

Systematic Development and Synthesis of Deduction Approaches

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Project Aim:

- Investigation and development of proof systems for modal logics and its extensions

Focus:

- Extension of the tableau synthesis framework
- Implementation of the tableau rule generator

Modal Logic:

- Used to verify systems
- Can be used in agent-based systems
- Model consists of worlds:

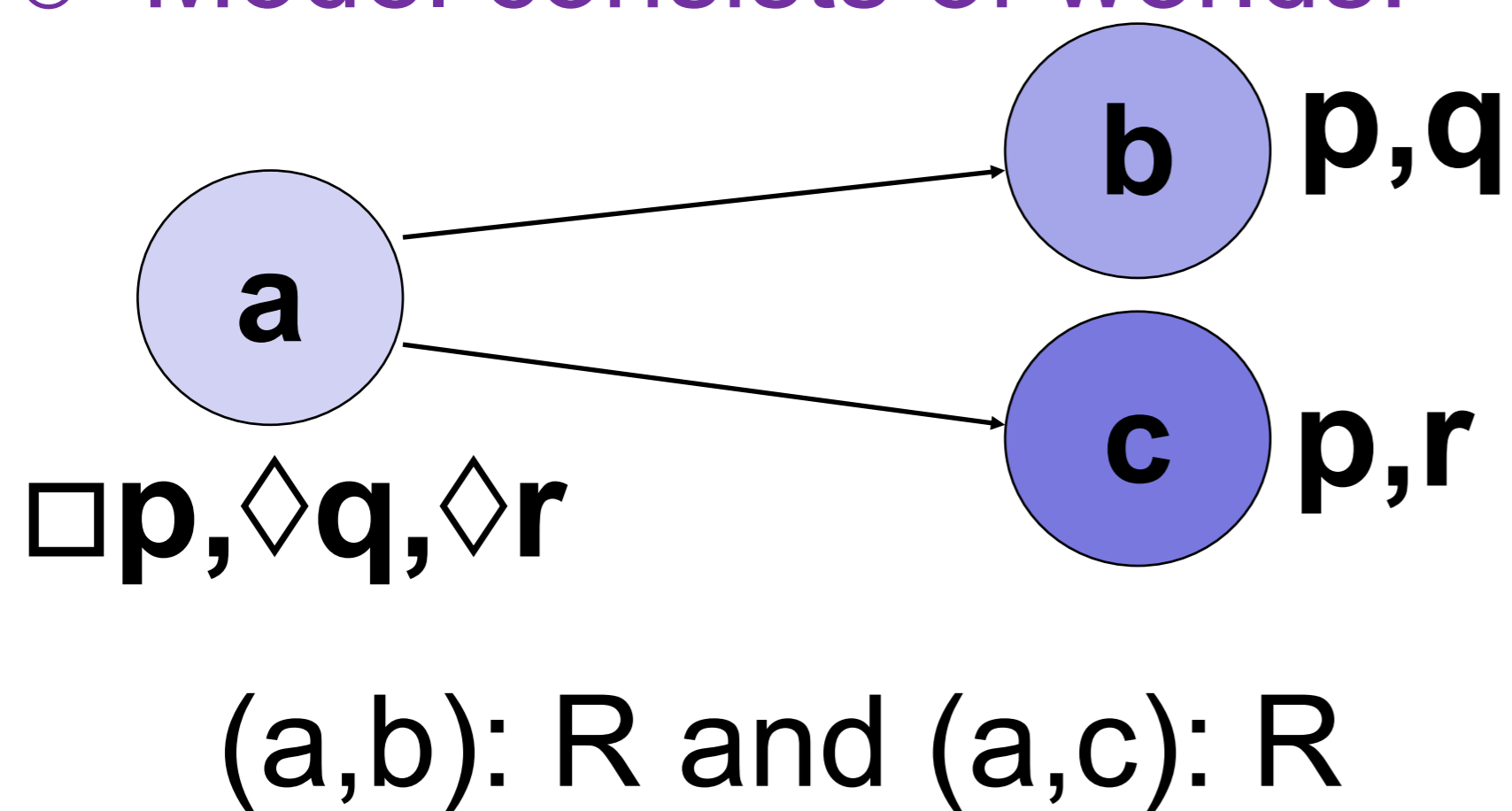


Tableau:

- Used as a decision procedure

$\{\Diamond p, \Box q, \Box \neg q\}$

$a: \Diamond p \wedge \Box q \wedge \Box \neg q$

$\downarrow \Diamond$

$(a,b): R, b: p$

$\downarrow \Box$

$b: q, \neg q$

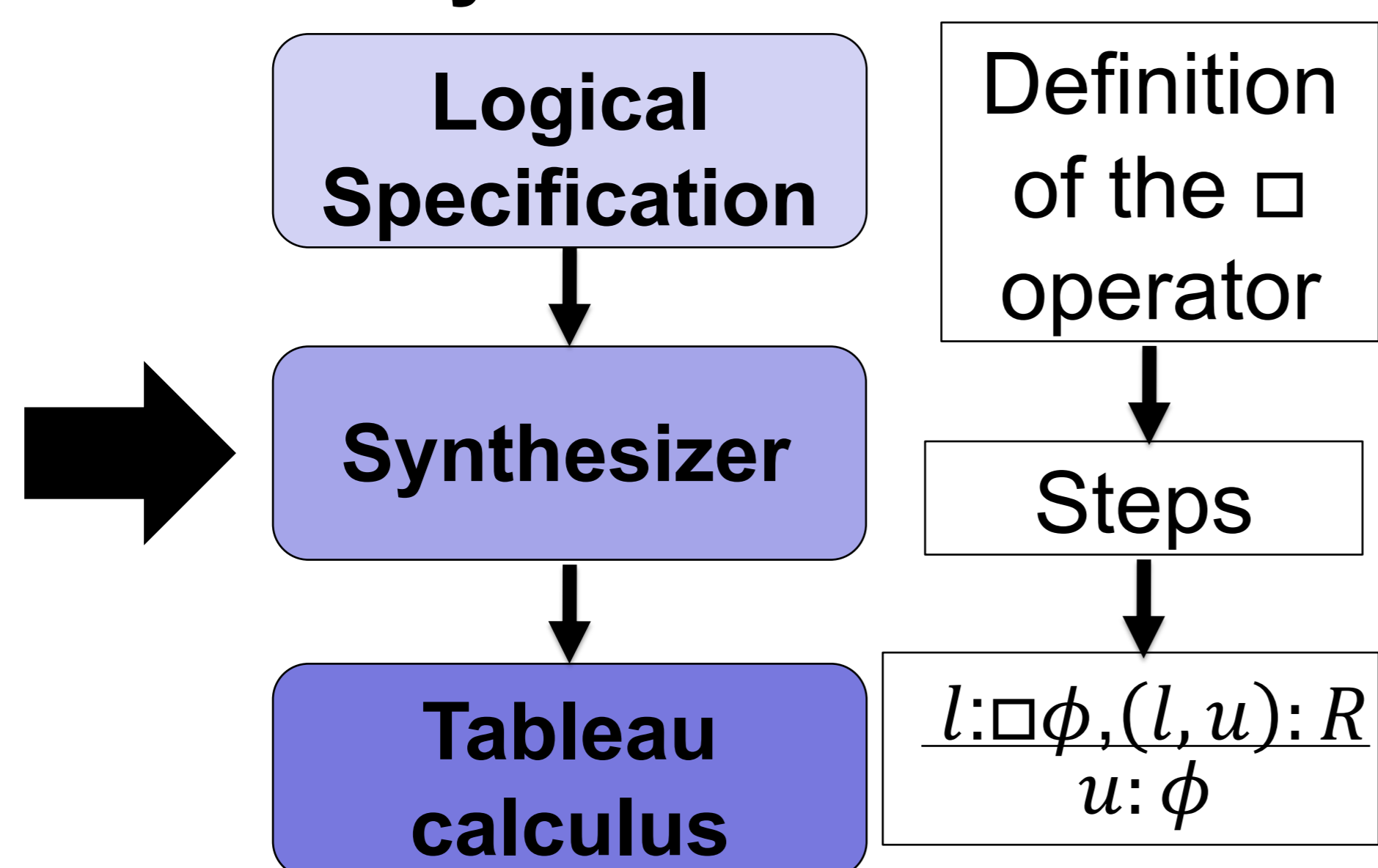
$\downarrow \perp$

$b: \perp$

Tableau Rules	
(\Box)	$\frac{l: \Box \phi, (l, u): R}{u: \phi}$
(\Diamond)	$\frac{l: \Diamond \phi}{(l, u): R, u: \phi}$
(\perp)	$\frac{l: \neg \phi, l: \phi}{\perp}$

Unsatisfiable

Tableau Synthesis Framework:



MetTeL:

