

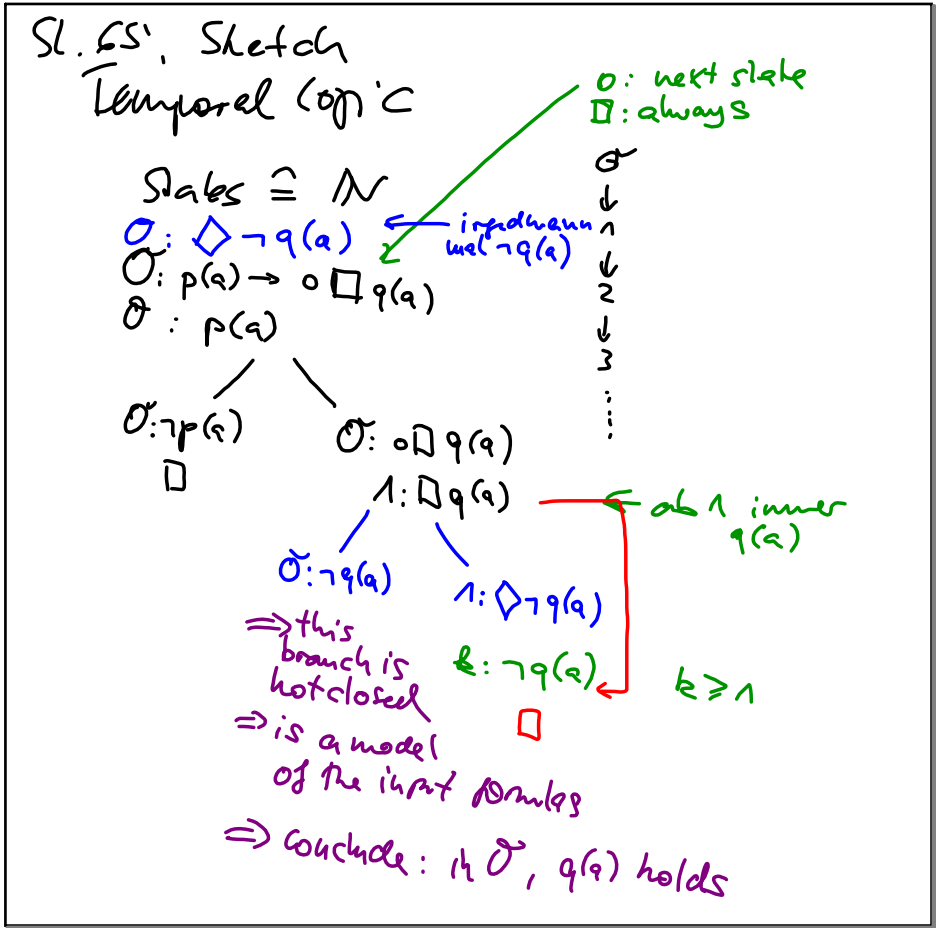
$\forall x: p(x) \rightarrow q(x)$   
 $p(a) \quad p(c)$   
 $q(b)$   
 $\neg q(x)$   
 $\exists x \rightarrow b$   
 $p(x_2) \rightarrow q(x_2)$   
 $\neg p(x_2) \quad q(x_2)$   
 $\exists x_2 \rightarrow a$   
 $\exists x_2 \rightarrow c$   
 $\exists x \rightarrow x_2$   
 $a \rightarrow \text{answer}$   
 $c \rightarrow \text{answer}$

*b is first answer*  
*... on blue next answer!*

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$\forall x \text{ person}(x) \rightarrow \exists y: \text{father}(x) \wedge \text{person}(y)$   
 $\forall x, y, z: \text{father}(x, y) \wedge \text{father}(y, z) \rightarrow \text{gf}(x, z)$   
 $p(\text{john})$   
 $p(\text{jack})$   
 $\neg f(\text{john}, \text{jack})$   
 $\rightarrow \text{gf}(\text{john}, x)$   
 $f(x_1, y) \wedge f(y, z) \rightarrow \text{gf}(x_1, z)$   
 $\neg (f(x_1, y) \wedge f(y, z))$   
 $\neg f(x_1, y)$   
 $\neg f(\text{john}, \text{john})$  not closable!  
 $\neg f(\text{john}, \text{jack})$  not successful! not an answer!  
 $\exists x \rightarrow \text{jack}$   
 $\exists y: f(x_2, y) \wedge p(y)$   
 $\text{Stufenfunktion for } y:$   
 $f(x_2, \text{father}(x_2)) \wedge p(\text{father}(x_2))$   
 $\text{possible answer: } z_1 \rightarrow \text{father}(x_2)$   
 $\text{is ... close } x_2 \leftarrow \text{jack}$   
 $\text{could both be closed if } y_1 = x_2 = \text{jack}$   
 $\rightarrow \text{ignore this!}$   
 $p(x_2) \rightarrow \exists y: f(x_2, y) \wedge p(y)$   
 $\neg p(x_2)$   
 $\exists y: f(x_2, y) \wedge p(y)$   
 $f(\text{john}, \text{father}(\text{john})) \wedge p(\text{father}(\text{john}))$   
 $\exists x_2 \rightarrow \text{father}(\text{john})$   
 $\Rightarrow z_1 \rightarrow \text{father}(\text{father}(\text{john}))$   
 $\Rightarrow \text{answer? } \text{father}(\text{father}(\text{john}))$

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res. calc

$$\frac{\frac{\neg a \vee b}{b} \quad a}{b} \hat{=} \frac{a \rightarrow b, a}{b}$$

$$\frac{\underline{\neg a \vee b} \quad \underline{a \vee c}}{b \vee c}$$

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