UNIVERSITEIT VAN AMSTERDAM
INSTITUTE FOR LOGIC, LANGUAGE AND COMPUTATION

# Core Logic

**2006/2007; 1st Semester**

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**Homework Set # 3** *Deadline:* September 27th, 2006

**Exercise 7** (4 points).

There are four rules in the Square of Oppositions

- Contradictory propositions cannot both be true and they cannot both be false.
- Contrary propositions cannot both be true but can both be false.
- Subcontrary propositions cannot both be false but can both be true.
- A subaltern must be true if its superaltern is true, and the superaltern must be false if the subaltern is false.

Two of them directly correspond to conversion rules in Aristotelian syllogistics. Which ones and why (2 points each)?

**Exercise 8** (8 points).

The following three pseudo-syllogisms are sometimes called "indirect moods of the first figure":

$A\mathrm{e}B$, $B\mathrm{a}C$ : $C\mathrm{e}A$ **Celantes**,
$A\mathrm{a}B$, $B\mathrm{i}C$ : $C\mathrm{i}A$ **Dabitis**,
$A\mathrm{a}B$, $B\mathrm{e}C$ : $C\mathrm{o}A$ **Fapesmo**.

(1) Why aren't these real syllogisms? (½ point)
(2) Each of these "indirect moods" corresponds to one of the valid moods of the fourth figure. Find the right mood and explain the correspondence. (1½ points)
(3) Explain all of the letters in the names **Celantes**, **Dabitis** and **Fapesmo** in terms of the medieval mnemonics. For this, give a formal proof of the indirect moods from the perfect syllogisms. (6 points)

**Exercise 9** (5 points).

(1) Give a formal proof of **Baroco** ($B\mathrm{a}A$, $B\mathrm{o}C$: $A\mathrm{o}C$) and **Camestres** ($B\mathrm{a}A$, $B\mathrm{e}C$: $A\mathrm{e}C$), explaining all the letters in the names. (4 points)
(2) Why could **Camestrop** ($B\mathrm{a}A$, $B\mathrm{e}C$: $A\mathrm{o}C$) rather be called **Camestrops**? (1 point)

**Exercise 10** (5 points).

A categorical proposition is called **particular** if it has 'i' or 'o' as a copula. Let $M$ be a mood such that both premises of $M$ are particular. Argue that $\mathrm{BCDF} \nvdash M$. (5 points)

**Hint.** We showed a similar meta-theorem in the lecture.