
24.903
 Language & Structure III: Semantics and Pragmatics
 Spring 2003, 2-151, MW 1-2.30
 April 9, 2003
 Assignment 7, due in class on April 16

1. Consider the following structure:

(1) [[Mary jogs] or [[Mary swims] or [Mary dances]]].

What are the predicted truth conditions of (1) under the following circumstances (i) if all the *or*'s are interpreted as inclusive, and (ii) if all the *or*'s are interpreted as exclusive.

Situation	∨	⊗
$\neg J \wedge \neg S \wedge \neg D$		
$\neg J \wedge \neg S \wedge D$		
$\neg J \wedge S \wedge \neg D$		
$\neg J \wedge S \wedge D$		
$J \wedge \neg S \wedge \neg D$		
$J \wedge \neg S \wedge D$		
$J \wedge S \wedge \neg D$		
$J \wedge S \wedge D$		

2. This exercise is about the entailment relations between sentences involving inclusive *or*, exclusive *or*, and *and*. Consider the following six claims.

For any pair of sentences S_1 and S_2 ,

- a. ' S_1 or_{incl} S_2 ' entails ' S_1 or_{excl} S_2 '.
- b. ' S_1 or_{excl} S_2 ' entails ' S_1 or_{incl} S_2 '.
- c. ' S_1 or_{incl} S_2 ' entails ' S_1 and S_2 '.
- d. ' S_1 and S_2 ' entails ' S_1 or_{incl} S_2 '.
- e. ' S_1 or_{excl} S_2 ' entails ' S_1 and S_2 '.
- f. ' S_1 and S_2 ' entails ' S_1 or_{excl} S_2 '.

Which of these claims are correct, and which are false? Justify your answers. Include concrete counterexamples to each of the claims that are false.

3. Consider the following claims involving \otimes ?

For any p, q, r ,

- a. Is $p \otimes p = p$? (Idempotency)
- b. Is $p \otimes q = q \otimes p$? (Commutativity)
- c. Is $(p \otimes q) \otimes r = p \otimes (q \otimes r)$? (Associativity)
- d. Is $p \otimes (q \otimes r) = (p \otimes q) \otimes (p \otimes r)$?
- e. Is $p \vee (q \otimes r) = (p \vee q) \otimes (p \vee r)$?
- f. Is $p \wedge (q \otimes r) = (p \wedge q) \otimes (p \wedge r)$?
- g. Is $p \otimes (q \vee r) = (p \otimes q) \vee (p \otimes r)$?
- h. Is $p \otimes (q \wedge r) = (p \otimes q) \wedge (p \otimes r)$?

Which of these claims are correct, and which are false? Justify your answers. Include concrete counterexamples to each of the claims that are false.

4. Consider the following logical expression: $p_1 \otimes p_2 \otimes \dots \otimes p_n$.

- a. Under what circumstances is this logical expression true?
- b. Under what circumstances is this logical expression false?
(Assume $n \geq 2$.)