Semantic Frameworks: Problem Set 1

Due before third session, 12 Nov

Problem 1

Consider a trivalent semantics for the connectives designed on the principle that any sentence is true if there is some way of assigning T or F to any undefined sentence such that the sentence as a whole is true. For example: $A \supset B$ is T if A is T and B is undefined, because B could be assigned T in which case the sentence is T. Otherwise the system is like the strong Kleene connective (e.g. if all ways of assigning truth values to the undefined parts make it false, then it is false).

Here is the table for $A \supset B$:

$\supset$	T	F	U
T	T	F	T
F	T	T	T
U	T	T	T

Give truth tables for negation, disjunction and conjunction in this system. Is $\neg(\neg A \vee \neg B)$ equivalent to $A \wedge B$ on this semantics? (By 'equivalent' I mean that the truth value of both complexes is the same whenever their atomic constituents have the same truth value.)

Problem 2

Consider an exclusive disjunction operator that is exactly like standard disjunction except it is false if both disjuncts are true. Here is it's truth-table:

$\vee$	T	F
T	F	T
F	T	F

Give the Strong Kleene truth table for this operator.

Problem 3

Consider the sentence:

(1) John came or Phil came or Sue came.

Assume this has the logical form '(John came or Phil came) or Sue came', where 'or' is the usual two-place connective.

It has often been argued that 'or' is ambiguous between an inclusive and exclusive reading.

If 'or' is ambiguous in this way, does this allow us to treat (1) as having a disambiguation on which it is true iff exactly one of the three people came. Justify your answer by going through different disambiguations of (1) on the ambiguity hypothesis.

SKIP THIS:

Consider the 4-valued semantics for scalar implicatures discussed in class. How does this hypothesis treat sentences such as (1)?

Problem 4

Suppose we have a fair die. Assume the trivalent semantics for conditionals introduced in class and the definition of probability to go along with this. What is the probability that "Either if it lands on an even number it lands 2 or if it lands on an odd number it lands 1" if a) we have a Weak Kleene disjunction or b) we have a Strong Kleene disjunction. What about the conjunction rather than the disjunction?

Problem 5

On a supervaluationist semantics when is the sentence 'At least three tall boys are happy', either super-true or super-false. Assume 'happy' and 'boy' are not vague but that 'tall' is. Give some justification.

Do not hesitate to email me for a clarification if anything is unclear to you!