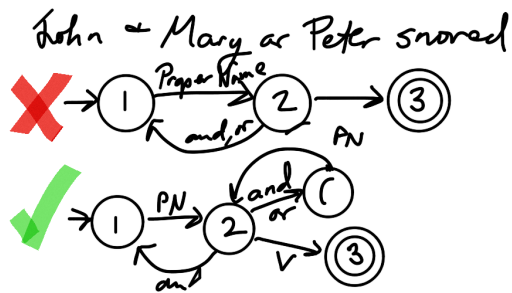
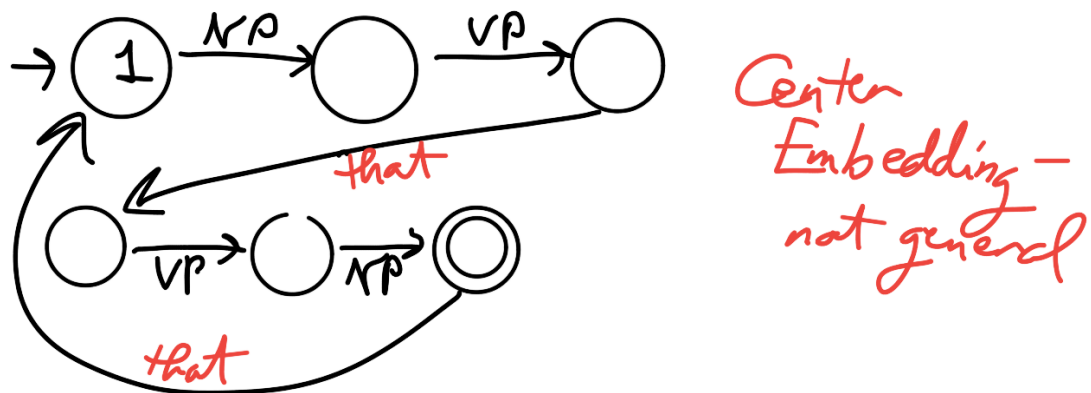


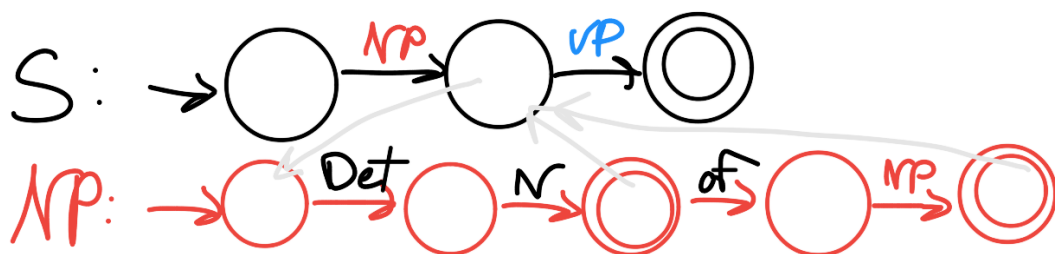
2 - Aug 28th, trees from string models



Depending on the run over the string, we can get additional structural information.



- tree structure —> eliminates redundancy, allows for generalizations —> Recursive Transition Network RTN. as long as no unbounded recursion, evaluates to FSA, but also tree-like.



- Competence/Performance - the distinction doesn't actually matter. The recursive cut-off is so deep it isn't interesting to us.
- Context Free Grammar
 - Phrase Structure Grammar
 - Attribute Value Matrices - introduced to simplify FSAs by allowing more general rules



$$S \rightarrow \left[\begin{array}{cc} P & \beta \\ NP_{1,2} & 1 \\ Gender & \gamma \\ Case & Nom \end{array} \right] \left[\begin{array}{cc} Num & a \\ P & \beta \\ NP_{1,2} & c1 \end{array} \right]$$

- GSPS - Generalized PSG, Gazdar, Klein, Pullum, Sag 1985
- ECPO - Exhaustive Constraint Partial Ordering
 - Divides into immediate precedence rules and dominance rules

$$\langle \text{kiss} \rangle \left[\begin{array}{cc} Cat & V \\ \left. \begin{array}{c} Pers \\ Num \end{array} \right\} & \neg (3^{sg}) \\ Tense & \neg \text{past} \\ Inf & \square \\ Subcat & _ NP \end{array} \right]$$

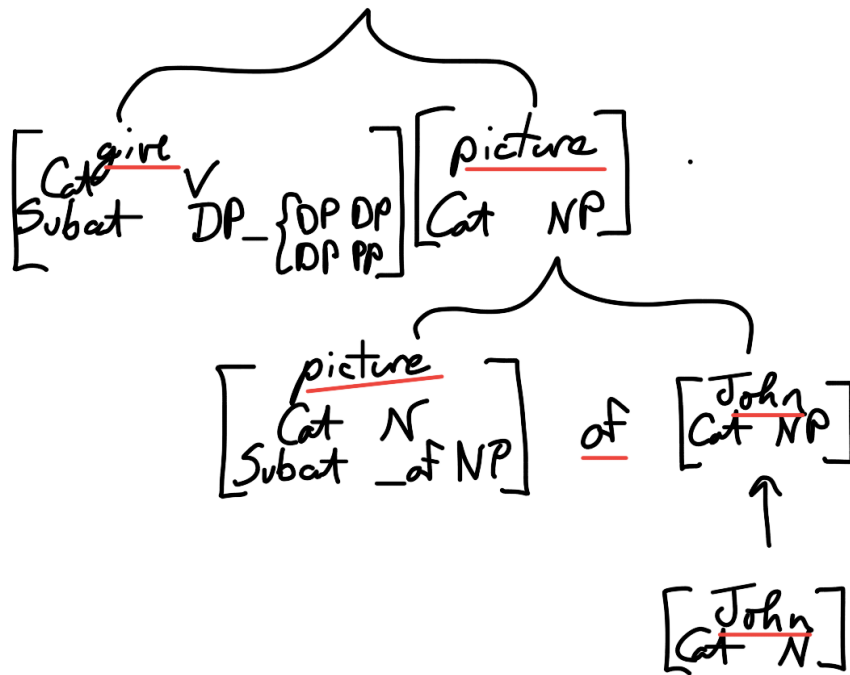
$$\langle \text{give} \rangle \left[\begin{array}{cc} Cat & V \\ Subcat & NP _ \left\{ \begin{array}{c} NP \\ NP \end{array} \right. \end{array} \right]$$

$$\langle \text{John} \rangle [Cat \ N]$$

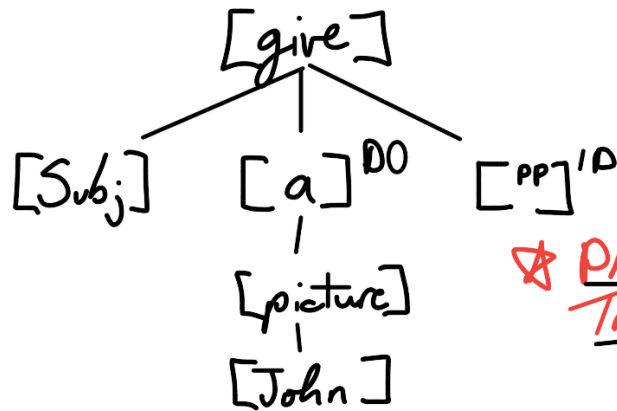
$$\langle \text{picture} \rangle \left[\begin{array}{cc} Cat & N \\ Subcat & _ \text{of } NP \end{array} \right]$$

$$\langle \text{a} \rangle \left[\begin{array}{cc} Cat & D \\ Subcat & _ NP \end{array} \right]$$

$$\left[\begin{array}{cc} Cat & \text{give}_{V'} \\ Subcat & DP _ DP \{ DP_{PP} \} \end{array} \right]$$

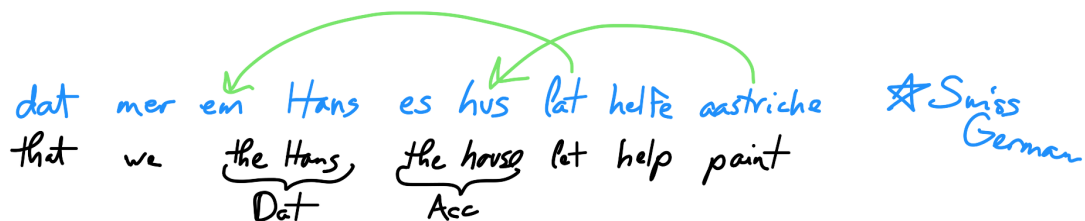


- CFG → PSG → AVMs → Lexicalization

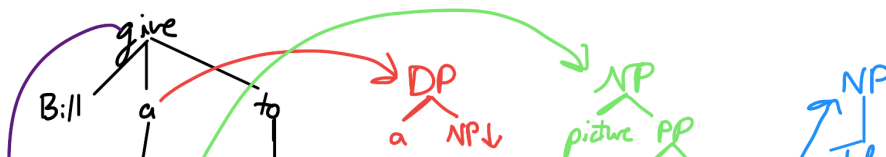


★ Phrase Structure Tree - "blueprint" for combining AVMs

- Crossing dependencies go beyond the context-free boundary (the same way center embedding is non-regular). CFG accounts for nesting but not crossing.



TREE ADJOINING GRAMMAR



picture 'b:ll A NPL John

