

Ling130 – DPL Rules

❖ *Dynamic Existential Quantification*

$$\triangleright \llbracket \exists x\phi \rrbracket = \{ \langle g, h \rangle \mid \exists k : k[x]g \ \& \ \langle k, h \rangle \in \llbracket \phi \rrbracket \}$$

❖ *Dynamic Conjunction*

$$\triangleright \llbracket \phi \wedge \psi \rrbracket = \{ \langle g, h \rangle \mid \exists k : \langle g, k \rangle \in \llbracket \phi \rrbracket \ \& \ \langle k, h \rangle \in \llbracket \psi \rrbracket \}$$

❖ *Atomic Formulas*

$$\triangleright \llbracket R t_1, \dots, t_n \rrbracket = \{ \langle g, h \rangle \mid h = g \ \& \ \langle \llbracket t_1 \rrbracket_h, \dots, \llbracket t_n \rrbracket_h \rangle \in F(R) \}$$

❖ *Dynamic Implication*

$$\triangleright \llbracket \phi \rightarrow \psi \rrbracket = \{ \langle g, h \rangle \mid h = g \ \& \ \forall k : \langle h, k \rangle \in \llbracket \phi \rrbracket \Rightarrow \exists j : \langle k, j \rangle \in \llbracket \psi \rrbracket \}$$

❖ *Dynamic Universal Quantification*

$$\triangleright \llbracket \forall x\phi \rrbracket = \{ \langle g, h \rangle \mid h = g \ \& \ \forall k : k[x]h \Rightarrow \exists m : \langle k, m \rangle \in \llbracket \phi \rrbracket \}$$

❖ *Dynamic Negation*

$$\triangleright \llbracket \neg\phi \rrbracket = \{ \langle g, h \rangle \mid h = g \ \& \ \neg\exists k : \langle h, k \rangle \in \llbracket \phi \rrbracket \}$$

❖ *Dynamic Disjunction*

$$\triangleright \llbracket \phi \vee \psi \rrbracket = \{ \langle g, h \rangle \mid h = g \ \& \ \exists k : \langle h, k \rangle \in \llbracket \phi \rrbracket \vee \langle h, k \rangle \in \llbracket \psi \rrbracket \}$$