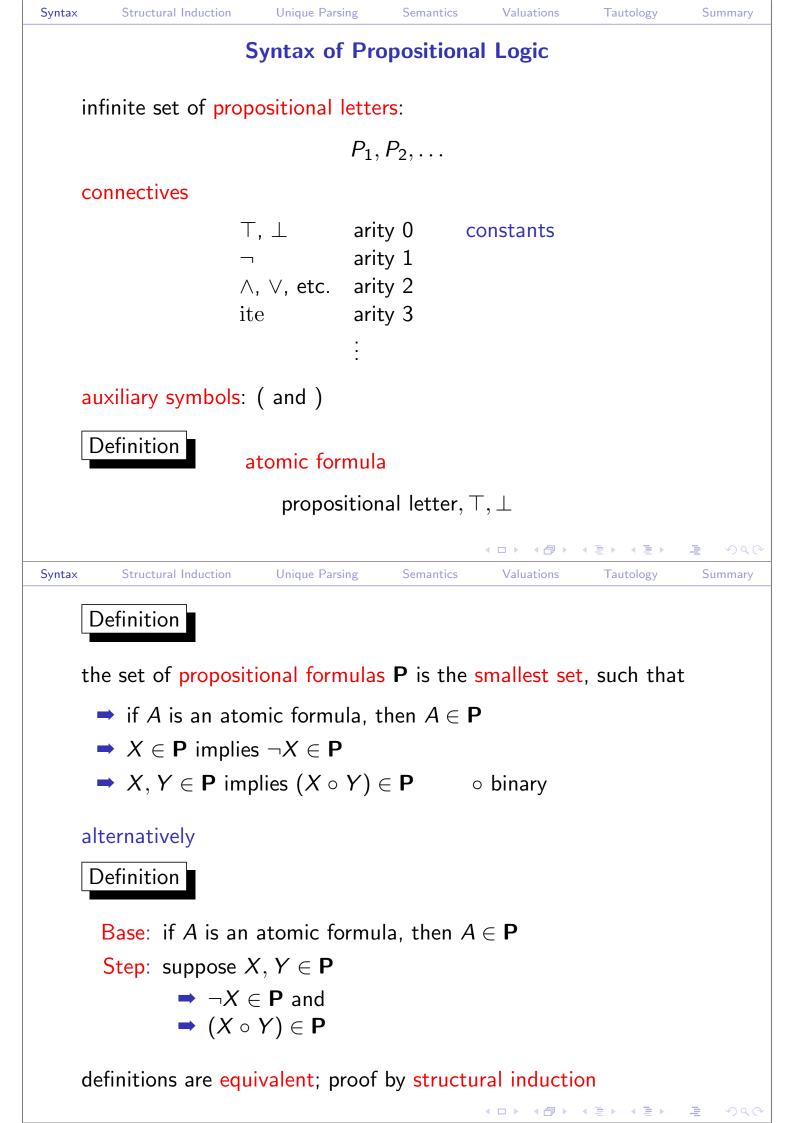
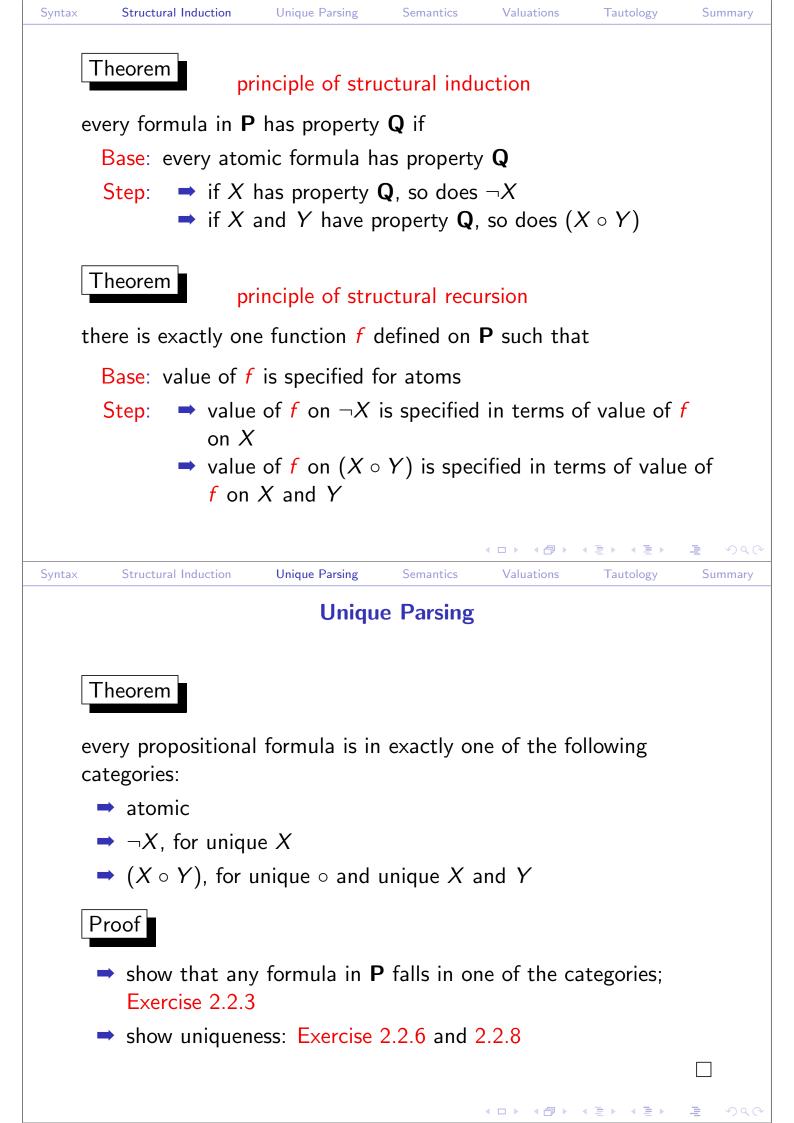
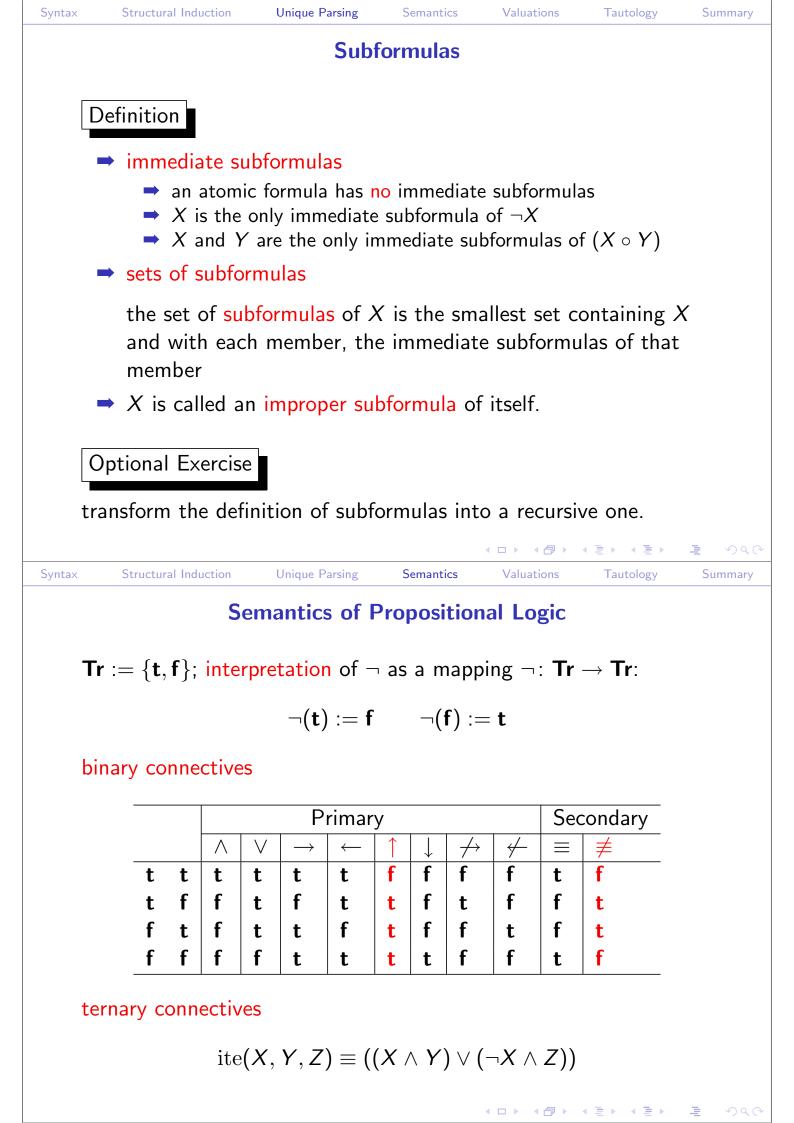
Syntax	Structural Induction	Unique Parsing	Semantics	Valuations	Tautology	Summa
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	Coorg	M_{ocor} ()/(1) ¹	Christian	λ	1)2	_
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			vogt@uibk.ac			
		office hours: 7	Fuesday 9am–3	l1am		
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/ntax	Structural Induction	Unique Parsing	Semantics	 □ ▶ < □ ▶ Valuations 	< 클 > 《 클 > Tautology	王 の Summa
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		"Snow is wh	nte."	5		
fo	orm complex sent	ences by usin	g connectiv	/es		
	"Mountains	are high and	snow is wh	ite." /	$M \wedge S$	
		ns are high, th				
I	➡ How does the	e truth/falsity	of comple>	sentences	depends c	on
	the truth/fals	ity of their at	oms?			
l	Which are tru	ie, independer	nt of the st	atus of the	ir atoms?	







SyntaxSouched InductionUnique ParkingSimulationValuationsTaratologySummaryDefinitiona Boolean valuation is a mapping
$$v: \mathbf{P} \to \mathbf{Tr}$$
fulfilling• $v(\top) = \mathbf{t}$ $v(\bot) = \mathbf{f}$ • $v(\neg X) = \neg v(X)$ • $v(X \circ Y) = v(X) \circ v(Y)$, \circ binary.Theoremfor each mapping f $f:$ propositional letters \rightarrow **Tr**exists a Boolean valuation v with $f(P_i) = v(P_i)$ Theorem v_1, v_2 are valuations with $v_1(P) = v_2(P)$, for all $P \in S$, then v_1, v_2 are valuations only letters from S syntaxSentend InductionUnique ParkingSentend InductionUnique ParkingSentential Data $P \in S$, then $v_1(X) = v_2(X)$ if X contains only letters from S SyntaxSentental InductionUnique ParkingSentential ValuationsBoolean valuations are uniquely determined by the valuations of the occurring atomsSentential Induction of $V(P) = \mathbf{t}$ Exampleconsider $v: \mathbf{P} \rightarrow \mathbf{Tr}$ such that $v((P) = \mathbf{t}$ $v(Q) = \mathbf{f}$ $v(X) = \mathbf{f}$ if $X \notin \{P, Q, R\}$ Hence $v((P \uparrow \neg Q) \rightarrow R) = v(P \uparrow \neg Q) \rightarrow v(R)$ $= (v(P) \uparrow v(Q)) \rightarrow v(R)$ $= (v(P) \uparrow v(Q)) \rightarrow v(R)$ $= (\mathbf{t} \uparrow \mathbf{f}) \rightarrow \mathbf{f}$ $= \mathbf{f} \rightarrow \mathbf{f} = \mathbf{t}$ Convention:outermost brackets are dropped.

