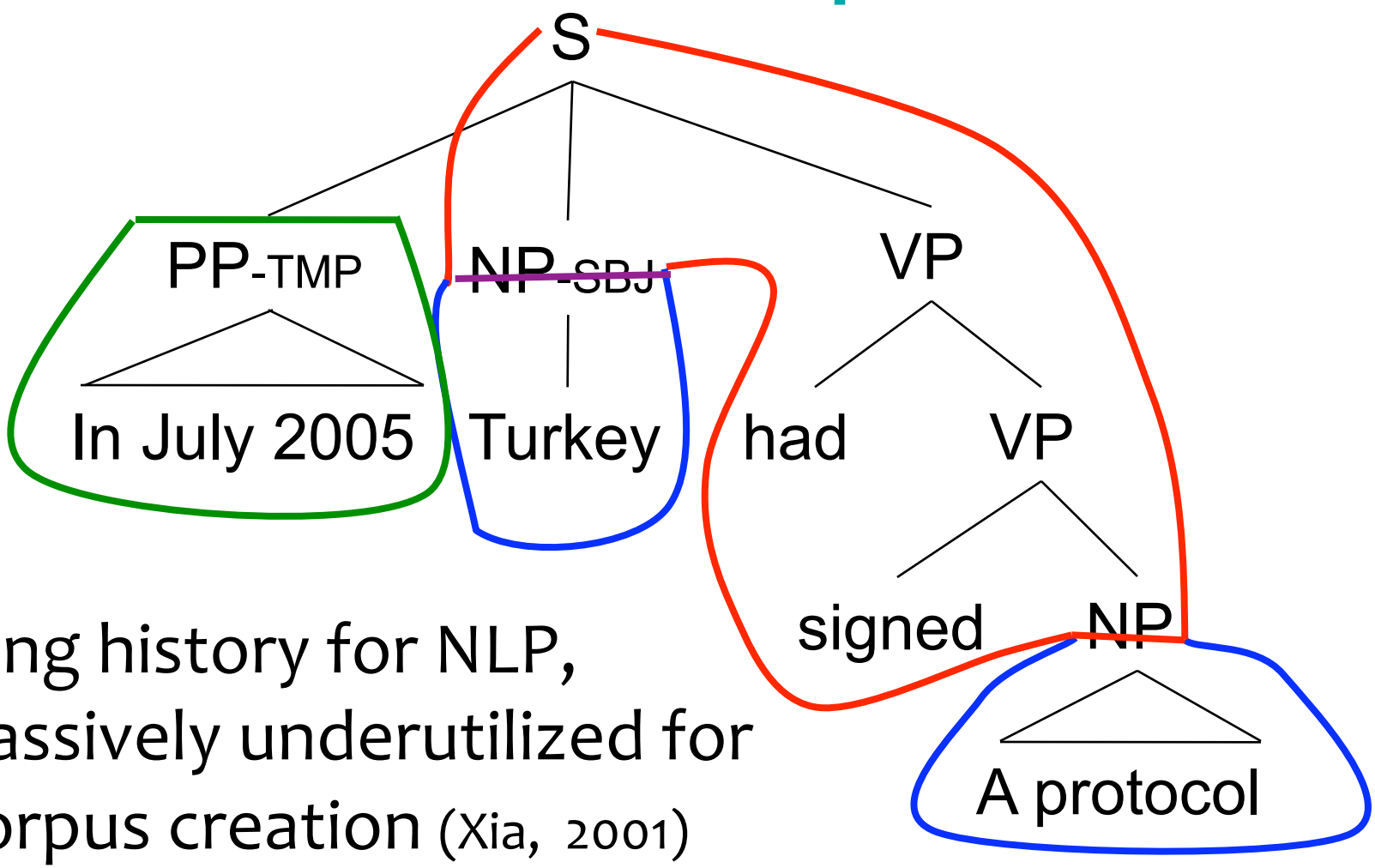

- Long history for NLP, massively underutilized for corpus creation (Xia, 2001)

(Near) Future QC and IAA - Benefits

- Correlation with all different levels of treebank
  - From source tokens downstream to tree contexts
  - Allows new types of searches
- More meaningful IAA analysis
  - Decompose annotators' trees
  - Useful automatic information:
    - e.g. What core structures are they agreeing on?
- Also fun for parsing, parsing analysis
  - Decompose gold tree and parse output, compare
- Even for MT eval (Kulick & Marcus)

Concluding Thoughts

- Consistency and Parsing
  - Parser results suggest improved consistency
  - More to do to guarantee consistency w/o parsing
- What other kinds of annotation do we need?
  - +/- human : MASC PL nonhuman == FEM SG
  - Verb pattern information
- More feedback please
  - Take advantage of analysis for release format? heads, better source/tree token representation?