

F.1 English Grammar

1. Subject_Head Rule

$$\text{subj-hd-ph} \Rightarrow \left[\begin{array}{l} \text{SUBJ-DTR} \quad [\text{SYNSEM} | \text{LOC} | \text{CAT} | \text{HEAD} \quad \boxed{1}] \\ \text{HD-DTR} \quad \quad [\text{SYNSEM} | \text{LOC} | \text{CAT} | \text{SUBJ} \quad \boxed{1}] \end{array} \right]$$

2. Head_Complement rule

$$\text{hd-comp-ph} \Rightarrow \left[\begin{array}{l} \text{HD-DTR} \quad \left[\begin{array}{l} \text{word} \\ \text{SYNSEM} | \text{LOC} | \text{CAT} | \text{COMP} \quad \boxed{1} \langle \boxed{2} \rangle, \dots, \boxed{n} \dots \end{array} \right] \\ \text{NON-HD-DTRS} \quad \langle [\text{SYNSEM} \quad \boxed{1}], [\text{SYNSEM} \quad \boxed{2}], \dots, [\text{SYNSEM} \quad \boxed{M}] \rangle \end{array} \right]$$

3. Coordination rule

$$\text{coordination-ph} \Rightarrow \left[\begin{array}{l} \text{CONJUNCT-DTR1} \quad \left[\begin{array}{l} \text{phrase} \\ \text{SYNSEM} | \text{LOC} | \text{CAT} \quad \boxed{1} \end{array} \right] \\ \text{COORDINATE-DTR} \quad [\text{SYNSEM} | \text{LOC} | \text{CAT} | \text{HEAD} \quad \text{conj}] \\ \text{CONJUNCT-DTR2} \quad \left[\begin{array}{l} \text{phrase} \\ \text{SYNSEM} | \text{LOC} | \text{CAT} \quad \boxed{1} \end{array} \right] \end{array} \right]$$

4. Head_Subject_Complement Rule

$$\text{hd-subj-comp-ph} \Rightarrow \left[\begin{array}{l} \text{HD-DTR} \quad \left[\begin{array}{l} \text{word} \\ \text{SYNSEM} | \text{LOC} | \text{CAT} \quad \left[\begin{array}{l} \text{HEAD} \quad [\text{INV} \\ \text{yes}] \\ \text{SUBJ} \quad \boxed{1} \quad \boxed{2} \quad \boxed{3} \end{array} \right] \end{array} \right] \\ \text{SUBJ-DTR} \quad \quad [\text{SYNSEM} | \text{LOC} | \text{CAT} \quad \boxed{4}] \\ \text{NON-HD-DTRS} \quad \langle [\text{SYNSEM} \quad \boxed{1}], [\text{SYNSEM} \quad \boxed{2}], \dots, [\text{SYNSEM} \quad \boxed{M}] \rangle \end{array} \right]$$

5. Specifier_head_Rule

$$\text{spr-hd-ph} \Rightarrow \left[\begin{array}{l} \text{HD-DTR} \quad \boxed{2} \quad \left[\begin{array}{l} \text{phrase} \\ \text{SYNSEM} | \text{LOC} | \text{CAT} | \text{SPR} \quad \boxed{1} \end{array} \right] \\ \text{SPEC-DTR} \quad \boxed{1} \quad \quad \quad [\text{SYNSEM} | \text{LOC} | \text{CAT} | \text{HEAD} \quad \boxed{2} | \text{SPEC}] \end{array} \right]$$

6. Adjunct_head and Head_adjunct rule

$$\text{adjunct-hd-ph} \Rightarrow \left[\begin{array}{l} \text{ADJUNCT-DTR} \quad [\text{SYNSEM} | \text{LOC} | \text{CAT} | \text{HEAD} | \text{MOD} \quad \boxed{2}], \\ \text{HD-DTR} \quad \quad \boxed{2} \quad \quad \quad [\end{array} \right]$$

$$\text{hd-adjunct-ph} \Rightarrow \left[\begin{array}{l} \text{HD-DTR} \quad \quad \boxed{2} \quad \quad \quad [\\ \text{ADJUNCT-DTR} \quad [\text{SYNSEM} | \text{LOC} | \text{CAT} | \text{HEAD} | \text{MOD} \quad \boxed{2}], \end{array} \right]$$