Between "If" and "Then."
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Document Version
Publisher's PDF, also known as Version of record

Publication date:
2015

Link to publication in University of Groningen/UMCG research database

Citation for published version (APA):

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Download date: 03-10-2019
Language is a powerful toolkit, full of sophisticated utensils allowing us to communicate almost anything we want, ranging from the most trivial of trivia to the greatest ideas a human mind can possibly construe. Regardless of whether we want to ask a housemate to buy some milk or to explain advances in string theory to a group of specialists, language will usually provide the right tools for our purposes. Some of these tools are exceedingly simple while others are highly complex devices, yet we are using them all routinely and effectively, though typically without much understanding of their internal structure.

Among those most complex and obscure linguistic devices, we find a class of sentences called *conditionals*, which are expressions (usually) of the form “If $\varphi$, (then) $\psi$,” where $\varphi$ and $\psi$ can be, in principle, any sentences. Conditionals have been an object of interest of philosophers, linguists, and psychologists for a few decades now, and this interest has kept growing over recent years. For someone outside this narrow field, this may strike as odd. Ultimately, all those books and papers concern just one type of sentence, and quite a common one, too. We encounter them almost everywhere, ranging from newspaper articles, *e.g.*:

(1) If the funds are not released within two weeks, the government risks being unable to pay wages and pensions. (*The Economist.*)

through works of fiction:

(2) If there are as many minds as there are men, then there are as many kinds of love as there are hearts. (Leo Tolstoy, *Anna Karenina.*)

philosophical treatises:

(3) If a question can be put at all, then it can also be answered. (Ludwig Wittgenstein, *Tractatus Logico-Philosophicus.*)

to everyday conversations:

(4) If Dorothy hears the news, she will be surprised.
(5) If your bike is not where you left it, someone must have stolen it.

(6) If Clara had not made a complaint, someone else would have.

Despite their prevalence, conditional sentences seem to belong to the most troublesome linguistic expressions. It is bewilderingly hard to come up with a non-trivial claim concerning conditionals that would not be subject to a contentious debate. Consequently, even the most fundamental questions regarding the semantics and pragmatics of conditionals are still awaiting a conclusive answer. There is no consensus among philosophers on what conditional sentences mean, what their truth conditions are, and whether or not they have truth conditions at all. Their assertability or acceptability conditions are not much less perplexing, not to mention the interpretation of conditionals whose antecedents or consequents are conditionals themselves. Regarding the problem of belief revision upon learning conditional information, philosophers have barely scratched the surface.

Despite the fact that a tremendous amount of work devoted solely to conditional sentences has been published in the course of the last three or four decades, the available theories still fail to meet all of the theoretical objectives that have been formulated in the literature. We appear to have reached a point at which every theory faces a counterexample, every argument has its counterargument, and every solution seems to give rise to an avalanche of new problems. One could even wonder if there is a point to further inquiry at all. But, of course, it is not customary for a philosopher to admit defeat. The inquiry must go on. However, it does not always have to continue along the same road, especially if the familiar road appears to be a blind alley.

1.1 Just another linguistic expression?

There are many reasons to believe that conditionals are special. To start with, it is not common for philosophers of language to question the very possibility for a whole class of sentences to have a truth value. Yet when it comes to conditionals, even this is controversial. Many researchers are convinced that conditionals do not have truth conditions, and, as a consequence, do not express propositions at all. But if that were true, which I am going to argue that it is not, how are we to account for the fact that people
seem to *mean something* when they assert sentences of the form “If $\phi$, then $\psi$,” and frequently they mean it to be true? We seem to learn something from assertions of this form after all. In other words, they do seem to convey some sort of information. What is that information if not a proposition expressed by the asserted sentence?

Few philosophers nowadays hold that the meaning of a linguistic expression should be equated with its use. According to the received view, meaning belongs to the domain of semantics, while use is the concern of pragmatics. However, given that drawing a line demarcating semantic phenomena from the pragmatic ones is not trivial, it is unwarranted to assume that we could investigate the former without ever considering the latter. Ultimately, sequences of sounds or strings of letters do not mean anything on their own. They only become meaningful when they are so intended by some language user. For example, the string “przepraszam” could be a random combination of letters of the Latin alphabet, but if uttered by a Polish speaker, it will have a meaning. Depending on the context, it can be used to say “I am sorry” or “Excuse me.” Anything we say has a meaning only because we intend it to have one. Even more complex strings, like

\[
(7) \text{Witold Gombrowicz is a Polish writer.}
\]

are just strings of letters unless they are used by a speaker to convey some information. This one has a straightforward interpretation: it means that an individual called “Witold Gombrowicz” has a property of being a Polish writer (or, alternatively, that this individual belongs to the set of Polish writers), precisely because an English speaker would use this particular sentence to convey the information about Gombrowicz’s profession and descent.

Interpreting a sentence can be thought of as a process of “decoding” its meaning, that is, of identifying the proposition that the sentence is meant to express in a given context. This process is abductive in nature: we attribute a particular meaning to an utterance on explanatory grounds. We interpret an utterance of $p$ as expressing a proposition $\phi$, because the speaker’s intention to communicate $\phi$ is the best explanation of his utterance of $p$ in the particular conversational situation. Thanks to this mechanism, we canusually understand expressions that are immensely underspecified, like sentences with indexicals or scope ambiguities, ellipses or anaphoras:

\[
(8) \text{a. She found it there.}
\]
b. Everyone has got one.

c. Ben does too.

d. Done.

We are able to interpret expressions that are not even proper sentences, and, moreover, we often do that automatically and effortlessly. Arguably, our capacity to communicate with others depends on our mindreading skills (Sperber and Wilson 1995). We tend to interpret people’s actions, including their linguistic behaviour, as meaningful. If, for example, I see my neighbour, Jim, rushing down the stairs and then suddenly turning around and hurrying back home, I may come to think that he must have forgotten something important. This seems to be the best explanation of Jim’s unusual behaviour—unusual, because it is not typical of people who apparently are in a hurry to suddenly turn and run back to where they came from. My interpretation of Jim’s behaviour hinges upon an assumption that whatever people do, they do it for a reason or because of a reason. (Note that reason is here understood very loosely, so what we may sometimes call a purposeless behaviour can also have some sort of reason: doing things for fun, for instance, just to amuse oneself, or even to procrastinate from doing something else, is in such a loose sense of the word reasonable enough.) Likewise, when we interpret people’s utterances, we assume them to be meaningful, purposeful, and relevant.

This assumption is obviously crucial for the interpretation of highly context-dependent or underspecified expressions like those in (8), but it also plays a role in understanding more straightforward expressions. Sometimes, the proposition expressed by a sentence, like perhaps (7), is so easy to grasp that prima facie the sentence hardly needs any explication, and hence inquiring into the speaker’s intentions appears redundant. In many conversational situations though, the truth conditions of a sentence are not so overt. For this reason asking why a speaker used a particular construction, or what kind of information they intended to convey, may prove to be a very helpful step in the process of identifying its meaning. This is why investigating the cognitive processes leading to a construction of a particular linguistic item is so important—a correct interpretation of what has been said

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1 See also, e.g., Apperly (2011, pp. 26-30) on the relationship between language and the theory of mind.
often depends on understanding why it has been put in this particular way.

It is a common assumption in philosophy of language that the meaning of a declarative sentence is given by its truth conditions (see, e.g., Davidson 1967). Accordingly, to interpret a sentence is, roughly, to determine the conditions under which that sentence expresses a true proposition. But does this directive apply to all types of sentences? Specifically, can we analyse the meaning of a conditional in terms of its truth conditions?

None of the hitherto proposed theories seems to have succeeded in accounting for all of our intuitions and the over-the-years collected data on how people use and interpret conditional sentences. Truth-conditional accounts are no exception. However, their failure should not be taken as a rationale behind a belief that conditional sentences have no truth conditions at all. It is not uncommon to have a strong intuition that whenever someone asserts sentences like “If I don’t take the first train in the morning, I will be late for my flight” or “Sarah will be disappointed if you don’t show up at her birthday party” they are saying something which can be either true or false. This intuition has been the driving force that led to a quest for a descriptively correct theory of conditionals, a quest of which this thesis is a documentation.

1.2 WHAT IS THOUGHT AND HOW IT IS EXPRESSED

To answer the question about the conditions that have to be fulfilled for a conditional to be true, we might first ask ourselves other questions: What do we learn from conditional statements? What kind of information does a speaker intend to convey when asserting a conditional? Why did they choose a conditional form to express their thought? And what kind of thoughts are manifested in this particular way?

There is an evident connection between production and interpretation of conditional sentences on the one hand, and hypothetical thinking on the other hand. The gist of this connection has been encapsulated in Frank Ramsey’s legendary footnote from “General propositions and causality” (Ramsey 1990, p. 155):

If two people are arguing ‘If p will q?’ and are both in doubt as to p, they are adding p hypothetically to their

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2 This thesis is concerned exclusively with conditional sentences that are declarative; interrogative, imperative and exclamatory sentences, which, in principle, can also have a form of a conditional, are beyond the scope of our investigations.
The above described procedure, known as the Ramsey Test, hints at a cognitive process that may lay underneath the interpretation of conditional sentences, namely, the process of hypothetical thinking. The idea that evaluating a conditional boils down to evaluating the consequent under the supposition of the antecedent seems to appeal to intuitions of many philosophers on the one hand, and to fit the data resulting from psychological experiments, on the other hand. However, the Ramsey Test in its original phrasing, although clearly intuitive and supported by the evidence from psychology, is, as pointed out by Jonathan Evans and David Over (2004, p. 153), a very specific procedure, meant only as a method of fixing one’s degree of belief in a conditional. The notion of hypothetical thinking, by contrast, denotes a more general cognitive process (cf. Evans 2007). Evaluating conditional sentences is just one application of this general cognitive process, but the association between the two might be exactly what made the idea of the Ramsey Test so intuitively appealing. One way to construe if itself is as “a linguistic device the purpose of which is to trigger a process of hypothetical or suppositional thinking and reasoning” (Evans and Over 2004, p. 153). Furthermore, hypothetical thinking prompts using words like if or suppose, so the dependence between the linguistic forms in question and the particular mode of thinking goes in both directions. Conditional sentences can thus be seen as outcomes of the process of hypothetical thinking, that is, hypothetical thoughts encoded as single linguistic expressions.

The process of hypothetical thinking can be roughly characterised as consisting of two steps. The first step amounts to entertaining a hypothesis, or in other words, to making a supposition. Reasoning under this supposition, that is evaluating possible consequences of the hypothesis, is the second step of this process. A conditional’s if-clause corresponds to such a hypothesis or a supposition. What is asserted under this supposition—the content of the conditional’s main clause—is an outcome of the process of hypothetical thinking. It is, roughly speaking, a statement about an imaginary version of the world such that the supposition holds in that world. But this is not just any statement. Although the Ramsey Test can be easily applied to a conditional consisting of any
two sentences, it is not the case that in the process of hypothetical thinking language speakers can arrive at any statement that holds under the supposition. We are not likely to assert sentences like the following:

(9) If there is life on some extrasolar planets, then Greece will not leave the European Union.

as we would find it bizarre to say:

(10) Let’s suppose that there is life on some extrasolar planets. In that case Greece would not leave the European Union.

The above statements sound strange even if the sentence “Greece will not leave the European Union” holds under the supposition of life on some extrasolar planets, or even if this sentence can be found in the speaker’s (and hearer’s) stock of beliefs after it has been revised by “There is life on some extrasolar planets.” Interestingly,

(11) If there is life on some extrasolar planets, then somewhere in the Universe there exists an advanced alien civilisation.

seems less bizarre a statement, even though it is unlikely that many people would tend to agree with it. (11) does not sound as absurd as (9), because it is possible to imagine a speaker whose assumption that there is life on some extrasolar planets would lead him to an idea of an advanced alien civilisation existing somewhere in the Universe. But what does it mean that an assumption leads a speaker to a certain conclusion?

Answering this very question is, in my opinion, what understanding the meaning of conditional sentences amounts to. The connection between the supposition expressed by a conditional’s antecedent, and the content of its consequent is what seems to define meaningful conditionals, that is, those conditionals that can be true and assertable. An analysis of this connection is therefore the main focus of my thesis.

1.3 TOWARDS AN EMPIRICALLY INFORMED PHILOSOPHY

The theory of conditionals to be presented in this thesis is not meant to be a normative theory, nor a theory of how ideally rational agents use their neat, formal-like languages. My objective is to characterise the way actual human beings, with all their biases and proneness to fallacies on the one hand, and their immensely
accurate capability to decipher hazy contextual cues on the other hand, use and interpret conditional sentences. Such a task, obviously, cannot be successfully performed in abstraction from the results of empirical investigations related to conditionals and hypothetical thinking.

Combining methods of hitherto distinct fields, like theoretical philosophy, logic, experimental linguistics and psychology of reasoning does not only facilitate modelling real-world phenomena, but over and above it allows us to tackle old issues in an utterly different way, prompting new developments. Moreover, empirically obtained data force us to verify our intuitions and re-evaluate the objectives imposed on theories that pretend to descriptive adequacy.

### 1.3.1 Outline of the thesis

In chapter 2, I present the two main families of propositional theories of indicative conditionals, the truth functional account and the possible worlds semantics, and discuss their strengths and shortcomings. Subsequently, in chapter 3, I introduce a new semantic theory of conditionals that emphasises the connection between antecedents and consequents, while doing justice to the intuitions captured by the Ramsey Test. I argue that, on the one hand, the new semantics escapes certain theoretical problems that undermine traditional accounts of conditionals, and on the other hand, that it matches the currently available data from psychology of reasoning and psycholinguistics. Furthermore, in chapter 4, I report the results of a new empirical study involving conditional sentences and various evidential markers in English and in Dutch. The results do not only support the proposal, but also show that the theory advocated here has a significant explanatory power. Chapter 5 shows that the proposal helps to explain an old philosophical problem posted by Allan Gibbard in his seminal 1981 paper. The aim is not just to present a new theoretical analysis of the stand-off, but also to support it empirically by reporting the results of an experiment. Furthermore, I show that the new semantics of conditionals sheds some new light on the role indicative conditionals can play in decision theory. In the conclusion, I outline possible extensions of the theory and highlight some avenues for further research.