

Exercise sheet 5

(Submit on a piece of paper at the beginning of class on Tuesday, 28. Feb)

1. Consider the following small grammar (on the web as file `parser/cyk/cyk_grammar.pl`):

```
% lexicon:
vp ---> [left].
vp ---> [duck].
vs ---> [thought].
vs ---> [saw].
vt ---> [saw].
vt ---> [loved].
det ---> [the].
det ---> [a].
det ---> [her].
n ---> [dragon].
n ---> [telescope].
n ---> [man].
n ---> [cave].
n ---> [duck].

pp ---> [there].
p ---> [in].
p ---> [at].
p ---> [with].
np ---> [mary].
np ---> [midnight].

% syntactic rules:
s ---> [np, vp].
vp ---> [vp, pp].
vp ---> [vt, np].
vp ---> [vs, s].
np ---> [det, n].
n ---> [n, pp].
pp ---> [p, np].
```

Pick three ambiguous example sentences licensed by this grammar (or, if you prefer, a variation of this grammar, which you should provide then) and draw the CYK table for them. For each table, add a three sentence explanation pointing to the place where the ambiguities are encoded.

In `parser/cyk/cyk.pl` (and with more basic output predicates in `parser/cyk/cyk_trace.pl`) you find a PROLOG implementation of the CYK algorithm. Try out your example sentences and see whether it fills the chart as you were expecting.

2. Read chapter 6 of Gazdar and Mellish (1989)