



**Core Logic**  
2006/2007; 1st Semester  
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**Homework Set # 2**

*Deadline:* September 20th, 2006

**Exercise 4** (8 points).

For each of the following papers written by ILLC members, give

- the full bibliographical data: full first and last name of all authors, full title, journal in which the paper appeared with full title, volume and issue number, page numbers (1 point each),

[**Example.** Johan van Benthem, Guram Bezhanishvili, Mai Gehrke, Euclidean hierarchy in modal logic. *Studia Logica* 75 (2003), no. 3, p. 327–344.]

- the first sentence of the paper not including the abstract (1 point each).

- (1) Aiello / van Benthem / Bezhanishvili, Reasoning about space
- (2) Ulle Endriss et al., Welfare Engineering in Practice, in: Postproceedings ESAW-2004
- (3) Troelstra, A. S., A tribute to Dirk van Dalen, APAL 73
- (4) van Rooy-Schulz on ‘exhaustive interpretation’ in JoLLI 2004

**Exercise 5** (7 points).

The following is a syntax for a term logic in the Aristotelean style. We have term variables  $t_i$  and symbols **All**, **Some**, **No** and **Somenot**, where, *e.g.*, **Some**( $t_0, t_1$ ) is interpreted as “Some  $t_0$  is  $t_1$ ,” *etc.* If **S** is one of the four symbols and  $t_0$  and  $t_1$  are term variables, then **S**( $t_0, t_1$ ) is called a *clause*. We now add two operators  $+$  and  $-$  to the language. If  $C$  is a clause, then both  $+C$  and  $-C$  are *statements*, interpreted as “ $C$  is true” and “ $C$  is false”, respectively.

A *rule* for this syntax is a diagram

$$\frac{S}{S'}$$

where  $S$  and  $S'$  are statements. For instance,

$$\frac{+\mathbf{All}(t_0, t_1)}{-\mathbf{No}(t_0, t_1)}$$

is a rule, interpreted as “if all  $t_0$  are  $t_1$ , then it cannot be true that no  $t_0$  is  $t_1$ ”.

Give all of the rules corresponding to the relationships represented in the square of opposition (for example, the above rule corresponds to one instance of “contraries cannot both be true at the same time”).

**Exercise 6** (7 points; +2 extra points)

Lacydes of Cyrene was one of the heads of the Academy. The *Encyclopædia Britannica* reports:

According to Athenaeus (x. 438) and Diogenes Laertius (iv. 60) he died from excessive drinking, but the story is discredited by the eulogy of Eusebius (Praep. Ev. xiv. 7), that he was in all things moderate.

Find the original quote of Diogenes Laertius (3 points; if you quote it in the original language, this is worth 2 extra points). Find the “eulogy of Eusebius”. Are you convinced that it discredits the story reported by Athenaeus and Diogenes Laertius? Give an argument for your position. (4 points)