Human Reasoning and the Weak Completion Semantics
Technische Universität Dresden
Exercise 10

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Note: Please consider the equational theory and the set of integrity constraints to be empty for each question, unless stated otherwise.

Problem 1

Given the following: *If X is a bird then X usually flies. However, Kiwis and Penguins cannot fly. Tweety is a bird.*
This can be represented by the program P: $fly(X) \leftarrow bird(X) \wedge \neg ab_{fly}(X)$, $ab_{fly} \leftarrow kiwi(X)$, $ab_{fly} \leftarrow penguin(X)$, $bird(X) \leftarrow kiwi(X)$, $bird(X) \leftarrow penguin(X)$, $bird(Tweety) \leftarrow \top$.
Also given: *Tweety can fly.*
You are provided the three choices of responses:

- *Tweety is either a kiwi or a penguin.*
- *Tweety is neither a kiwi nor a penguin.*
- *Nothing follows.*

Assuming the classification of the conditional *if X is a bird then X usually flies* to be factual conditional with non-necessary antecedent, what do you think would be the general and sceptical responses of humans? Can you model both?

Problem 2

Given the following: *If X is a bird then X usually flies. Jonathan is a bird.*
This can be represented by the program P: $fly(X) \leftarrow bird(X) \wedge \neg ab_{fly}(X)$, $ab_{fly} \leftarrow \bot$, $bird(Jonathan) \leftarrow \top$.
Assume the conditional is classified as factual with non-necessary antecedent. Given the second premise: *Jonathan does not fly.* Please model an explanation for the said observation.

Problem 3

Consider the experiments 7 and 8 of the suppression task. How would *you* classify the conditionals? Please remodel the said experiments taking your classification into account. For each, also state if the new conclusion differs from the one in the original experiment.

Problem 4

a. Consider experiment 2 of the suppression task. We slightly change the background knowledge to: *if she has an essay to write then she will study late in the library, if she has textbooks to read then she will study late in the library.* Assume that the conditionals are classified as obligational with non-necessary antecedent. Please show the evaluation of the conditional, *if she has an essay to write then she will study late in the library* using MRFA. Is the given conditional *indicative* or *subjunctive*?

b. Consider experiment 9 of the suppression task. Assume that the conditional *if she has an essay to write then she will study late in the library* has been classified as obligational with non-necessary antecedent. And the conditional *if the library is open then she will study late in the library* has been classified as factual with necessary antecedent. Please show the evaluation of the conditional, *if she is studying late in the library then she has an essay to write* using MRFA. Is the given conditional *indicative* or *subjunctive*?