

An incremental approach to parsing

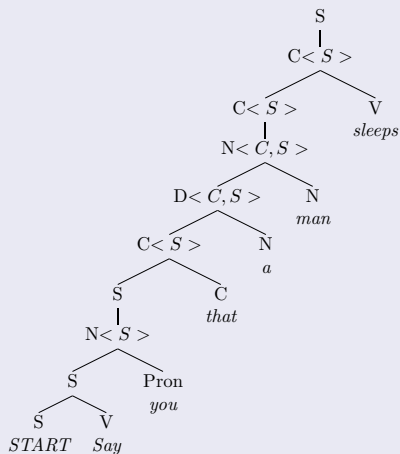
Petter Haugereid

Department of Language, Literature, Mathematics and Interpreting
Western Norway University of Applied Sciences

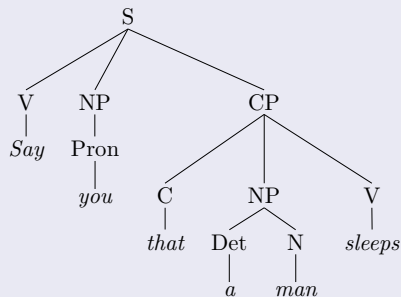
Amsterdam, July 8, 2025

Incremental parsing with Norsyg

Parse tree (Norgenstein)



Constituent tree

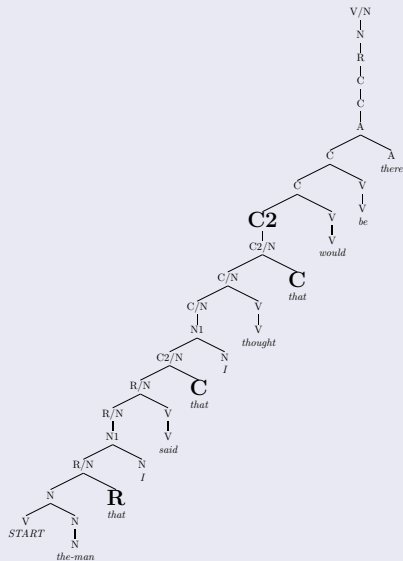


Extraction pathway marking in Irish

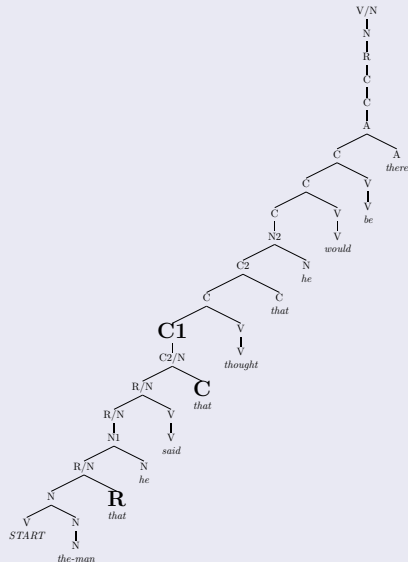
- (1) an fear **aL** dúirt mé **aL** shíl mé **aL** bheadh _ ann
 the man COMP said I COMP thought I COMP would-be there
 the man that I said I thought would be there
- (2) an fear **aL** dúirt sé **aL** shíl _ **goN** mbeadh sé ann
 the man COMP said he COMP thought _ COMP would-be he there
 the man that he said thought he would be there

(McCloskey, 1979)

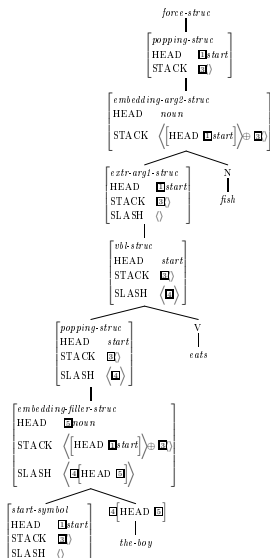
Long extraction path



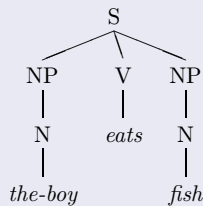
Shorter extraction path

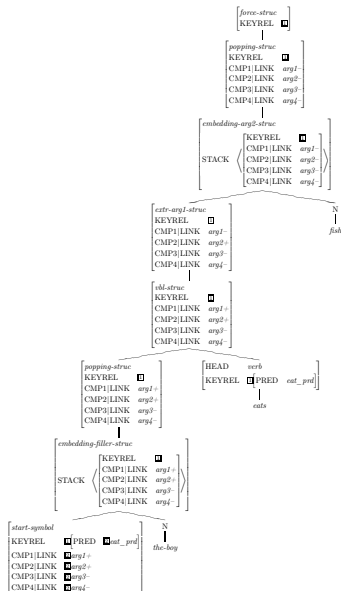


Incremental parsing with Norsygy



Constituent tree





```

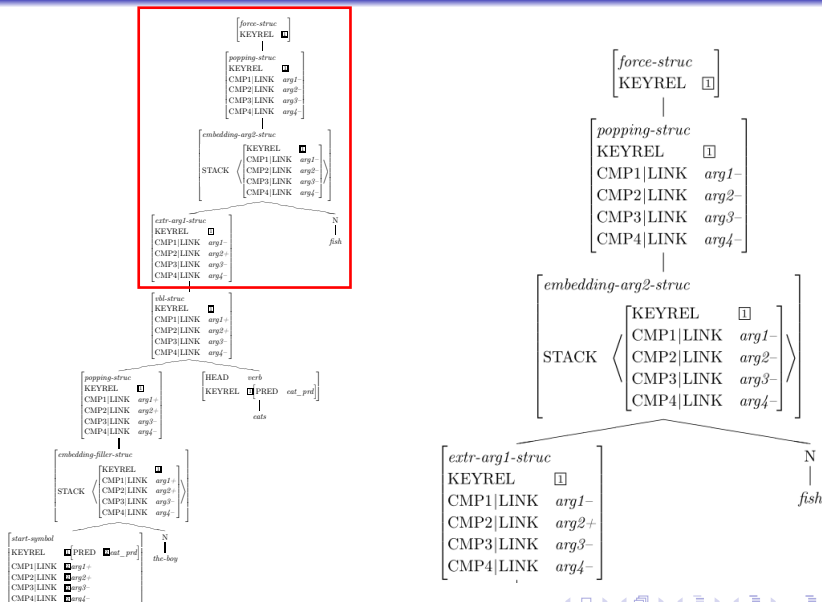
      S
     /|\
    NP V  NP
    |  |  |
    N  eats N
    |           |
the-boy      fish

```

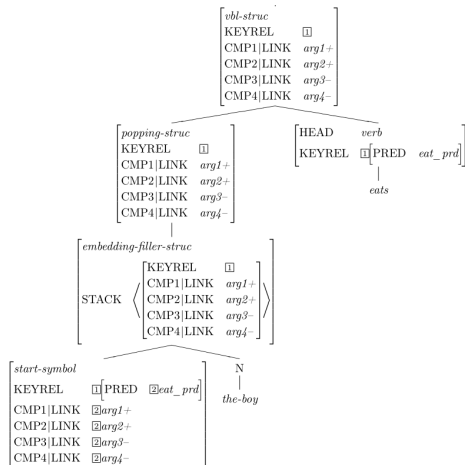
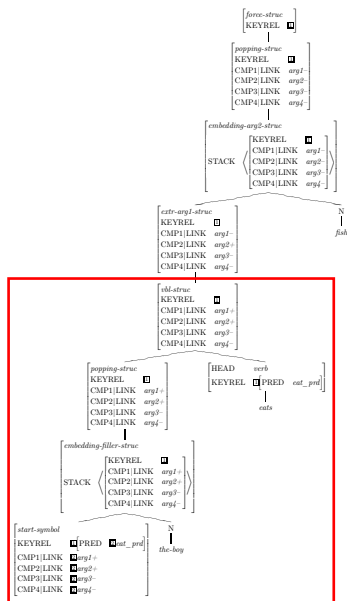
```

graph TD
    link --> arg2p[arg2+]
    link --> arg1p[arg1+]
    link --> arg4p[arg4+]
    link --> arg3p[arg3+]
    link --> arg3m[arg3-]
    link --> arg4m[arg4-]
    link --> arg1m[arg1-]
    link --> arg2m[arg2-]
    arg2p --> eat12[eat_12_rel]
    arg1p --> eat12
    arg4p --> eatprd[eat_prd]
    arg3p --> eatprd
    arg3m --> eatprd
    arg4m --> eatprd
    arg1m --> eat1[eat_1_rel]
    arg2m --> eat1
  
```

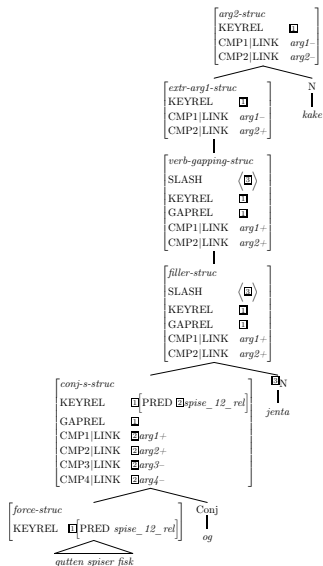
Incremental parsing with Norsyng



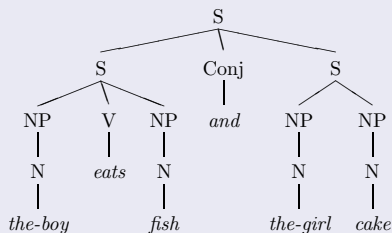
Incremental parsing with Norsy



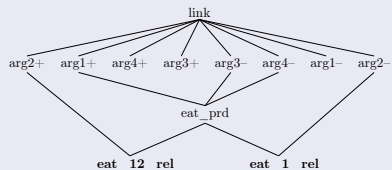
Analysis of gapping



Constituent tree



Linking types



Other topics

Delayed complements

- (3) So many people enrolled for the course that we had to move to a larger room.

(Huddleston and Pullum, 2002, 967)

Scrambling and verb final languages:

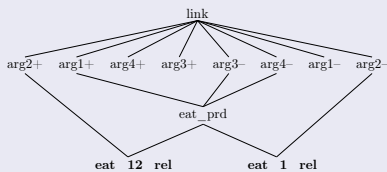
- 1 [[[[*daß* ARG4] ARG1] ARG2] V]
- 2 [[[[*daß* ARG4] ARG2] ARG1] V]
- 3 [[[[*daß* ARG1] ARG4] ARG2] V]
- 4 [[[[*daß* ARG2] ARG4] ARG1] V]

Comparing types to neurons

Quote that didn't make the cut

Although a type hierarchy is not identical to a neural network, it can be conceptualized in a similar way. Each subconstruction type functions like a neuron, triggering the activation of other (intermediate) types. The cumulative activation of these subconstruction types results in the formation of a construction type, analogous to how the combined activity of neurons in a network can give rise to concepts and cognitive processes.

Linking types



The way forward

What should I do?

- Other phenomena that are suited for this analysis?
- How can I make the analysis appear less controversial?

References

- Huddleston, R. and Pullum, G. K. (2002). *The Cambridge Grammar of the English Language*. Cambridge University Press.
- McCloskey, J. (1979). *Transformational Syntax and Model-Theoretic Semantics*. Dordrecht: Reidel.