### Conditionals Lecture 1

Dorothy Edgington  
Paris June 2019

#### Varieties of Conditional

- The basic case: take a sentence in the indicative mood, suitable for making a statement: ‘We’ll be home by ten’; ‘Tom cooked the dinner’. Add a conditional clause:
  - ‘We’ll be home by ten if the train is on time’
  - ‘If Mary didn’t cook the dinner, Tom cooked it’.
- These are called indicative conditionals, or sometimes ‘open conditionals’.

#### Overview of 4 lectures

- 1. When is a conditional true?
- 2. When is a conditional probable?
- 3. Counterfactual/subjunctive conditionals
- 4. Embedded conditionals, uncertainty and indeterminacy

#### First contrast

- ‘Subjunctive’ or ‘counterfactual’ conditionals.
- Tom would have cooked the dinner if Mary had not done so.
- We would have been home by ten if the train had been on time.
- Argument for big difference:
  - If Oswald didn’t kill Kennedy someone else did
  - If Oswald hadn’t killed Kennedy someone else would have

#### Argument against big difference

- ‘Don’t go in there: if you go in you will get hurt’
- Ceiling collapses.
- ‘You see, if you had gone in you would have got hurt. I told you so’
- Similarly for the earlier examples, and countless others.

#### Second contrast

- As well as conditional statements, there are conditional commands, promises, offers, questions, etc. As well as conditional beliefs there are conditional desires, hopes, fears, etc. For instance I can have the desire that if I’m offered the job, no one be told immediately. It turns out to be quite a stiff test: which theory of conditional statements/beliefs extends to a good theory of these other conditional speech acts/mental attitudes
### Conditionals and Reasoning

- 1. Deductive reasoning. Much controversy over which principles of deductive reasoning using conditionals are valid. E.g. transitivity: ‘If A, B; and if B, C; so, if A, C’. Putative counterexample:
  - If Smith is elected, Brown will resign immediately afterwards.
  - If Brown dies before the election, Smith will be elected.
  - So, if Brown dies before the election, Brown will resign immediately afterwards.

### Non-demonstrative reasoning

- They are not at home; because the lights are off; and if they had been at home the lights would have been on.
- I think the patient took arsenic; for he has [such-and-such] symptoms; and these are the symptoms he would have if he had taken arsenic.

### Practical reasoning

- If I do x, such-and-such will happen.
- Care is needed about which conditionals provide reasons for acting. Tom has heart disease. He is taking medication to lower the chance of a heart attack. Yet from another perspective: if he’s taking this medication he’s more likely to get a heart attack than if he isn’t.

### Truth conditions

- A dominant tradition in the philosophy of language is to explain meaning in terms of truth conditions. We have devices for building a complex sentence out of one or more simpler sentences. One-place sentence operators include: it is not the case that/possible that/probable that/surprising that/known that.

### Two-place sentence operators

- Let A be ‘Ann went to Paris’. Let B be ‘Bob went to Paris. We can form sentences
  - A and B; A or B; if A, B; A before B; A because B; if it had been the case that A, it would have been the case that B.
  
According to the dominant tradition, we need to explain how the truth-conditions of the whole depend in a systematic way of the truth conditions of the contained sentences.

### Truth-functionality

Ground-level logic deals with the operators which have the peculiarly simple property that the truth value(s) of the contained sentence(s) determine the truth value of the resultant sentence: not; or; and; ?if?—this last being controversial. Write these as ¬A, A ∨ B, A&B, A⇒B.
### Truth table for ‘If A,B’

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>A→B</th>
<th>~A→B</th>
<th>A→¬B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>T</td>
<td>T</td>
<td>T</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>2.</td>
<td>T</td>
<td>F</td>
<td>F</td>
<td>T</td>
<td>T</td>
</tr>
<tr>
<td>3.</td>
<td>F</td>
<td>T</td>
<td>T</td>
<td>T</td>
<td>F</td>
</tr>
<tr>
<td>4.</td>
<td>F</td>
<td>F</td>
<td>F</td>
<td>T</td>
<td>T</td>
</tr>
</tbody>
</table>

- A→B = ¬A or B = ~A&A→B
- ~(A&B) = A→¬B
- A or B = ¬A→B

### Non-truth-functional truth conditions

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>A→B</th>
<th>A→B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>T</td>
<td>T</td>
<td>T</td>
<td>T</td>
</tr>
<tr>
<td>2.</td>
<td>T</td>
<td>F</td>
<td>F</td>
<td>?</td>
</tr>
<tr>
<td>3.</td>
<td>F</td>
<td>T</td>
<td>T</td>
<td>T</td>
</tr>
<tr>
<td>4.</td>
<td>F</td>
<td>F</td>
<td>T</td>
<td>T</td>
</tr>
</tbody>
</table>

- NB this is not a theory, but the upshot of some theory about what makes a conditional true, which is non-truth-functional

### Example: Stalnaker

- ‘Consider a possible world in which A is true and otherwise differs minimally [if at all] from the actual world. ‘If A, B’ is true (false) if B is true (false) in that possible world.
- i.e 6 possibilities, not 4 or 8, for Stalnaker. (See previous slide)

### Arguments for truth-functionality

1. The inferences from (A or B) to (if not A, B), and from not(A&B) to (if A, not B) can seem very compelling. They are valid truth-functionally, but invalid non-truth-functionally
2. Conditional proof: from premises X, Y it follows that Z. So, from premise X it follows that if Y, Z. Now from premises ~(A&B), A it follows that B. So, from premise ~(A&B) it follows that if A, B. Valid only on the truth-functional reading.

### Minimal non-truth-functionality

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>A→B</th>
<th>~A→B</th>
<th>A→¬B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T</td>
<td>T</td>
<td>T</td>
<td>T/F</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>T</td>
<td>F</td>
<td>F</td>
<td>T/F</td>
<td>T</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>T</td>
<td>T/F</td>
<td>T</td>
<td>T/F</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>F</td>
<td>T/F</td>
<td>F</td>
<td>T/F</td>
</tr>
</tbody>
</table>

### Arguments against truth-functionality

1. Notoriously, all conditionals with false antecedents are true! And all conditionals with true consequents are true. But I am sure not inconsistent when I believe the Republicans won’t win, but reject the claim that if they win they will double income tax. And I can consistently believe that Sue is lecturing just now, while rejecting the thought that if she had a heart attack today, she is lecturing just now.
### Other absurdities

- A ‘proof’ of the existence of God:
- If God does not exist, then it is not the case that if I pray my prayers will be answered.
- I do not pray.
- Therefore God exists.

### Switches Paradox

- If (A&B) then C; therefore, either (if A then C) or (if B then C)
- If you press switch A and you press switch B, the light will go on. Therefore, either, if you press A the light will go on, or, if you press B the light will go on.
- If it’s a triangle and its equi-angular, then it’s equilateral. Therefore, either, if it’s a triangle it’s equilateral, or, if it’s equi-angular it’s equilateral.
- Valid for the truth-functional conditional.

### More absurdities

- The following are tautologies:
  - (If A, B) or (If B, A)
  - (If A, B) or (If B, C)
  - (If A, B) or (If not A, B)

### Grice’s pragmatic defence

There are many ways of speaking the truth yet misleading your audience. One way is to say something weaker than some other relevant thing you are in a position to say. That’s why we don’t say ‘If A, B’ when we just believe ¬A; or when we just believe B. The same phenomenon applies to disjunctions, and negated conjunctions:
He’s either in the pub of the library
You won’t eat those and live

### But

- Unlike the case of disjunctions and conjunctions, nobody thinks that believing ¬A is sufficient reason to believe ‘if A, B’, or that they are doing anything wrong if they reject A and also reject if A, B.
- Also Grice’s suggestion doesn’t address the full range of counterintuitive results.