

Trouble with "If"s

The theory we've been learning does a tolerably good job. Not a perfect job, but a tolerable job. It fails, for instance, to take notice in the difference between these two sentences:

I took some of Dr. Browner's elixir and got sick.
I got sick and took some of Dr. Elixir's elixir.

Still, by and large, the translations give adequate results.

Except for conditionals. The theory give a terrible account of English conditionals. Recall that the theory makes no claims about English arguments that translate into invalid SC arguments, but it does claim that English arguments that translate into valid SC arguments are valid. But this claim can't be upheld for arguments with conditionals, as a few examples will show.

The first is due to William Harper:

If I put sugar into my coffee, it will taste fine.
Therefore, if I put sugar and motor oil into my coffee,
it will taste fine.

This is a crazy argument, yet it's SC translation is valid:

$(S \rightarrow F)$
 $\therefore ((S \wedge M) \rightarrow F)$

The next two are due to Ernest Adams:

If I pull both switch A and switch B, the engine will start.
Therefore, either the engine will start if I pull switch A or the engine will start if I pull switch B.

$((A \wedge B) \rightarrow S)$
 $\therefore ((A \rightarrow S) \vee (B \rightarrow S))$

If Clinton wins the election, Bush will retire to his home in Kennibunkport.
If Bush dies before the election, Clinton will win the election.
Therefore, if Bush dies before the election, Bush will retire to his home in Kennibunkport.

$(C \rightarrow R)$
 $(D \rightarrow C)$

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$\therefore (D \rightarrow R)$

Either the unburied dead will walk the earth if I bury a chicken head in my backyard, or the unburied dead will walk the earth if I fail to bury a chicken head in my back yard.

is an English sentence no one believes, even though it's SC translation is valid:

$((B \rightarrow D) \vee (\neg B \rightarrow D))$

Contraposition – the inference from "If ϕ then ψ " to "If not- ψ then not- ϕ ," and variants on this with the "not"s placed in different positions – is valid in SC, but not in English:

If I buy a car, I won't buy a Pontiac.
Therefore, if I buy a Pontiac, I won't buy a car.

$(C \rightarrow \neg P)$
 $\therefore (P \rightarrow \neg C)$

Finally, two silly proofs of the existence of God, the first due to Paul Grice:

It's not the case that, if God exists, human life is a product of random chance.

$\neg(G \rightarrow C)$
 $\therefore G$

The second is due to Dorothy Edgington:

If God does not exist, then it's not the case that, if I pray, my prayers will be answered.
I do not pray.
Therefore, God exists.

$(\neg G \rightarrow \neg(P \rightarrow A))$
 $\neg P$
 $\therefore G$

There are only sixteen possible truth tables for a binary connective, and of the sixteen, the truth table for " \rightarrow " comes the closest to representing the truth conditions for the English

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"if..., then." But none of the sixteen does very well. One would like something better.

In attempts to come up with a theory of conditionals that better reflects the way conditionals are used in ordinary English, two approaches have become prominent.

The first, developed mainly by Ernest Adams, understands conditionals probabilistically. The probability of a conditional is the conditional probability of the consequent given the antecedent. Thus the conditional probability that the coffee will taste good given that I put sugar in the coffee is high, whereas the conditional probability that the coffee will taste good given that I put sugar and motor oil into it is low. The conditional probability of Bush's retiring to his home in Maine given that Clinton wins the election is high, as is the conditional probability of Clinton's winning the election given that Bush dies before. But the conditional probability of Bush's retiring to Kennibunkport given that he dies before the election is nearly zero.

The other prominent approach, pioneered by Robert Stalnaker, has it that a conditional (if ϕ , then ψ) is true iff ψ is true in the possible world most like the actual world of any world in which ϕ is true. Thus the world most like the actual world of any world in which I put sugar in my coffee is a world in which the coffee tastes fine, whereas the nearest world in which I pour in sugar and motor oil is a world in which the coffee tastes lousy.

Unfortunately, the price of getting a more accurate theory is to get a more complicated theory. Both Adams' theory and Stalnaker's theory are sufficiently complicated that it will not be possible to go into them here.