

How Ordinary Are Conditionals?

Kai von Fintel

Department of Linguistics and Philosophy
Massachusetts Institute of Technology

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Questions About Meaning

- What Do Sentences Mean?
- What Do Such-and-Such Sentences Mean?
- How Do They Come to Mean What They Mean Compositionally?
- How Do Speakers Know What They Mean?

A Possible Vision of Division of Labor

- Philosophers give us answers to the deep questions (what do sentences mean? and maybe even: what do such-and-such sentences mean?)
- Linguists and Psychologists work on how things are implemented (in grammar, in the mind) and how they work in detail
- Add to that: logicians whose study of the formal behavior of artificial, stipulated languages has given us plenty of tools for the analysis of actual, naturally grown languages

A Disturbance in the Force

- Today, I'll be talking about an area where the bucolic vision has broken down
- Linguists work with the assumption that a particular kind of possible worlds semantics for indicative conditionals is correct
- Philosophers have withdrawn their assent and have become convinced that indicatives are extra-ordinary creatures

The Extra-Ordinary Claim

NTV: Indicative conditionals ($A \rightarrow C$) are not sentences that are asserted to express propositions with an ordinary truth-conditional content.

Instead:

- They express (rather than assert) a high conditional probability of C *given* A . Or:
- They serve to make a conditional assertion of C under the supposition that A .

Ridicule?

Lycan:

- “The claim that ordinary conditional sentences lack truth-values is grossly implausible on linguistic grounds.”
- “The linguist would think you were crazy.”
- “Yet according to NTV, indicatives not only differ in meaning from the corresponding subjunctives, they do not even have anything like the same *kind* of meaning that subjunctives do. Tell that to a linguist and s/he will laugh in your face. (I have done that experiment.)”

What We Ought to Do

- Tell each other why we think we need to do what we do
- Assess each other's arguments and motivations

A Linguist Looking at NTV

- Technical feasibility?
- General fit with explicit systems of semantics & pragmatics?
- Arguments for and against

The Plan

Since there is too much to do, I'll cherry-pick a bit for this talk.

- Sketch of a Working Theory of Indicatives
- The Complaint about Discourse
- The Compelling Intuition about the Probability/Uncertainty of Conditionals
- Embedding

Lewis on Restrictive *If*-Clauses

- (1) This dog almost always/usually/sometimes/never bites
if/when he is approached.

“The *if* of our restrictive *if*-clauses should not be regarded as a sentential connective. It has no meaning apart from the adverb it restricts. The *if* in *always if ... , ... , sometimes if ... , ... ,* and the rest is on a par with the non-connective *and* in *between ... and ... ,* with the non-connective *or* in *whether ... or ... [...]*. It serves merely to mark an argument-place in a polyadic construction.”
(Lewis “Adverbs of Quantification”, 1975)

Kratzer's Thesis

Lewis wasn't just right about adverbial quantification. His analysis is right about other occurrences of *if*.

“The history of the conditional is the story of a syntactic mistake. There is no two-place *if . . . then* connective in the logical forms of natural languages. *If*-clauses are devices for restricting the domains of various operators.” (Kratzer “Conditionals”, 1986)

In other words: *there are no conditionals*, just constructions involving an *if*-clause and an operator that the *if*-clause restricts.

Tripartite Structures

Heim's dissertation:

Quantifier/Operator [Restriction] [(Nuclear) Scope]

Heim achieved a solution to the problem of donkey anaphora, which ensured that the Lewis/Kratzer/Heim view of the partition of “conditionals” into Operator + *if*-clause + consequent became the received view in linguistic semantics.

'If' Restricting Various Operators

- (2) If John committed this murder, he **ought** to be in jail.
if restricts *ought*
- (3) If we are on Rte. 195, we **must/might** be in Mansfield.
if restricts epistemic *must/might*
- (4) If it rains tomorrow, the game **will** be cancelled.
if restricts future modal *will*
- (5) If it had rained, the game **would** have been cancelled.
if restricts subjunctive modal *would* – probably not quite right

Research Strategy

This picture entails that studying a particular kind of conditionals has to start with the study of the particular kind of operator that the *if*-clause is restricting.

- Want to study “predictive” conditionals? Study the future *will* modal!
- Want to study deontic conditionals? Study the modal *ought*!
- etc.

Bare Conditionals

- (6) If this dog is approached, he bites.
- (7) If John was here on time, he left Cambridge at noon.

Kratzer:

- covert operator restricted by *if*-clause
- covert frequency adverb in (6) (\approx “always”)
- covert epistemic necessity modal in (7) (\approx “must”)

Did You Say “Covert Modal”?

Yes.

Linguists are quite relaxed about positing phonologically empty but structurally present elements, as long as their presence can be argued for.

For example: think of how word order, morphology, and syntax can assure that a sentence is read as an imperative. Syntacticians have argued for a covert Imperative operator whose presence is detectable by the effects it has on the overall mechanics of the sentence.

The Need for a Theory of Epistemic Modals

If bare indicative conditionals like

(7) If John was here on time, he left Cambridge at noon.

involve a covert epistemic necessity modal, then to understand them we need to understand epistemic modals.

The Meaning of Epistemic Modals

Hintikka-style semantics:

must ϕ is true at index i iff ϕ is true at every index compatible with

- what is known at i
- the evidence available at i
- the information at hand at i

Notes:

- Kratzer has a more detailed development of Hintikka's semantics (adding a measure of ranking of the indices), which we will not discuss today.
- there are some other components of meaning (evidentiality in particular), but this will do for now.

Contextual Variability/Flexibility

Hacking, Teller, DeRose: Flexibility of the Relevant Knower(s)

- solipsistic: *must* ϕ = “as far as **I** know, *must* ϕ ”
- group: *must* ϕ = “as far as **we** know, *must* ϕ ”
- (new relativism:) *must* ϕ = “as far as **anyone will ever** know, *must* ϕ ”

The Working Assumption

Run-of-the-mill indicative conditionals à la

(7) If John was here on time, he left Cambridge at noon.

involve

- an *if*-clause restricting
- a covert epistemic necessity modal
- which will show the usual contextual flexibility

Allies

Other defenders of an epistemic conditional analysis of indicative conditionals include:

- Stalnaker (1975)
- Warmbrod (1983)
- Pendlebury (1989)
- Lowe (1991)
- McCawley (1996)
- Lycan (2001) [?]
- Weatherson (2001)
- Nolan (2003)
- Gillies (2004)

Why Not?

To find out why this kind of analysis of indicatives is not deemed feasible by NTV proponents, I turned to Jonathan Bennett's book as my guide.

I will address three of the arguments that he discusses:

- The Complaint about Discourse
- The Compelling Intuition about the Probability of Conditionals
- Embedding

Two others (the connection between disjunction and indicatives, and the argument from Bradley's preservation condition) have been ably discussed by others and I don't feel like I have anything to contribute to that discussion.

Lewis

Lewis in “Probabilities of Conditionals . . .”: “Presumably our indicative conditional has a fixed interpretation, for speakers with different beliefs, and for one speaker before and after a change in his beliefs. Else how are disagreements about a conditional possible, or changes of mind?”

Bennett

“Your assertion of $A \rightarrow C$ was not a report on your state of mind because neither you nor I treated it in that manner. [...] When I asked ‘Are you sure?’ and you said ‘Yes, fairly sure’, you were not assuring me that your probability for C given A was high; rather, you were expressing confidence in that high conditional probability.”

“[M]any indicative conditionals have a subjective element to them, yet they are not devices whereby the speaker reports some fact about himself. The only other way to accommodate this subjectivity is to suppose that in an indicative conditional the speaker expresses but does not report a fact about his own state of mind. **In the absence of anything else he could be reporting, the conclusion is that indicative conditionals are not reports at all; that is, they are not propositions with truth values.**”

The Traffic Problem for the Epistemic Theory

- The gist: indicative conditionals are not treated intersubjectively as reports about the speaker's state of mind.
- If indicatives were epistemic conditionals, they would be reports about the speaker's state of mind.
- So, the epistemic theory is wrong.

First Line of Defense

Explicit self-reports are often not treated as such, either:

(8) A: I believe it is raining.

B: No, it's not.

B': ??No, you don't.

(9) A: I believe it is raining.

B: Are you sure?

Second Line of Defense

According to the epistemic analysis, these indicatives are not in fact reports on the speaker's **belief state** but claims about what follows from the evidence available to the speaker together with the assumption that the antecedent is true.

So, when you asked “Are you sure?”, you asked whether I am sure that **the evidence available to me** is such that with the addition of the antecedent it entails the consequent.

Third Line of Defense

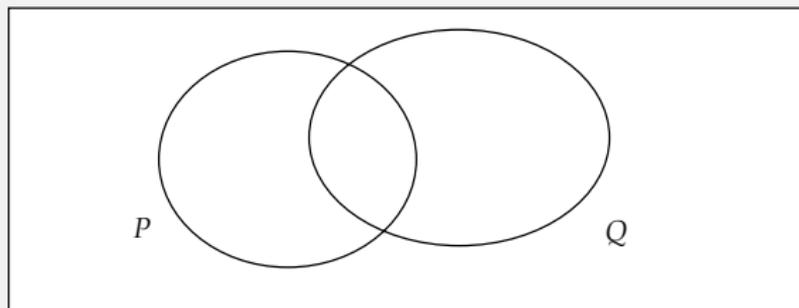
According to the epistemic analysis, these indicatives are – in the right context, perhaps even preferably – interpreted as about the evidence available to not just the speaker but to a group, a community of investigators.

By the way . . .

- (10) A: Yuck.
B: Are you sure?

It appears that true expressives (here an expression – not an assertion – of disgust) are treated in discourse as entirely subjective. So, NTV in fact might not predict correctly that conditionals are felt to be more objective.

Jackson on the Compelling Intuition



“I ask you the following question, If you throw a dart at the board, how likely is it to land in the area marked Q if it lands in the area marked P ? It is **compelling** that the answer to this question is nothing other than how likely the dart is to land in the intersection of P and Q given it lands in P , which equals the probability of its landing in the intersection of P and Q as a fraction of the probability of its landing in P .” (Jackson “Indicative Conditionals Revisited”, March 27, 2006)

The Compelling Intuition

The probability of a conditional is the conditional probability.

The Trouble with the Compelling Intuition

Lewis and successors:

- There is no (sane) way to give truth-conditions to $A \rightarrow C$ such that the probability of those truth-conditions being satisfied = the conditional probability of C given A.

Jackson 2006:

- There is no such-and-such conditions associated with $A \rightarrow C$ (not its assertibility conditions, not its acceptability conditions, nothing) such that the probability of those such-and-such conditions being satisfied = the conditional probability of C given A.

Jackson's Despair

Jackson 2006: The Compelling Intuition is a mistake. The probability of a conditional is not the conditional probability.

“Our usage of the indicative conditional construction is governed by a mistaken intuition [...]. We [...] wrongly think and speak as if the indicative conditional in fact has truth conditions such that its probability is the conditional probability of its consequent given its antecedent.”

The Way Out

When we ask

(11) What is the probability that C , if A ?

(12) How likely is it that C , if A ?

we are not asking what the probability of an indicative / epistemic conditionals is.

Instead, the *if*-clause does its usual job. It restricts an operator, here: the probability operator.

Lewis Again

In fact, that is precisely what Lewis said, in a paper that only linguists seem to read:

“The *if* of our restrictive *if*-clauses should not be regarded as a sentential connective. It has no meaning apart from the adverb it restricts. The *if* in *always if . . . , . . . , sometimes if . . . , . . .*, and the rest is on a par with the non-connective *and* in *between . . . and . . .*, with the non-connective *or* in *whether . . . or . . .*, or **with the non-connective *if* in the probability that . . . *if* . . .** It serves merely to mark an argument-place in a polyadic construction.”

Similar Cases

A surface string can receive one parse when occurring on its own and a very different one when occurring embedded:

- (13)
 - a. A randomly tossed coin comes up heads.
 - b. The probability that a randomly tossed coin comes up heads is fifty-fifty.

- (14)
 - a. ?On a given day, the Red Sox win.
 - b. The probability that on a given day the Red Sox win is about 60%.

- (15)
 - a. This dog bites if he is approached.
 - b. This dog quite often bites if he is approached.
 - c. It almost never happens that this dog bites if he is approached.

Why This Interpretation?

There are three reasons why structures where a conditional apparently occurs under a probability expression are (almost) always parsed not as involving an embedded conditional with a covert operator but as having the *if*-clause restrict the probability operator:

- positing covert operator is a last resort strategy
- the probability operator would like to be restricted
- epistemic modals resist embedding under probability operators

Resisting Embedding

- (16)
- a. If she threw an even number, it must have been a six.
 - b. ?The probability that if she threw an even number it must have been a six is

Objection

Objection: If the following two structures do not share a constituent corresponding to the “conditional”, then how come they are felt to be talking about the same thing?

- (17) a. If she is not in her office, she must be at home.
 b. Actually, it is not very likely that she is at home if she is not in her office.

Reply: because they both talk about possible scenarios in which she is not in her office. Compare:

- (18) a. Every student smokes.
 b. Actually, very few students smoke.

Both of these make quantificational claims about students and thus talk about the same thing, without sharing a mythical constituent “students smoke”.

Cross-Speaker Cases

How can the restrictor-operator relation be established in cases like the following?

- (19) A: If he didn't tell Harry, he told Tom.
B: Probably so.

[von Stechow, Colloquium at UMass, December 2003. The point was also raised in discussion at UConn by Brian Weatherson.]

Is this parallel to the following?

- (20) A: Every student smokes.
B: Most of them.

The Embedding Challenge

Edgington (SEP): “Compounds of conditionals are a hard problem for everyone. It is difficult to see why it should be so hard if conditionals have truth conditions.”

Handicapping the Contenders

- If indicatives were impossible to embed, we would have a clear win for NTV.
- If indicatives were as easily embeddable as disjunctions, say, we would have a clear win for truth-conditional analyses.
- Instead what we seem to find is that indicatives can be embedded but not everywhere.

NB: Bill Lycan yesterday presented many examples of embedded indicatives. But note that almost all of his examples involve the modal *will* in the consequent. These are quite different from the bare indicatives that are the focus here.

Some Not So Great Embeddings

- (21) ??If John left Cambridge at noon if he was here on time, he didn't come here by private jet.
- (22) ??Almost every participant; left home at noon if he; was here on time.

Some OK Embeddings

- (23) Either the game was cancelled or if it was played, they didn't broadcast it.
- (24) Martin is so busy that if he's here at the meeting, Bill told him to come.

The Response from NTV

Edgington (SEP): “Thus, no general algorithmic approach to complex statements with conditional components has yet met with success. **Many followers of Adams take (by default) a more relaxed approach to the problem.** They try to show that when a sentence with a conditional subsentence is intelligible, it can be paraphrased, at least in context, by a sentence without a conditional subsentence. As conditionals are not ordinary propositions, in that they essentially involve suppositions, this (it is claimed) is good enough. They also point out that some constructions are rarer, and harder to understand, and more peculiar, than would be expected if conditionals had truth conditions and embedded in a standard way.”

Should we just relax? It sure would be nice, although semanticists would be quickly out of a job if they relaxed too much about compositionality.

Prediction

The epistemic analysis has a chance at making a fairly precise prediction:

- Epistemic indicatives should be embeddable just where epistemic modals are (modulo additional factors)

Embeddability of Epistemic Modals

Epistemically modalized sentences are hard to embed:

- (25) ??If John must have left Cambridge at noon, he didn't come here by private jet.
- (26) Almost every participant might have left Cambridge at noon.
preferred scope: might \succ almost every

But not always:

- (27) Either the game was cancelled or they must not have broadcasted it.
- (28) Martin is so busy that he must have been forced to come to the meeting.

So, How Ordinary **Are** Conditionals?

- There **are** no conditionals.
- Bare indicative conditionals of the relevant sort are as ordinary as epistemically modalized sentences are – no more, no less
- Progress should come from a better understanding of epistemic modality.
- Note: non-standard ideas about the meaning of epistemic modality are a dime a dozen, so there is still much work to be done to show that conditionals are ordinary.

Advice to NTV proponents:

- Pursue the connection between simple epistemic modality and indicative conditionals

Advertisement

What Do Linguists Work on When They Work on Conditionals?

- Tense & Aspect and the “Indicative/subjunctive” connection
- Negative Polarity Items
- Complex Conditionals: *unless, only if, even if*
- Even more complex conditionals: *If you want to go to Harlem, you ought to take the A train* (von Stechow & Iatridou)
- etc.