

CS 6740/IS 6300
Lecture 10: more on CCGs

$\frac{i}{NP}$ $\frac{dislike}{(S \setminus NP) \setminus NP}$ $\lambda x. \lambda y. dislike'(x, y)$ $\frac{and}{CONJ}$ $\lambda f. \lambda g. \lambda x. \lambda y. f(x) \wedge g(y)$ $\frac{mary}{NP}$ $\frac{likes}{\lambda x. \lambda y. like'(x, y)}$ $\frac{musicals}{NP}$

$\lambda x. and'(f(x), g(x))$
 $\lambda x. \lambda y. and'(f(x), g(y))$
 <similar to "i dislike">

S/NP $\lambda x. and'(dislike'(i', x), like'(mary, x))$

S and' (dislike'(i', musicals'), like'(mary, musicals'))

forward composition: $\frac{X/Y}{X/Z}$

$f: \text{domain } Y \rightarrow \text{range } X$, $g: \text{domain } Z \rightarrow \text{range } Y$
 $f \circ g: \text{domain } Z \rightarrow \text{range } X$

type raising: $\frac{X}{T/(T \setminus X)}$ for ↑ some type

Example: for i' , i' is a function over possible relations over it.
 i' applied to $\lambda x. run(x)$ is $run(i')$
 i' applied to $\lambda x. \lambda y. dislike'(x, y)$ is $\lambda y. dislike'(i', y)$
 So its domain is "things looking for an NP to the left", $T \setminus NP$
 Since the NP i' fulfills this desire, the result is a \bar{c} .

or $\frac{X}{T \setminus (T \setminus X)}$ for some type T

If there's something to the left of this X that's looking for an X to the right, then this X satisfies its need.