Philosophy 57 — Day 27 – Last Day

- Quiz #7 Today (solutions to be posted tomorrow)

- Approximate "curve up to now" ($\frac{\text{average of 4 best quiz scores} + \text{mid-term score}}{2}$)

  - 88–100 (A); 80–87 (B); 70–79 (C); 60-69 (D); < 60 (F);

- Today's Agenda

  - "Short-Cut" Truth-Tables (for invalid PL arguments)

  - Extra-Credit Problems (Tips)

  - Final Exam Outline

  - Questions?

  - Farewell . . .

  - I will be in my office from 1–5 p.m. on Thursday

"Short-Cut" Truth-Tables (for invalid PL arguments)

- There is a "short-cut" or "indirect" method for doing simultaneous truth-tables of arguments in propositional logic. This method can save time in some cases.

- Instead of constructing the entire truth-table, you can simply try to construct a row of the table in which the premises are true and the conclusion is false.

- If you can construct such a row, then the argument is invalid. If constructing such a row is impossible, then the argument is valid.

- Example: consider the argument from B and $A \supset B$ to A. Let's try to construct a row in which B and $A \supset B$ are both true, but A is false.

A	B	B	A	$\supset$	B	A
F	T	T	F	T	T	F

- Since we succeeded in constructing such a row, the argument is invalid.

- But, what happens when we try this on a *valid* argument? The answer is that we *cannot* consistently construct such a row. Let's try this …

Extra-Credit Problems (Tips) I

- Part I: You are given two 4-atom PL arguments, and asked to determine if they are valid or invalid. If the argument is invalid, you only need to report the row that proves it. If it's valid, you need to do the whole table.

- Hint: try the "indirect" method first. If you succeed in finding a row in which all premises are true and conclusion is false, then you are done. If you can't seem to find such a row, then do the whole truth-table.

- If you want to play it safe, just do the whole truth-table for each problem, and then say whether the argument is valid or not.

- Part II: Knights, Knaves, and truth-tables. This one requires some discussion. I will go to the handout now to explain this set of puzzles.

- Example (come back to this): You meet two inhabitants: Zoey and Mel. Zoey tells you that Mel is a knave. Mel says, "Neither Zoey nor I are knaves." So who is a knight and who is a knave? I will work this example in some detail.

Extra-Credit Problems (Tips) II

- The island of Knights and Knaves has two types of inhabitants, Knights who always tell the truth, and Knaves who always lie (no knaves are knights).

- Suppose A is the proposition person a is a knight and suppose a makes a statement S. Then, A is true if and only if S is true, since A is equivalent to S.

- That is, $A \approx S$. So, whenever an inhabitant x makes a claim S, we can infer that $X \equiv S$. That is, we can infer that x is a knight if and only if S is true.

- If a says "I am a Knight" then we can infer from this statement that $A \equiv A$. But, since this is *logically true*, we get no information from such a statement.

- A native *cannot* say "I am a Knave", since if this were true, then it would be false and if it were false, then it would be true (and, no Knights are Knaves).

- If a says "I am the same type as b," then we can infer $A \equiv (A \equiv B)$ which is equivalent to B (that is, $B \approx A \equiv (A \equiv B)$, which you can prove using truth-tables). So, this statement allows us to infer that person b is a Knight!

Final Examination (Outline)

- Outline of Final Exam (roughly):

  - Chapters 1–3 (1/6, ≈17%)

    * True/False, Multiple Choice, And/Or Matching
    * Roughly like quizzes

  - Chapters 4–5 (2/6, ≈33%)

    * Translation
    * Venn Diagrams for Claims and/or Arguments

  - Chapter 6 (3/6, ≈50%)

    * Translation
    * Truth Tables for Claims and/or Arguments

- Two 8.5×11 inch sheets of notes allowed for final.