Using the `ccg-latex.sty` file

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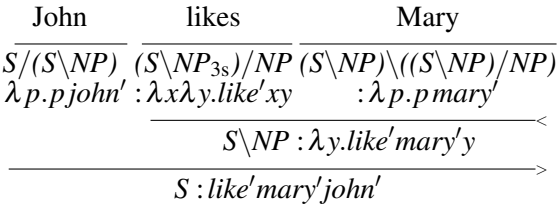
Include this line somewhere in the latex preamble:

```
\usepackage{ccg-latex}
```

I will show examples with increasingly high-level ccg-latex code.

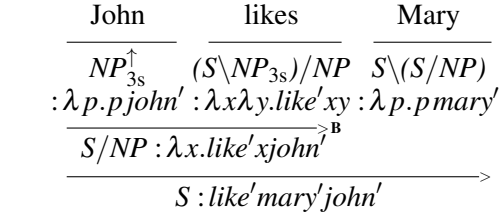
Examples with the `\cgex{n}{derivations}` command. The `\lf{}` is already in math mode. Lexical assumption lines are drawn by one command.



The ccg-latex code is:

```
\cgex{3}{John & likes & Mary\\
\cglines{3}\\
\cgf{S\fs(S\bs NP)} & \cgf{(S\bs\cgs{NP}{3s})\fs NP}
  & \cgf{(S\bs NP)\bs((S\bs NP)\fs NP)}\\
\lf{\lambda p.p\,\so{john}}
& \lf{\lambda x\lambda y.\so{like}xy} & \lf{\lambda p.p\,\so{mary}}\\
&\cgline{2}{\cgba}\\
&\cgres{2}{S\bs NP \lf{\lambda y.\so{like}\so{mary}y}}\\
% note that \cgres is by default in \cgf font
\cgline{3}{\cgfa}\\
\cgres{3}{S \lf{\so{like}\so{mary}\so{john}}}
}
```

Same example with lower-level ccg-latex commands for lexical assumption lines, and with shorthanded type-raising notation using subscript and superscript. NB. they are typeset in math mode without needing `$..$`.



The ccg-latex code is:

```
\cgex{3}{John & likes & Mary\\
% uses the alias \cat rather than \cgf above--same result
\cgul & \cgul & \cgul\\
 % manually repeats the columns for comparison with \cglines above
\cat{\cgss{NP}{3s}{\uparrow}}
& \cat{(S\bs\cgs{NP}{3s})\fs NP} & \cat{S\bs(S\fs NP)}\\
\lf{\lambda p.p\,\so{john}}
& \lf{\lambda x\lambda y.\so{like}xy} & \lf{\lambda p.p\,\so{mary}}\\
\cgline{2}{\cgfc}\\
\cgres{2}{S\fs NP \lf{\lambda x.\so{like}x\so{john}}}\\
% note that \cgres is by default in \cgf font
\cgline{3}{\cgfa}\\
\cgres{3}{\cat{S} \lf{\so{like}\so{mary}\so{john}}}
% using \cat inside \cgres is nae problem
}
```

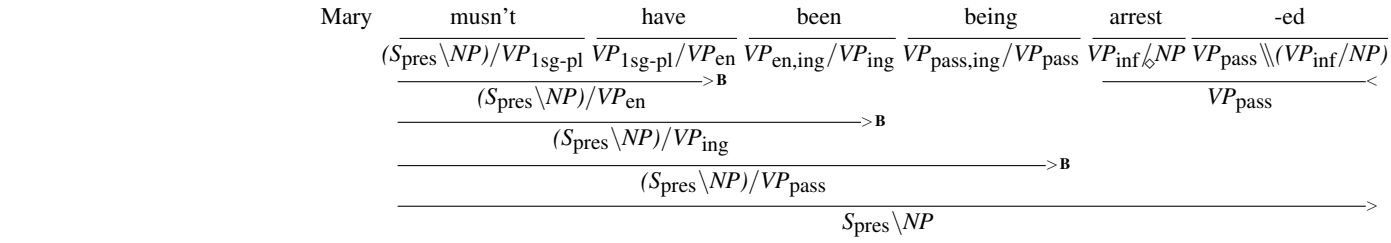
An example with double slashes (for morphology, etc.)

$$\dfrac{\text{dismiss} \qquad\qquad \text{-ed}}{\dfrac{VP_{\text{inf}}/NP\text{: }\lambda x\lambda y.dismiss'\,x\,y \quad ((S\backslash NP_{\text{agr}})/NP)\backslash\backslash(VP_{\text{inf}}/NP)\text{: }\lambda p\lambda x\lambda y.past'(P\,x\,y)}{(S\backslash NP_{\text{agr}})/NP\text{: }\lambda x\lambda y.past'(dismiss'\,x\,y)}<}$$

ccg-latex code (using `\cgf` instead of `\cat`, which do the same, and native latex math for LF, which does the same as `\lf{..}`). NB. empty subscripts, if you feel like it, or if you keep changing the categories as I do).

```
\cgex{3}{dismiss& -ed\\
\cglines{2}\\
\cgf{\cgs{VP}{inf}\fs\cgs{NP}{}
$:\lambda x\lambda y.\so{dismiss}\,x\,y$}&
\cgf{(((\cgs{S}{}\bs\cgs{NP}{agr})\fs NP)\bss(\cgs{VP}{inf}\fs NP)
$:\lambda p\lambda x\lambda y.\so{past}(P\,xy)$}\\
\cgline{2}{\cgba}\\
\cgres{2}{\cgf{(\cgs{S}{}\bs\cgs{NP}{agr})\fs\cgs{NP}{}
$:\lambda x\lambda y.\so{past}(\so{dismiss}\,x\,y)$}}
}
```

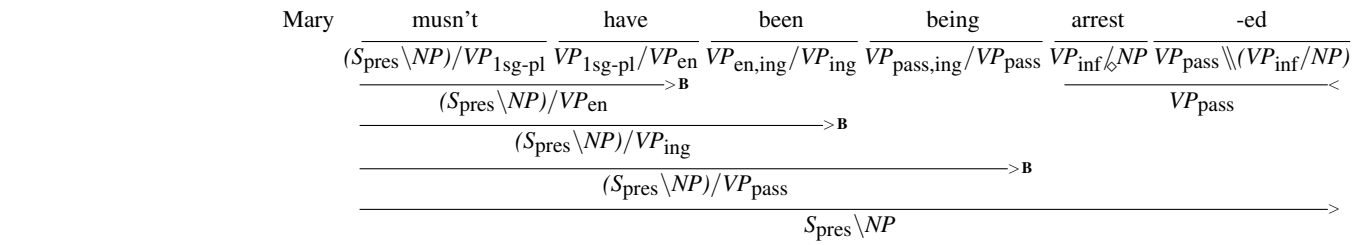
Here is one example with features galore, from Emmon Bach:



ccg-latex code:

```
{\footnotesize
Mary \cgex{6}{musn't & have & been & being & arrest & -ed\\
  \cglines{6}\\
  \cgf{(\cgs{S}{pres}\bs NP)\fs\cgs{VP}{1sg-pl}}
  & \cgf{\cgs{VP}{1sg-pl}\fs\cgs{VP}{en}}
   &\cgf{\cgs{VP}{en,ing}\fs\cgs{VP}{ing}}
   &\cgf{\cgs{VP}{pass,ing}\fs\cgs{VP}{pass}}
   &\cgf{\cgs{VP}{inf}\fds NP}
   &\cgf{\cgs{VP}{pass}\lds(\cgs{VP}{inf}\fs NP)}\\
   \cgline{2}{\cgfc}  &&&\cgline{2}{\cgba}\\
 \cgres{2}{(\cgs{S}{pres}\bs NP)\fs\cgs{VP}{en}}
 &&&\cgres{2}{\cgs{VP}{pass}}\\
   \cgline{3}{\cgfc}\\
 \cgres{3}{(\cgs{S}{pres}\bs NP)\fs\cgs{VP}{ing}}\\
 \cgline{4}{\cgfc}\\
 \cgres{4}{(\cgs{S}{pres}\bs NP)\fs\cgs{VP}{pass}}\\
 \cgline{6}{\cgfa}\\
 \cgres{6}{\cgs{S}{pres}\bs NP}
}}
```

Same example with `\begin{ccg}{n}{data}{derivations}\end{ccg}`.
No gloss line on top, and lexical assumption lines are drawn by default.

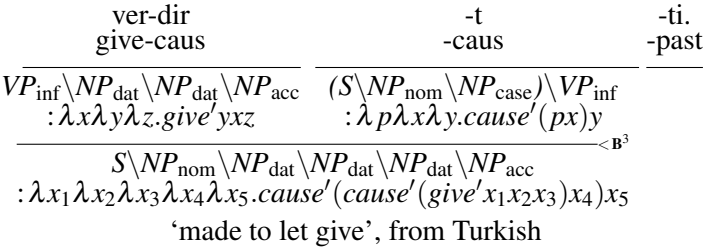


ccg-latex code:

```
{\footnotesize
Mary
\begin{ccg}{6}{musn't & have & been & being & arrest & -ed}
  {
  \cgf{(\cgs{S}{pres}\bs NP)\fs\cgs{VP}{1sg-pl}}
  & \cgf{\cgs{VP}{1sg-pl}\fs\cgs{VP}{en}}
   &\cgf{\cgs{VP}{en,ing}\fs\cgs{VP}{ing}}
   &\cgf{\cgs{VP}{pass,ing}\fs\cgs{VP}{pass}}
   &\cgf{\cgs{VP}{inf}\fds NP}
   &\cgf{\cgs{VP}{pass}\lds(\cgs{VP}{inf}\fs NP)}\\
   \cgline{2}{\cgfc}  &&&\cgline{2}{\cgba}\\
 \cgres{2}{(\cgs{S}{pres}\bs NP)\fs\cgs{VP}{en}}
 &&&\cgres{2}{\cgs{VP}{pass}}\\
   \cgline{3}{\cgfc}\\
 \cgres{3}{(\cgs{S}{pres}\bs NP)\fs\cgs{VP}{ing}}\\
 \cgline{4}{\cgfc}\\
 \cgres{4}{(\cgs{S}{pres}\bs NP)\fs\cgs{VP}{pass}}\\
 \cgline{6}{\cgfa}\\
 \cgres{6}{\cgs{S}{pres}\bs NP}
}
\end{ccg}
}
```

Another example, to show glossing in the beginning. The end gloss is typeset by `\mc`, for multi-column, centered.

It uses `\begin{ccgg}{n}{data}{gloss}{derivations}\end{ccgg}`.



‘made to let give’, from Turkish

ccg-latex code:

```
\begin{ccgg}{3}{ver-dir & -t & -ti.}{give{-caus} & {-caus} & {-past}}
{
\cgf{\cgs{VP}{inf}\bs\cgs{NP}{dat}\bs\cgs{NP}{dat}\bs\cgs{NP}{acc}}
& \cgf{(S\bs\cgs{NP}{nom}\bs\cgs{NP}{case})\bs\cgs{VP}{inf}}\\
\lf{\lambda x\lambda y\lambda z.\so{give}yxz}
& \lf{\lambda p\lambda x\lambda y.\so{cause}(px)y}\\
\cgline{2}{\cgbc$^3$}\\
\cgres{2}{S\bs\cgs{NP}{nom}\bs\cgs{NP}{dat}\bs\cgs{NP}{dat}
\bs\cgs{NP}{dat}\bs\cgs{NP}{acc}}\\
\cgres{2}{\lf{\lambda x_1\lambda x_2\lambda x_3\lambda x_4\lambda x_5.
\so{cause}(\so{cause}(\so{give}x_1x_2x_3)x_4)x_5}}\\[1ex]
\mc{3}{‘made to let give’, from Turkish}
}
\end{ccgg}
```