Indicative conditionals

PHIL 43916
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1. Three types of conditionals

A first key distinction is the distinction between indicative and subjunctive/counterfactual conditionals, which is often introduced via the contrast between conditionals like

> If Oswald didn't kill Kennedy, then someone else did.
> If Oswald hadn't killed Kennedy, someone else would have.

We've already talked (when we discussed modals) about the second sort; our topic today is the first.

Indicative conditionals should also be distinguished from 'biscuit conditionals', as in

> There are biscuits on the sideboard if you want them.

As we'll see, it is surprisingly difficult to give a semantics for intuitive conditionals which, in all cases, agrees with our intuitions about their truth conditions.

2. Material conditionals

In your introductory logic, class, the "if-then" you learned was the material conditional, which we can symbolize by '$\supset$'. $\supset$ is, like 'and', a truth-functional connective; whether a sentence

$$p \supset q$$

is true depends only on the truth-values of p and q. In particular, it is true iff p is false, or q is true.

One very simple hypothesis is that indicative conditionals just are material conditionals; that, in English, 'if p, then q' is true iff the material conditionals 'p $\supset$ q' is true.

Here's an argument for that view: take any sentence of the form 'p or q', like

> Either ND will win the national title or Oregon will.

This seems to immediately entail:

> If ND won't win the national title, then Oregon will.

And in general sentences of the form 'p or q' seem to entail 'if not p, then q.' But then it follows that sentences of the form 'not p or q' entail 'if p, then q.' And this is equivalent to the claim that the material conditional entails the corresponding indicative conditional.

Does the indicative conditional entail the material conditional? It seems clear that it does. For if it didn't, then we could have a situation in which 'if p then q' was true, and p true, and q false. But this seems impossible.

Here is a second argument for the view that indicative conditionals are equivalent to material conditionals. It seems that sentences of the following forms are equivalent:

> If p, then, if q then r
> If p & q, then r

For instance:

> (i) If Oregon loses, then, if K State loses, Notre Dame will play Alabama.
> (ii) If Oregon loses and K State loses, then Notre Dame will play Alabama.

Using the equivalence of (i) and (ii), we argue for the claim that material conditionals entail the corresponding indicative conditional. (As above, the reverse direction of entailment seems less controversial.) Consider the material conditional $p \supset q$. There are two ways for this to be true: either $\neg p$ is true or q is true. We want to argue that, either way, the indicative conditional 'if p then q' is true.

> Suppose first that $\neg p$ is true. We know that an indicative conditional is true if its antecedent entails its consequent, and hence that 'if p & $\neg p$, then q' is true. This is a sentence of form (ii); by the equivalence of (ii) and (i), we get that 'if $\neg p$, then if p then q' is true. We are supposing that $\neg p$ is true; by modus ponens we can then derive that 'if p then q' is true, which is what we want.
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> Suppose now that q is true. The argument here is parallel to the above. By the fact that indicatives are true if their antecedents entail their consequents, we get that 'if p and q, then q' is true. By the equivalence of (i) and (ii), we get that 'if

> q, then if p then q' is true. But we are supposing that q is true, so by modus ponens we derive that 'if p then q' is true.
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> We conclude that if $p \supset q$ is true, so is the indicative 'if p then q'.

Given that we accept the equivalence of (i) and (ii), the only way to block the argument seems to be to deny modus ponens. Here's a suggested counterexample to modus ponens:

> If a Republicans will win the election, then if Reagan will not win, Anderson will win.
> A Republican will win the election.
> So, if Reagan will not win, Anderson will win

Is this convincing?

So we have arguments that the indicative conditional is true iff the corresponding material conditional is. But this leads to some very surprising consequences (sometimes called the 'paradoxes of material implication'). These result from the fact that it is very easy to make a material conditional true: all one needs is either a false antecedent or a true consequent. And, if material conditionals entail the corresponding indicative, it is also very easy to make indicatives true. If indicatives were equivalent to material conditionals, the following arguments would be valid:

> Bob failed the class.
> If Bob got an A on every assignment, then he failed the class.
>
> Notre Dame will win the national title.
> If Notre Dame loses the rest of its games by 40 points, Notre Dame will win the national title.
>
> Notre Dame will win the national title.
> If Notre Dame won't win the national title, they will be voted #1 in all the polls.

But most people think that arguments of this sort are not valid; that, in each case, the first sentence can be true and the second sentence false. But if this is right, then the theory that indicative conditionals are equivalent to material conditionals must be false.

This leaves us with a kind of paradox: we have good arguments in favor of the material conditional theory, but also powerful counterexamples to it. Let's explore some alternatives to the theory.

3. Indicatives and possible worlds

A different sort of view treats indicative conditionals in a way more like the treatment we briefly discussed in connection with counterfactuals. One way into this view is to begin, not with truth conditions, but with the question of when we ought to *believe* some conditional 'if p then q.' Many have thought that something like the following is right: we 'hypothetically' add p to our stock of beliefs and ask whether, on that basis, we should believe q.

One might think that we should use this model of belief to guide our view of truth conditions. Stalnaker expressed one way of developing this sort of view as follows:

> Now that we have found an answer to the question, "How do we decide whether or not we believe a conditional statement?" the problem is to make the transition from belief conditions to truth conditions; ... . The concept of a possible world is just what we need to make the transition, since a possible world is the ontological analogue of a stock of hypothetical beliefs. The following ... is a first approximation to the account I shall propose: Consider a possible world in which A is true and otherwise differs minimally from the actual world. "If A, then B" is true (false) just in case B is true (false) in that possible world.

This raises the question: if this is the correct view, what distinguishes indicative and subjunctive conditionals? One answer: the pragmatic requirement that, in the case of an indicative 'if p then q', p be compatible with the context set.

An immediate question for this view is how it can respond to the two arguments given above for the equivalence of indicative and and material conditionals. Stalnaker's response to the first argument: the relevant inference is, even if not valid, still 'reasonable', given the pragmatic that disjunctions are in general only assertable when the context set is consistent with both disjuncts and neither entails the other. Given plausible assumptions about how uttering a disjunction modifies the context set, and how this in turn modifies the interpretation of the relevant conditional, it turns out that whenever the relevant disjunction is accepted, the conditional should subsequently be accepted as well.

What can be said about the second argument? Why, on this sort of view, are (i) and (ii) not equivalent?

4. Conditionals and adverbs of quantification

David Lewis drew attention to sentences like these:

> Usually, if it rains in South Bend, it pours.
> If it rains in South Bend, it seldom pours.
> If it rains in South Bend, it always pours.

Suppose that we understood sentences like these as indicative conditionals combined, respectively, with the sentence operators ‘usually’, ‘seldom’, and ‘always.’ Would this give us the right result?

Lewis suggested that instead we take these terms to be quantifiers over ‘cases’ which are restricted by the antecedent. On this view, the above sentences are not really conditionals at all. The role of the antecedent is not to state ‘conditional information’, whatever that might mean, but rather to restrict the quantifier. The role of the antecedent is then must like ‘tallest student’ in ‘The tallest student cut class.’

One might then extend this view to indicative conditionals which contain no explicit adverb of quantification; we might take these cases to involve implicit universal quantification.

One argument for the superiority of this sort of view can be based on the following case, due to Grice:

> Yog and Zog play chess according to normal rules, but with the special conditions that Yog has white 9 times out of 10 and that there are no draws. Up to now, there have been a hundred games. When Yog had white, he won 80 out of 90. And when he had black, he lost 10 out of 10. Suppose Yog and Zog played one of the hundred games last night and we don’t yet know what its outcome was. In such a situation we might utter (24) or (25):
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> (24) If Yog had white, there is a probability of 8/9 that he won.
> (25) If Yog lost, there is a probability of $\frac{1}{2}$ that he had black.
>
> Both utterances would be true in the situation described...

But if we analyze (24) and (25) as

> (26) 8/9 probably (If Yog had white, then Yog won)
> (27) 1/2 probably (If Yog lost, Yog had black)

we get a problem, given the theory that indicative conditionals are material conditionals, since the parenthetical sentences are (given the rules of chess) logically equivalent. But presumably logically equivalent sentences can’t have different probabilities.

The restrictor theory, by contrast, offers a neat solution to this problem.

How could the proponent of the restrictor view respond to the arguments for the material conditional view given above? Are (i) and (ii) equivalent on this sort of theory?

A consequence of plausible ways of developing this sort of view (as with Stalnaker's theory) is that indicative conditionals will be indexical; their truth conditions will depend on the context set. Is this plausible? A possible argument that it is not: embedding indicatives in attitude ascriptions with multiple subjects.