

# LING/C SC 581:

## Advanced Computational Linguistics

Lecture 11

# Today's Topics

- Homework 4 Review
  - Let's do the transformation live on `n15.prolog!`
  - *Finish the live programming*
- Homework 5

# Homework 4 Review

- Now, let's run the sentences!
  1. the boy saw the man with the telescope
  2. the boy with the telescope saw the man
  3. the boy kicked the man with the telescope
  4. the boy with the telescope kicked the man
  5. the boy with the telescope kicked the man with the limp

# Homework 4 Review

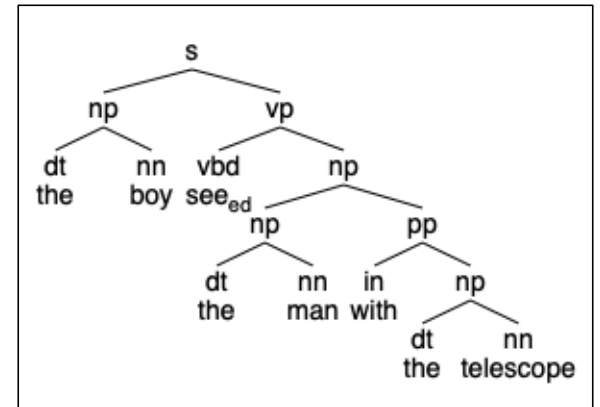
- Sentence 1:

```
?_ s(Parse, [the, boy, saw, the, man, with, the, telescope],
[]).
```

```
Parse = s(np(dt(the), nn(boy)), vp(vbd(see_ed),
np(np(dt(the), nn(man)), pp(in(with), np(dt(the),
nn(telescope)))))) ;
```

```
Parse = s(np(dt(the), nn(boy)), vp(vp(vbd(see_ed),
np(dt(the), nn(man))), pp(in(with), np(dt(the),
nn(telescope)))))) ;
```

**false.**

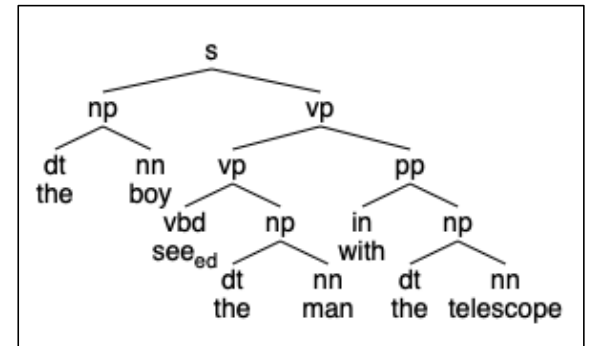


- Sentence 2:

```
?_ s(Parse, [the, boy, with, the, telescope, saw, the, man],
[]).
```

```
Parse = s(np(np(dt(the), nn(boy)), pp(in(with), np(dt(the),
nn(telescope))))), vp(vbd(see_ed), np(dt(the), nn(man)))) ;
```

**false.**



# Homework 4 Review

- Sentence 3:

```
?- s(Parse, [the, boy, kicked, the, man, with, the, telescope], []).  
Parse = s(np(dt(the), nn(boy)), vp(vbd(kick_ed), np(np(dt(the),  
nn(man)), pp(in(with), np(dt(the), nn(telescope)))))) ;  
Parse = s(np(dt(the), nn(boy)), vp(vp(vbd(kick_ed), np(dt(the),  
nn(man))), pp(in(with), np(dt(the), nn(telescope)))))) ;  
false.
```

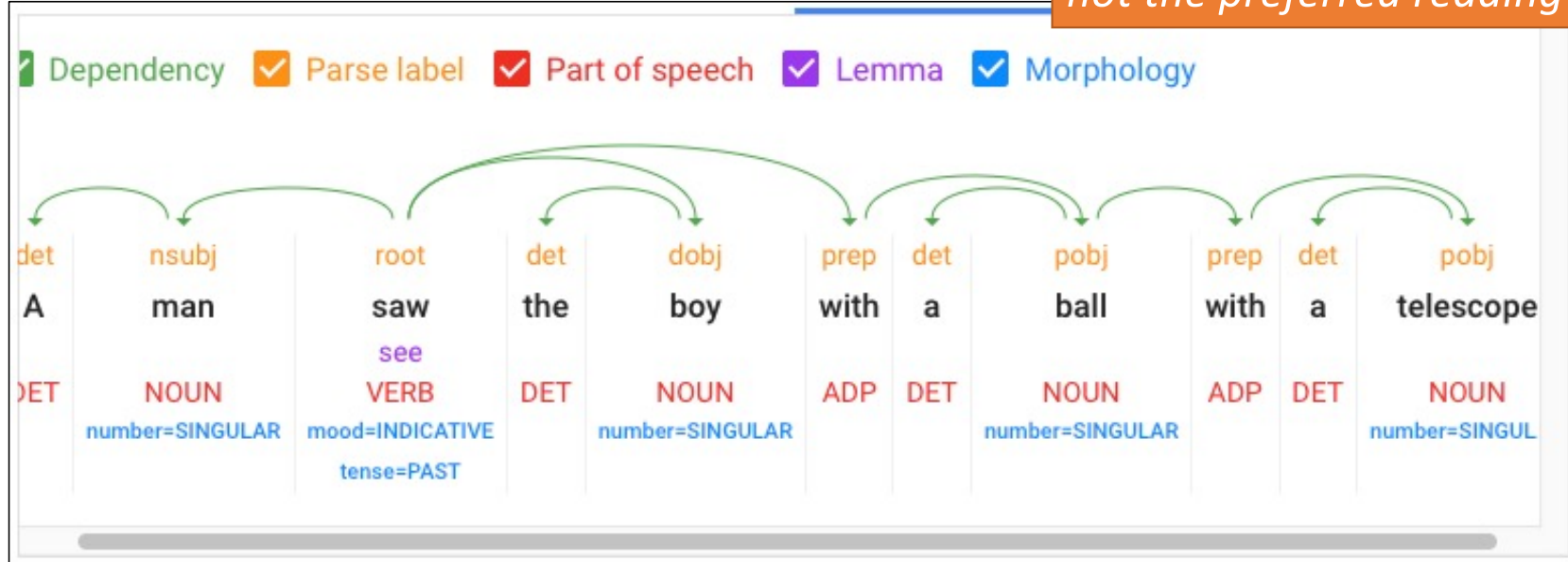
- Sentence 4:

```
?- s(Parse, [the, boy, with, the, telescope, kicked, the, man], []).  
Parse = s(np(np(dt(the), nn(boy)), pp(in(with), np(dt(the),  
nn(telescope)))), vp(vbd(kick_ed), np(dt(the), nn(man)))) ;  
false.
```

# Homework 4 Review

<https://cloud.google.com/natural-language>

*not the preferred reading either*



# Homework 4 Review

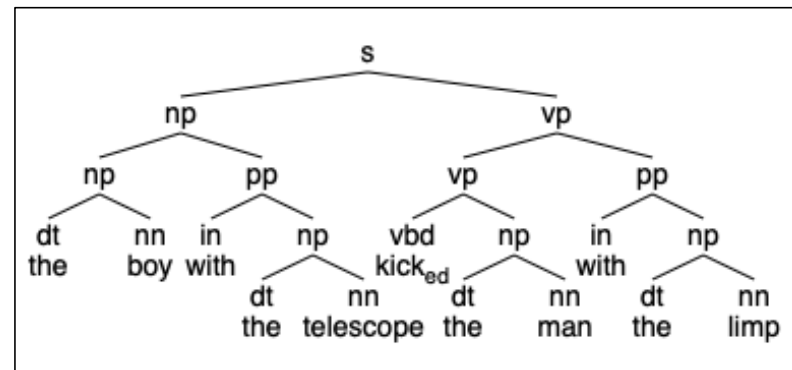
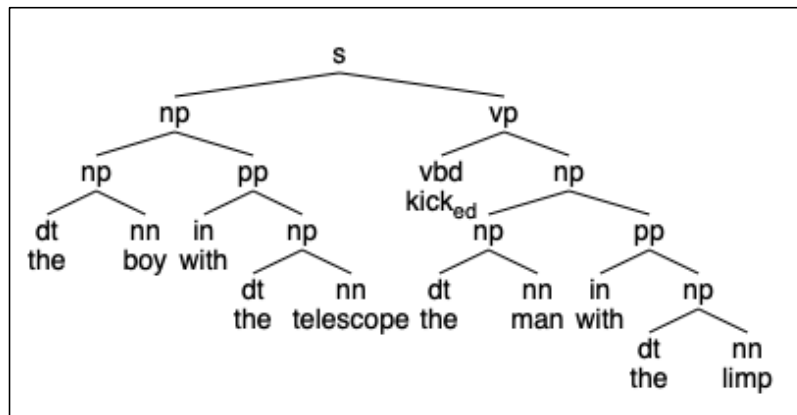
- Sentence 5:

```
?- s(Parse, [the, boy, with, the, telescope, kicked, the, man, with, the, limp], []).
```

```
Parse = s(np(np(dt(the), nn(boy)), pp(in(with), np(dt(the), nn(telescope)))), vp(vbd(kick_ed), np(np(dt(the), nn(man)), pp(in(with), np(dt(the), nn(limp)))))) ;
```

```
Parse = s(np(np(dt(the), nn(boy)), pp(in(with), np(dt(the), nn(telescope)))), vp(vp(vbd(kick_ed), np(dt(the), nn(man))), pp(in(with), np(dt(the), nn(limp)))) ;
```

**false.**

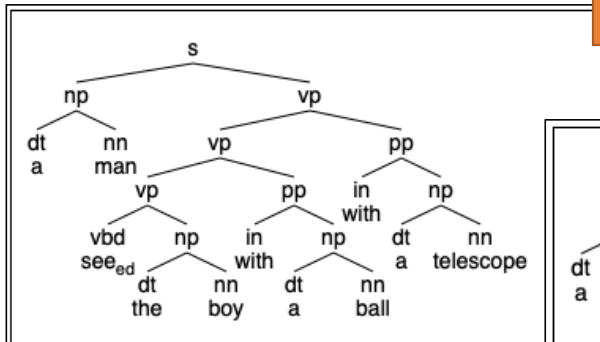


# Homework 4 Review

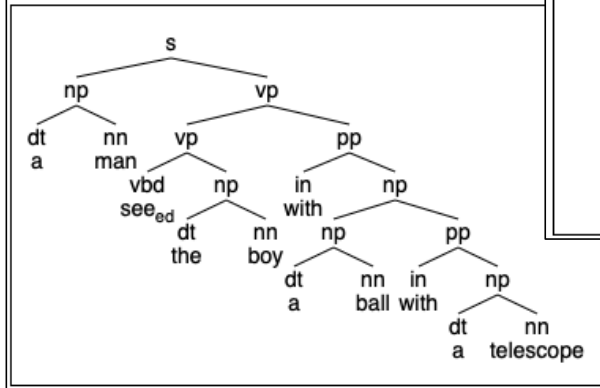
which one will an AI pick?

5 syntactic options

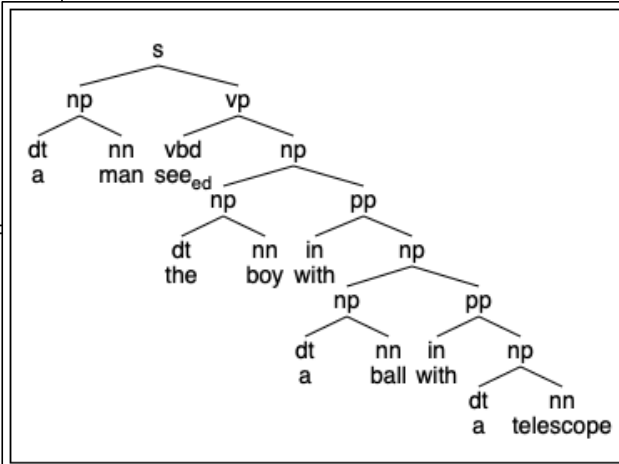
#1



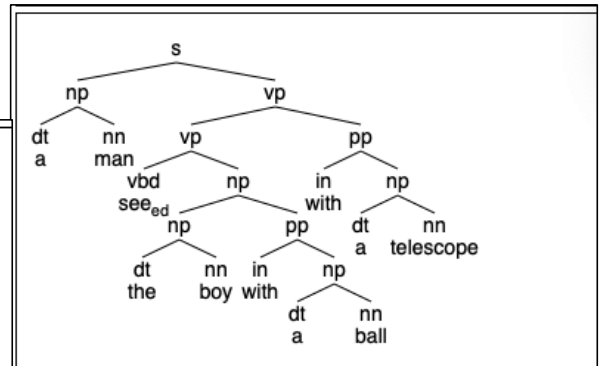
#2



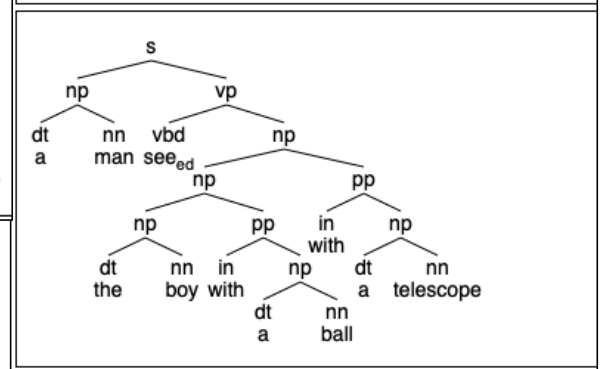
#5



#3



#4





# Homework 4 Review

ChatGPT 3.5 ▾



**You**

A man saw the boy with a ball with a telescope. Describe what happened?



**ChatGPT**

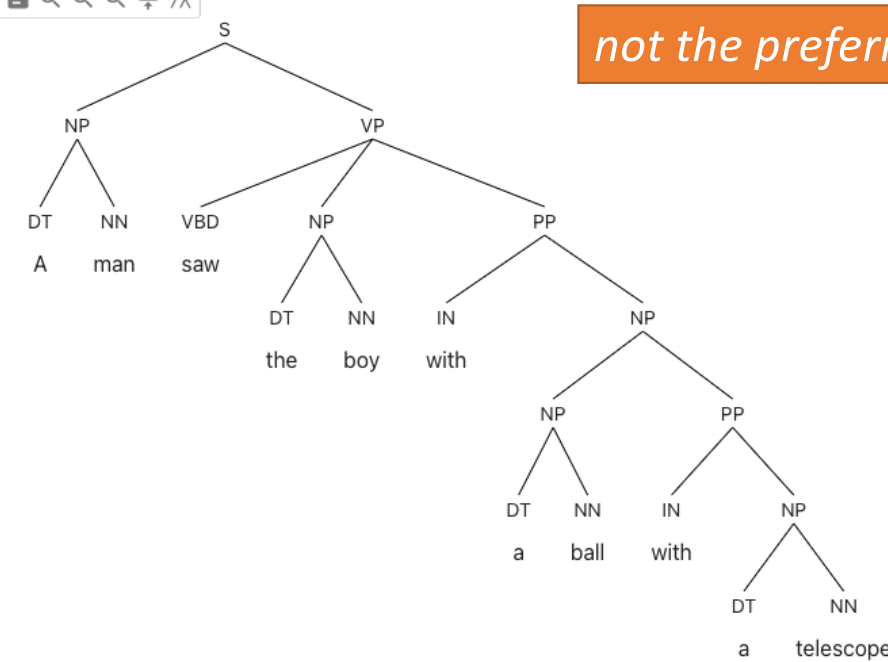
As the man peered through his telescope, he noticed a boy playing with a ball in the distance. The boy seemed to be gleefully kicking the ball around, his movements animated and full of energy. With each kick, the ball soared through the air, tracing an arc against the backdrop of the sky.

# Homework 4 Review

- <https://parser.kitaev.io>

Sentence:  
A man saw the boy with a ball with a telescope

Parse tree:



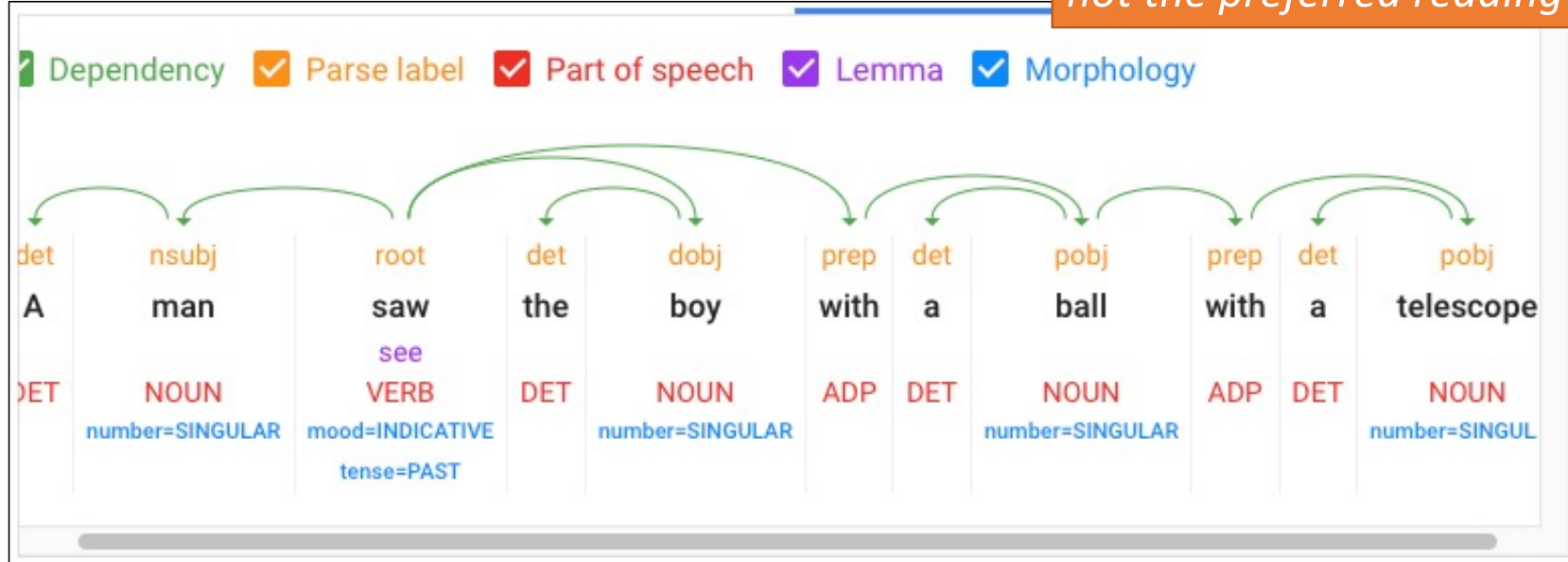
```
graph TD
    S[S] --- NP1[NP]
    S --- VP[VP]
    NP1 --- DT1[DT]
    NP1 --- NN1[NN]
    DT1 --- A[A]
    NN1 --- man[man]
    VP --- VBD[VBD]
    VP --- NP2[NP]
    VP --- PP1[PP]
    VBD --- saw[saw]
    NP2 --- DT2[DT]
    NP2 --- NN2[NN]
    DT2 --- the[the]
    NN2 --- boy[boy]
    PP1 --- IN1[IN]
    PP1 --- NP3[NP]
    IN1 --- with1[with]
    NP3 --- DT3[DT]
    NP3 --- NN3[NN]
    DT3 --- a1[a]
    NN3 --- ball[ball]
    NP3 --- PP2[PP]
    PP2 --- IN2[IN]
    PP2 --- NP4[NP]
    IN2 --- with2[with]
    NP4 --- DT4[DT]
    NP4 --- NN4[NN]
    DT4 --- a2[a]
    NN4 --- telescope[telescope]
```

*not the preferred reading*

# Homework 4 Review

<https://cloud.google.com/natural-language>

*not the preferred reading either*



# Homework 4 Review

ChatGPT 3.5 ▾



**You**

A man saw the boy with a limp with a ball. Describe what happened?



**ChatGPT**

The man observed a boy with a noticeable limp holding a ball. Concerned, he approached the boy gently and asked if everything was alright. The boy explained that he had injured his leg recently and was still recovering, but he loved playing with his ball nonetheless. The man smiled and offered to play with the boy, adjusting the game to accommodate his condition. Together, they spent some time playing and laughing, creating a heartwarming moment of connection and understanding.



# Homework 4 Review

ChatGPT 3.5 ▾



**You**

A man saw the ball with a ball with a limp. Describe what happened?



**ChatGPT**

It seems like there might be a bit of confusion in your question. Could you please clarify what you mean by "a man saw the ball with a ball with a limp"? Are you asking for a description of a man encountering a ball that has a limp, or is there another interpretation you had in mind?



# Homework 5

- Contrast 1 vs 2:
  1. John knew an untrue story about him.
  2. John overheard an untrue story about him.
- Q1:
  - Do you get a difference in the possible antecedents of *him*? Explain.
  - You may want to consider some variants:
    - e.g. when the prior sentence is *Bill is an honest man*.
    - e.g. when pronoun *him* is replaced by the reflexive *himself*
- Q2: ask ChatGPT. Who is the story about?
  - *Evaluate whether ChatGPT gets the same contrast as you.*



DALL-E 2 History Collections

Edit the detailed description

John heard an untrue story about him.



# Homework 5

- Submit to [sandiway@arizona.edu](mailto:sandiway@arizona.edu)
- SUBJECT: 581 Homework 5 *YOUR NAME*
- One PDF file (for grading)
  - include your ChatGPT screenshots in your answer
- Deadline:
  - midnight Monday
  - we will review the homework on Tuesday