

Some Optional Exercises on Politics+ λ and Its Semantics

This is not a problem set, but only some optional exercises for those who'd like some practice with the language Politics+ λ and its semantics. I would be happy to look over and comment on your answers to the problems below.

(1) **Exercises on Syntax, Non-Montagovian**

Please consult pages 1 – 4 of the handout “An Algebraic Approach to Quantification and Lambda Abstraction: Preliminaries.” Using calculations like those in (9), please show that the following are meaningful expressions of Politics+ λ .

- a. $((\text{smokes}' x_3) \ \& \ \forall P_4 (P_3 \text{ barack}'))$
- b. $(\lambda x_3 ((\text{man}' x_3) \vee (\text{president}' x_3)))$
- c. $(\lambda v_{\langle e, \langle e, t \rangle \rangle, 4} ((\text{loves}' \text{ mitt}') \text{ michelle}'))$
- d. $(\lambda P_4 \exists x_3 ((\text{man}' x_3) \ \& \ (P_4 x_3)))$

(2) **Exercises on Model-Theoretic Semantics**

Please consult pages 5 – 9 of the handout “An Algebraic Approach to Quantification and Lambda Abstraction: Preliminaries.” Please calculate the interpretation of each of the following expressions relative to the model \mathcal{M} in (13) and an arbitrary variable assignment g based on \mathcal{M} .

- a. $(\lambda x_3 ((\text{man}' x_3) \vee (\text{president}' x_3)))$
- b. $(\lambda v_{\langle e, \langle e, t \rangle \rangle, 4} ((\text{loves}' \text{ mitt}') \text{ michelle}'))$
- c. $(\lambda P_4 \exists x_3 ((\text{man}' x_3) \ \& \ (P_4 x_3)))$
- d. $\forall P_4 (P_4 \text{ barack}')$

(3) **Exercises on Syntax, Non-Montagovian**

Please consult pages 12 – 16 of the handout “An Algebraic Approach to Quantification and Lambda Abstraction: Preliminaries.” Using calculations like those in (32)-(36), please show that the following are meaningful expressions of Politics+ λ , under the definition of the language in (31).

- a. $((\text{smokes}' x_3) \ \& \ \forall P_4 (P_3 \text{ barack}'))$
- b. $(\lambda x_3 ((\text{man}' x_3) \vee (\text{president}' x_3)))$
- c. $(\lambda v_{\langle e, \langle e, t \rangle \rangle, 4} ((\text{loves}' \text{ mitt}') \text{ michelle}'))$
- d. $(\lambda P_4 \exists x_3 ((\text{man}' x_3) \ \& \ (P_4 x_3)))$

(4) **Exercises on Montagovian Interpretation of Politics+ λ**

Please consult pages 7 – 18 of the handout “An Algebraic Approach to Quantification and Lambda Abstraction: Fregean Interpretations.” Please calculate the meaning of each of the following expressions relative to the logically possible partly-Fregean interpretation defined in (53).

- a. $(\lambda x_3 ((\mathbf{man}' x_3) \vee (\mathbf{president}' x_3)))$
- b. $(\lambda v_{\langle e, \langle e, t \rangle \rangle, 4} ((\mathbf{loves}' \mathbf{mitt}') \mathbf{michelle}'))$
- c. $(\lambda P_4 \exists x_3 ((\mathbf{man}' x_3) \& (P_4 x_3)))$
- d. $\forall P_4 (P_4 \mathbf{barack}')$