

Homework on §3.5—assigned Mon 9/29 and due Wed 10/1

Construct a derivation for the following claim of entailment and, for each stage, tell (i) which gap you chose to work on, (ii) the proximate argument of the gap and the (basic) rules that could have been applied, and (iii) the rule you applied (if any could be applied):

$$\neg (A \wedge \neg B) \wedge C, A \wedge D \Rightarrow B \wedge D$$

The following worksheet is designed for this sort of exercise.

Procedure for the derivation worksheet

Enter any premises of the argument as initial assumptions, enter its conclusion as a goal, and follow the procedure below until you are done.

1. *Find any open gaps.*
 - If there aren't any, you've shown that the initial argument is valid and you're done.
 - If there are any, pick one to work on, and go on to step 2.
2. *Note the proximate argument of the gap.* That is, write down the gap's active resources and goal.
 - Go on to step 3.
3. *Find any rules that can be used to close the gap.* Write the name of each such rule under the conclusion of the proximate argument.

<i>conditions for closing the gap</i>	<i>rule</i>
the goal is among the resources	QED
the goal is \perp , and there are resources ϕ and $\neg \phi$	Nc
the goal is \top	ENV
\perp is a resource	EFQ

- If there aren't any, go on to step 4.
 - If there are any, pick one, use it to close the gap, and go back to step 1.
4. *Find any rules that can be used to exploit resources or plan for the goal.* Write the name of each such rule under the sentence in the proximate argument it exploits or plans for.

<i>kind of sentence</i>	<i>exploitation rule</i>	<i>planning rule</i>
conjunction	Ext	Cnj
negated {	atomic sentence	<i>none</i>
	non-atomic sent.	CR (when the goal is \perp)
		RAA
atomic sentence	<i>none</i>	IP
\top or \perp	<i>none</i>	<i>none</i>

- If there aren't any, you've reached a dead-end open gap, so you've shown that the initial argument is not valid, and you're done.
- If there are any, pick one, apply it, and go back to step 1.

