UNIVERSITEIT VAN AMSTERDAM
INSTITUTE FOR LOGIC, LANGUAGE AND COMPUTATION

Core Logic

2004/2005; 1st Semester

dr Benedikt Löwe

Homework Set # 5 *Deadline:* October 13th, 2004

Exercise 11 (13 points total).

We are considering two new systems of dialogic logic: In the first one, called **strictly constructive**, we restrict the proponent in a way that he also can only react to the last move of the opponent and denote the corresponding semantic relation by $\models_{\mathrm{sc}}$. In the second one, called **liberal**, $\models_{\mathrm{lib}}$, we liberalize the opponent so that he also can react to all prior moves of the proponent.

(1) Give formal definitions (in the style of the lecture, giving explicitly the rules for the two players) for $\models_{\mathrm{sc}}$ and $\models_{\mathrm{lib}}$ (1½ points each).
(2) Prove that $\models_{\mathrm{lib}} \varphi$ holds for no formula φ (4 points).
(3) Find two different formulas φ such that $\models_{\mathrm{sc}} \varphi$ and give dialogue proofs for them (1½ points each).
(4) Find a formula φ such that $\models_{\mathrm{dialog}} \varphi$ but not $\models_{\mathrm{sc}} \varphi$. Give dialogue proofs of both claims (1½ points each).

Exercise 12 (6 points total).

Give dialogue proofs of the following formulas in $\models_{\mathrm{cl}}$ (1½ points each):

- $\neg\neg\neg p \rightarrow \neg p$,
- $((p \rightarrow q) \wedge \neg q) \rightarrow \neg p$.

For both formulas, decide whether they are valid in $\models_{\mathrm{dialog}}$ and give a dialogue argument for or against your claim (1½ points each).

Exercise 13 (6 points total).

Read

> Paul Vincent **Spade**, Why Don't Mediaeval Logicians Ever Tell Us What They're Doing? Or, What Is This, A Conspiracy?, *preprint* 2000.

Spade gives four 'exhibits' to prove his thesis that there are key issues of medieval logic that we don't understand. Summarize each of these four exhibits briefly (at most three sentences each; 1½ points each).

`http://staff.science.uva.nl/~bloewe/2004-I-CL.html`