

$\frac{\text{Children}}{Np}$ $\frac{\text{are}}{(S[dcl] \setminus NP) / (S[Eng] \setminus NP)}$ $\frac{\text{rushing}}{(S[Eng] \setminus NP) / PP}$ $\frac{\text{to}}{PP / NP}$ $\frac{\text{the}}{NP / N}$ $\frac{\text{there}}{N / N}$ $\frac{\text{park}}{N}$
_____ >
N

① Complete the parse tree using forward + backward application.
 (N.B. you can handle $S[dcl]$, $S[Eng]$ as you would other primitive types)

<u>the</u>	<u>toy</u>	<u>that</u>		<u>the</u>	<u>boy</u>	<u>wanted</u>
NP/N	N	$(NP \setminus NP) / (S \setminus [d \setminus L]) / NP$		NP/N	N	$(S \setminus [d \setminus L]) \setminus NP / NP$
				$\xrightarrow{\quad NP \quad}$		

② Complete the derivation for this noun phrase (root will be NP) using rules of function application, composition and type raising.

③ Consider the following sentences (and any of your own) and suggest types (or a rule) to handle co-ordination.

$\frac{\text{Edward}}{\text{NP}}$ $\frac{\text{lived and breathed}}{(S \setminus \text{NP}) / \text{NP}}$ $\frac{\text{dinosaurs}}{\text{NP}}$?

$\frac{\text{Edward}}{\text{NP}}$ or ? $\frac{\text{George}}{\text{NP}}$ $\frac{\text{broke it}}{(S \setminus \text{NP}) / \text{NP}}$ NP

Now return to the video ..

they can fish
 0 1 2 3

0	NP		
1			
2			
	1	2	3

they : NP
 can : NP
 (S \ NP) / (S \ NP)
 S \ NP
 (S \ NP) / NP
 fish : NP
 S \ NP
 (S \ NP) / NP

- ① find all the parses for 'they can fish' using the CKY algorithm.
- ② Use CKY to find a CCG parse for:
 'People I knew waited'
 - you will need to suggest categories for the words.