Conditionals 2

Seminar 9

PHIL2520 Philosophy of Logic

4 December 2012

Administration

Reading for today: Priest Ch4 sec 4.5-4.9; Ch5)

11 Dec: Many Valued Logic (reading: Priest Ch 7)

Wed, 12 Dec, 3.30-4.30pm, philosophy seminar room: Solution session for assignment 3

18 Dec: Exam 1.30pm-3.30pm here

18 Dec: Exam 6pm-8pm Philosophy seminar room (for students who can't make earlier exam time due to clashes. You need to contact me if you want to attend this exam.)

8 Jan: Essay Due 5pm Email submission to danm@hku.hk

Nomic language N

Language N is the same as M except '□' in N symbolises 'It is physically necessary that', and '◊' symbolises 'It is physically possible that', where:

i) It is physically necessary that A iff it follows from the physical laws that A;

ii) It is physically possible that A iff it is consistent with the physical laws that A

A possible worlds analysis of physical necessity and physical possibility

i) ‘It is physically **necessary** that A’ is true at possible world w iff, for **any** possible world w’ that is compatible with the physical laws at w, A is true at w’;

ii) ‘It is physically **possible** that A’ is true at possible world w iff, for **some** possible world w’ that is compatible with the physical laws at w, A is true at w’;

What is the true logic of language N?

Def: Q is a **logical consequence** of P1,…,Pn in N iff, for any meaning interpretation m, for any possible world w, if P1,…, Pn are true at w under m, then Q is true at w under m

Hypothesis: The true logic for N is a normal modal logic

Question: If this hypothesis is correct, which normal modal logic is the true logic for N?

The languages T, E and O

Language T is the same as M except ‘□’ in T symbolises ‘It will always be the case that’, and ‘◊’ symbolises ‘It will be the case that’.

Language Ex is the same as M except ‘□’ in T symbolises ‘x knows that’, and ‘◊’ symbolises ‘x does not know that it is not the case that’.

Language O is the same as M except ‘□’ in T symbolises ‘It obligatory that’, and ‘◊’ symbolises ‘It is permissible that’.

What is the true logic of languages T, E and O?

Hypothesis: The true logics for T, E and O are normal modal logics

Question: If this hypothesis is correct, which normal modal logics are the true logics for T, E and O?

Indicative and Subjunctive Conditionals

(1) If Oswald didn’t shoot Kennedy someone else did (True) (Indicative conditional)

(2) If Oswald hadn’t shot Kennedy someone else would have (False) (Subjunctive conditional)

The hook account of indicative conditonals

Def: ‘A ⊃ B’ is true iff ‘~A v B’ is true. (‘⊃’ is called ‘the material conditional’ or ‘hook’)

The hook account (alternatively known as the material conditional account): Suppose `If A, B’ is an indicative conditional. Then:`If A, B’ is true iff ‘A ⊃ B’ is true

Problematic consequences of the hook account:

(PMI1) For any sentences A and B, if A is false, then `If A, B’ is true

(PMI2) For any sentences A and B, if B is true, then `If A, B’ is true

A diagnosis of what is wrong with hook account

‘If A, B’ can be true according to the hook account even there is no modal connection between A and B.

Example: ‘If the sun is rising, Hong Kong has 7 million people’ is true according to the hook account

This diagnosis motivates the strict conditional account of indicative conditionals

The strict conditional account of indicative conditionals

The strict conditional account: Suppose `If A, B’ is an indicative conditional.

Then:`If A, B’ is true iff ‘Necessarily, either not A or B’ is true.

(Or in symbols: :`If A, B’ is true iff ‘$\Box(A \supset B)$’ is true, where ‘$\Box$’ symbolises ‘necessarily’.)

Note: (PMI1) and (PMI2) are false on this account.

Objection 1: The paradoxes of strict implication

According to the strict conditional account, (PSI1) and (PSI2) are true.

(PMI1) For any sentences A and B, if '◊A' is false, then `If A, B' is true

(PMI2) For any sentences A and B, if '□B' is true, then `If A, B' is true

However, some instances of (PMI1-2) seem false. Examples are:

(3) If 48+25=63, Hong Kong is in Europe

(4) If Hong Kong is in Asia, 67+58=125

The Gricean Response

It would be inappropriate for us to assert either (3) or (4). But they aren’t false.

It would be inappropriate for us to assert either (3) or (4), since asserting them would break the rule of strength, since we know that 48+25 is not 63, and we know that 67+58=125.

(Strength): Assert the strongest relevant claim that you are in a position to make

Objection 2: Truth according to a theory or fiction

(PSI1) appears to be incompatible with the following plausible principle:

(T) Suppose T is a theory or a fiction, and C is a sentence. Then: 'According to T, C' is true iff 'If T, C' is true.

Example: Bohr's ('solar system') theory of the atom which (as Bohr knew) was inconsistent, and hence not possible. (See Priest p75-76 for other examples.)

Objection 2: Truth according to a theory or fiction (cont)

(5) and (6) follow from (T) and the strict conditional account.

(5) According to Bohr’s theory, the Rydberg formula obtains

(6) According to Bohr’s theory, electrons have rectangular orbits.

But, while (5) seems true, (6) seems false.

Moreover, while Bohr predicted the Rydberg formula on the basis of his theory, he didn’t similarly predict that electrons have rectangular orbits. Why not?

Objection 3: Irrelevance

It is natural to think that in order for ‘If A, B’ to be true, there must be some connection between A and B (in the sense that they must be about related things).

However, the strict conditional account requires no such connection.

Response (C.I. Lewis): ‘If A v ~A, B’ can be true, even though ‘A v ~A’ are completely unconnected, since there is a proof from ‘A v ~A’ to ‘B’. (See Priest p. 76)

Objection 4: The or-to-if argument

The or-to-if argument given for the hook account given in seminar 4 can be used to argue that the strict conditional account is false.

The argument: Suppose you learn that John is either in the pub or in the library. You thereby find out that, if John is not in the library, he is in the pub. Hence (7) is true. But (7) is false according to the strict conditional account.

(7) If John is not in the library, he is in the pub

Objection 5: Some problematic inferences

According to the strict conditional account (and also the hook account), the following are true.

(Ant S) ‘If A&C, B’ is a logical consequence of ‘If A, B’

(Con) ‘If ~B, ~A’ is a logical consequence of ‘If A, B’

(Trans) ‘If A, C’ is a logical consequence of ‘If A, B’ and ‘If B, C’

Objection 5: Some problematic inferences (cont)

However, each of these inferences appear to have false instances, as the following show (See Priest p. 82)

(8) If it does not rain tomorrow we will go to the cricket. Hence, if it does not rain tomorrow and I am killed in a car accident, then we will go to the cricket

(9) If we take the car then it won't break down en route. So, if the car does break down en route, we didn't take it

(10) If the other candidates pull out, john will get the job. If John gets the job, the other candidates will be disappointed. Hence, if the other candidates pull out, they will be disappointed

The missing premises response

Often when we give an argument, we do not explicitly mention some premises, perhaps because we take them as obvious.

Example: I might say ‘The plane lands in Rome; therefore, the plane lands in Italy’, leaving out the obvious premise ‘Rome is in Italy’ that is required for the argument to be valid.

The missing premises response (cont)

The response: When stating conditionals, we also fail to explicitly mention "premises" (parts of the antecedent) that we take as obvious, but are strictly required for the truth of the conditional.

Example 1: If I explicitly utter 'If the plane lands in Rome, it lands in Italy', I really mean to say that, if the plane lands in Rome, **and Rome is in Italy**, then the plane lands in Italy.

Example 2: If I explicitly utter 'If it doesn't rain tomorrow, then we will go to the cricket tomorrow' I mean to say that, if it does not rain tomorrow **and I am not killed in an accident tonight and …** , we will go to the cricket tomorrow.

Problem

The list of missing “premises” that typically need to be added to validate (Ant-S), (C), and (T) is infinite.

For example, the ‘…’ above needs to be filled with infinitely many sentences to rule out the possibility of me being killed in a domestic accedent, all transport breaking down, a martian invasion, etc

The ceteris paribus account

The above problem motivates the following theory.

The ceteris paribus account: `If A, B’ is true iff ‘$\Box((A \,\&\, C_A) \supset B)$’ is true,
where ‘C_A’ roughly means ‘everything relevant other than A remains the same’).

Note: ‘Ceteris Paribus’ is latin for ‘other things being equal’