Assignment: Inference

Introduction to Pragmatics, Fall 2010

Due: Tuesday, November 30th

Propositional Logic

Read: Kearns, *Semantics,* sections 2.1 and 2.2 (pp. 25-35).

1. What is a *proposition*?

2. What does it mean for something to be *truth-functional*?

3. Why isn't the word "because" truth-functional?

4. What is a *connective*?

5. What is something that is truth-functional, but not a connective?

6. Give the truth tables for conjunction, inclusive disjunction, negation, and material implication.

7. Kearns gives a truth table for inclusive disjunction but not exclusive disjunction. Based on how she describes it, what is the truth table for exclusive disjunction? You can use either the symbol '$\oplus$' or 'XOR' to represent exclusive disjunction.

8. In the sentence, "You win if you answer correctly," what is the antecedent? What is the consequent?

9. Say P represents "you win," and Q represents "you answer correctly." How would you represent the meaning of the sentence, "You win *only if* you answer correctly" in propositional logic?

10. Exercise B, p. 48. To get you started, here is part of it:

P	Q	$P \vee Q$	$\neg(P \vee Q)$	$\neg P$	$\neg Q$	...
T	T	T	F			
T	F	T	F			
F	T	T	F			
F	F	F	T			

11. Exercise C, p. 48.

12. A proposition is a *tautology* if it is always true, regardless of what values the variables it contains take on. For example, '$P \vee \neg P$' is a tautology:

P	$\neg P$	$P \vee \neg P$
T	F	T
F	T	T

because there is a 'T' in every row in the column for '$P \vee \neg P$' in the truth table (the last column). Decide whether the following is a tautology:

$$[P \to Q] \iff [\neg Q \to \neg P]$$

In other words, is '$P \to Q$' is equivalent to '$\neg Q \to \neg P$'?

13. Two propositions are *contradictory* if they can never be true at the same time. For example, 'P' and '$\neg P$' are contradictory. You can tell by looking at the final column in the truth table for their conjunction, '$P \wedge \neg P$', which has 'F' in every row:

P	$\neg P$	$P \wedge \neg P$
T	F	F
F	T	F

Are '$P \to Q$' and '$P \wedge \neg Q$' contradictory? Show using a truth table.

Implication Relations

Read: Chierchia and McConnell-Ginet (1990), Ch. 1, Sec. 3.

1. C&MG point out that "This is yellow" and "This is a fountain pen" together entail "This is a yellow fountain pen," but "This is big" and "This is a sperm whale" do not entail "This is a big sperm whale." Why doesn't the second inference follow? Can you construct a similar example, where "This is ADJECTIVE" and "This is a(n) NOUN" do not entail "This is a(n) ADJECTIVE NOUN"? [5]

2. C&MG give four definitions for entailment. Which one is most similar to material implication? Which one is second most similar? Explain.

3. C&MG's evidence that (23a) "Mary used to swim a mile daily" does not entail (23b) "Mary no longer swims a mile daily" is that one could continue (23a) by saying, "I wonder whether she still does [swim a mile daily]." How does the possibility of continuing like that show that (23a) does not entail (23b)?

4. Do exercise 1 on p. 23 (and justify your answers).

5. How do C&MG define *implicature*?

6. What does it mean that (generalized) conversational implicatures are defeasible? How does this test prove that they are not entailments?

7. Do exercise 2 on p. 27.

8. How do C&MG define *presupposition*?

9. What do C&MG mean when they say that "presuppositions come in families" (p. 30)?

10. What is presupposition accommodation?

11. Do exercise 3, pp. 32-33.