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The Mechanisms Underlying Fallacy and Indicative/Subjunctive Conditionals*

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1. Introduction

This paper examines *if p, q* constructions such as those in (1-3), give rise to false inferences. These are examples of fallacies, which are well-known flawed modes of reasoning that lead to false conclusions and tend to occur “in the absence of absolute knowledge” (Lamb 1988). Under such conditions, it is apparently simplest to connect fallacy to human heuristics (Volokh 2003), which means that the mechanisms by which fallacies operate cannot be explained logically.

- (1) If the communists win in Vietnam, Indochina at large will be communized.
(Indochina at large is not, in fact, communized.)
- (2) If PCR testing is increased, the Japanese medical system will collapse.
(The Japanese medical system did in fact collapse, despite the fact that PCR testing was highly restricted.)
- (3) If you want to make America great again, you should vote for Trump.

Irrespective of the precise details of the *if p, q* form in question, the key question to ask is, “How likely is it that *p* will support *q*?” This question, in turn, requires that we ask, “What are the mechanisms by which *p* can lead others to support *q*?” However, fallacies stand in contrast to this support relation between *p* and *q*. They are apparently distinguished by the presupposed condition defined by Stalnaker, Karttunen and Heim’s theories, detailed in (4):

- (4) If *B* is a presupposition of *S* iff *S* can be felicitously uttered only in contexts that entail *B*.

Thus, it is commonly assumed that the *if*-clause specifies the circumstances under which the consequent is true. For example, (5) suggests that Mary’s departure has something to

do with John's arrival.

- (5) If John comes, Mary will leave.

However, as in the examples above, since the consequent q is false, the antecedent p of the fallacy does not satisfy this condition. We can observe that the speakers in these examples are not expected to use a presupposition p as a vector of new information q . Rather, they have an implicature to solicit a negative change in the evaluation of actual contexts in which the antecedent p is presupposed. This leads to the following questions, which concern a still underexplored topic in the linguistic/semantic field.

- (I) What are the mechanisms that give rise to fallacy?
(II) How do fallacies become endowed with their semantic significance?

To elucidate these questions, I propose that the consequent q of fallacy has a covert presupposition x that is not a reliable assumption regarding the actual world/common ground/mutual belief of the interlocutor, building on insights from the Stalnakerian view of presuppositions and common ground (Stalnaker 1974, 2002). I also demonstrate the difference between indicative and subjunctive conditionals. The latter, which von Stechow (1998) has pointed out as a kind of domain of quantification, and argue that in this respect, the fallacy can be regarded as similar to subjunctive conditionals. I further show that this similarity has potential ramifications for an assertive contribution to the truth conditions of a sentence. Based on these observations, I argue that fallacy is a mode of reasoning that occurs when there is an incongruence between the speaker's presupposition and the actual world/common ground. Although the subjunctive conditionals cannot occur in the same circumstance, they do occur in circumstances where the presupposition is shared with the interlocutor. This mismatch between the common ground compatible with the presupposition p and the speaker's individualized context incompatible with p introduces a doubly structured background belief that provides the mechanism that drives the appropriate range of readings available in fallacy.

The remainder of this article is organized as follows. Section 2 outlines the Stalnakerian view of presupposition and common ground. Section 3 details the difference between indicative and subjunctive conditionals. At the same time, I show that the similarity between subjunctive conditional and fallacy has potential implications for an assertive contribution to the truth conditions of a sentence. In Section 4, I discuss the difference between them in greater depth and clarify the background mechanisms that

give rise to the proper implicature of the fallacy. Section 5 summarizes the discussion presented in this paper.

2. Presupposition and common ground

Traditionally, presuppositions are identified based on Frege's (1892) two intuitions. First, for a sentence to have a truth value, its presupposition must be satisfied. Second, presuppositions survive under negation. Regarding the first, this is directly related to presupposition as a precondition for the felicitous use of a sentence. As mentioned in (4), the statement "S presupposes B" indicates that a certain proposition B must be true in order for a given proposition S to be satisfied (i.e., to have a truth value). According to this view, if any presupposition is false, the proposition of an assertion lacks a truth value. In contrast to this view, however, Stalnaker (2002: 702) argues that "the facts to be explained in such case were not the facts about the truth-conditional content of the sentence, but instead facts about what speakers took for granted—what they presupposed—when they used certain sentences." This is the pragmatic account of presupposition, in which pragmatic presupposition can be described as a constraint on the contexts in which the sentence is allowed to be felicitously uttered/used (Karttunen 1974). In this view, the notion of the context of utterance becomes crucial. The central concept that characterizes the context of utterance is common ground, as described in (6) and (7).

- (6) The mutually recognized shared information in a situation in which an act of trying to communicate takes place. (Stalnaker 2002)
- (7) The set of propositions that the participants in the conversation at that time mutually assume to be taken for granted and not subject to discussion.
(Abusch 2002; von Stechow 2008; Stalnaker 1974)

That is, the common ground is the set of propositions whose truth is taken for granted as part of the background of the conversation.

Since the common ground is a set of propositions, it can be identified with a set of worlds in which the propositions of the common ground are true. Stalnaker calls this set of worlds the *context set*, and he claims that the distinction between presupposition and assertion can be drawn not in terms of the content of propositions expressed, but in terms of the context of utterance.

In sum, presuppositions resemble the speaker's background beliefs, namely the propositions that she takes for granted in making her utterance.

3. Indicative conditionals vs. subjunctive and fallacy conditionals

In this section, I pursue the difference between indicative and subjunctive conditionals, which von Fintel (1998) describes as a kind of domain of quantification. In this respect, fallacy and subjunctive conditionals appear to be similar. However, I demonstrate that the similarity has several ramifications for the behavior of presupposition projections, which constitute an assertive contribution to the truth conditions of a sentence. The similarity and dissimilarity between them will be discussed in more detail below.

3.1. Analysis of von Fintel (1998): Indicative vs. subjunctive conditionals

According to standard Stalnaker and Lewisian analyses, conditionals such as (8) conform to a semantic structure in which the *if*-clause restricts an implicit quantifier over worlds, as shown in (9) (von Fintel 1998).

(8) If it rains, you will get wet.

(9) A bare conditional *if* p , q has the logical form $\forall_D(\text{if } p)(q)$.

If defined, it is true in a world w if all worlds w' in $D(w)$ such that $p(w')$ are such that $q(w')$: $p \cap D(w) \subseteq q$.

(D is a function that assigns to any world w a set of accessible worlds.)

The statement in (9) holds that *if* p , q is true in a world w iff all p -worlds w' in the currently relevant contextually determined domain of quantification $D(w)$ are q -worlds. This quantificational structure typically carries the presupposition in (10).

(10) $p \cap D(w) \neq \emptyset$

In other words, the indicative conditionals are only appropriate in contexts that are compatible with the antecedent p . The conversation also includes the current context set C , which contains all and only those worlds that are currently considered epistemically accessible, that is, “common ground” worlds. Therefore, all p -worlds are in C , as in (11).

(11) Indicative: $p \cap D(w) \subseteq C$

In contrast, a subjunctive conditional¹ such as (12) is only felicitous relative to a world w if C contains no p -worlds, as in (13). (13) dictates that subjunctive conditionals should be used when the presupposition of p is false in C . This follows from the fact that

indicative conditionals must satisfy the above contextual constraint, namely that all p -worlds must be in C , while subjunctive conditionals cannot conform to this constraint.

(12) If it rained, you would get wet.

(13) Subjunctive: $p \cap D(w) \not\subseteq C$

However, it should be noted that the precise domain of quantification for subjunctive conditionals is a matter of ongoing debate among scholars. For von Fintel, for example, (13) would hold that the subjunctive marks the presupposition that we are actually quantifying over at least some p -worlds outside the context set. Then (13) should be rewritten as (13').

(13') Subjunctive: possibly $[p \cap D(w) \not\subseteq C]$

The revision is predicted based on analysis of Anderson's example in (14) as follows. The consequent of (14) is true in any world in which Jones shows exactly those symptoms that he shows in the actual world. Thus, we cannot presuppose that the antecedent is false. In this case, it is natural to use the indicative version in (14').

(14) If Jones had taken arsenic, he would have shown just exactly those symptoms that he does in fact show. [So, it is likely that he took arsenic]. (Anderson 1951)

(14') #If Jones took arsenic, he would show just exactly those symptoms that he does in fact show.

This reasoning seems to be on the right track, since (14') is associated with the inference that all relevant p -worlds are in C , as shown in (11). Nevertheless, (14) uses the subjunctive to mark the conditional. The question arises why this is the case.

The crucial point is that indicatives infer that all p -worlds are in C . Therefore, the result that the consequent is true is obvious, it cannot be informative. Given that the subjunctive mood can select a domain that is partly outside the context set, as shown in (13'), it is perfectly possible to select a subjunctive mood in cases where it is presupposed that the consequent is true, as in (14).

Analysis of Anderson's example supports the prediction that the available interpretation of subjunctive conditionals should be that the function D can reach outside the context set C .

3.2. *Subjunctive vs. fallacy conditionals: The logical structure of fallacy*

Consider the question “In what kinds of cases might the speaker wish to employ a selection function D that goes beyond the context set?” Stalnaker answers that “the most obvious case would be one where the antecedent of the conditional statement was counterfactual, or incompatible with the presupposition of the context.” Subjunctive conditionals correspond to the former case, and fallacy to the latter. In this respect, fallacy and subjunctive conditionals can be considered similar.

Meanwhile, however, there is a notable difference between them in terms of the truth values of the antecedents and consequents. Since the antecedents in (1-3) are not false in the current C , we cannot presuppose that the consequents are false. However, this prediction is challenged because the consequents in (1-3) are false.

As mentioned above, indicative conditionals must satisfy the contextual constraint that all p -worlds must be inside C , while subjunctive conditionals cannot conform to this constraint. They should be used when at least some p -worlds are outside the context set C . In both cases, it is not necessarily the case that all p -worlds must be outside C . Since the antecedents in (1-3) are not false in C , the fallacy is not exceptional. However, the fact that there remains a discernible difference in the truth condition of a sentence between the indicative–subjunctive conditionals and the fallacy suggests that we might believe that there is something like a covert presupposition x for q in the fallacy, as in (15). Taken together, (11), (13), (13'), and (15) suggest that a fallacy conditional is felicitous relative to a world w only if C does not contain a p -world but does contain an x -world, as in (16).

$$(15) (C \cap p) \cap x \subseteq q$$

$$(16) x \cap D(w) \subseteq C$$

I claim that this is the basic meaning of fallacy. The available interpretation of fallacy should be that in fallacy conditionals, the function D reaches outside the context set C . This also implies something about the new multitude of context sets. The difference in the domain of quantification $D(w)$ between the indicative, the subjunctive and the fallacy can be confirmed by the possibility of presupposition projection onto conditional clauses. We turn to this discussion in the next section.

4. **Presupposition projection and negation**

In this section I will briefly digress into the conversationally triggered presupposition for discussing the projection behavior in conditionals, as it provides a useful tool for

confirming the adequacy of the discussion in Section 3.2.

Stalnaker (1999: 71) states the appropriateness conditions for indicative conditionals as follows. He continues that (17) states that the counterfactual conditionals must be expressed in the subjunctive. However, when we look at the projection behavior of presuppositions in indicative and subjunctive conditionals, it may be possible to find a similarity between them.

(17) It is appropriate to make an indicative conditional statement or supposition only in a context that is compatible with the antecedent.

According to Kadmon (2001), all presuppositions exhibit the same projection behavior. For example, (18) entails (18'), a presupposition is conventional and cannot fail to be implied. Kadmon (2001: 213) gives another example. For instance, (19) implies (19') and (20) implies (20').²

(18) John stopped smoking.

(18') (It is being taken for granted that) John smoked.

(19) Sue promised John an official invitation.

(19') It is being taken for granted that John wanted an official invitation.

(20) If it were raining outside, it would be possible to hear the rain through that window over there.

(20') It is being taken for granted that it is not raining outside.

It is important to note that the projection behavior of the presuppositions in (19') and (20') is clearly conversationally triggered. The same is true for (5), which has a conversationally triggered presupposition in (5').

(5) If John comes, Mary will leave.

(5') It is being taken for granted that Mary dislikes John.

In the examples considered, we find that the projection behavior of conversationally triggered presuppositions is exactly parallel to the familiar projection behavior of conventional presuppositions. No presuppositions are filtered out. They are satisfied by the local context in either indicative or subjunctive conditionals and seem to be linked to antecedent *p* and consequent *q* as a presupposition characterizing the context in which *q* can be felicitously uttered.

However, a similar point cannot be made regarding fallacy. Consider the repeated examples in (1-3). (1) does not implicate (1'), (2) does not implicate (2'), and (3) does not implicate (3').

- (1) If communists win in Vietnam, Indochina at large will be communized.
- (1') #It is being taken for granted that Ho Chi Minh will take power.
- (2) If PCR testing is increased, the Japanese medical system will collapse.
- (2') #It is being taken for granted that PCR testing is effective against COVID-19.
- (3) If you want to make America great again, you should vote for Trump.
- (3') #It is being taken for granted that you are patriot.

(1'-3') are also not linked as consequents of (1-3) as a premise characterizing the context in which consequents can be appropriately uttered. Nevertheless, as in (21), (23) and (25), (1'-3') are not filtered out. They are projected to be consequent as a premise that characterizes the context in which consequents can be uttered felicitously.³ (22), (24) and (26) still implies (1'-3') respectively. Table 1 summarizes the above discussion.

- (21) If communists win in Vietnam, Ha Noi will be the capital.
- (1') It is being taken for granted that Ho Chi Minh will take power.
- (22) It is not the case that if communists win in Vietnam, Ha Noi will be the capital.
- (23) If PCR testing is increased, the Japanese medical system will not collapse.
- (2') It is being taken for granted that PCR testing is effective against COVID-19.
- (24) It is not the case that if PCR testing is increased, the Japanese medical system will not collapse.
- (25) If you want to make America great again, you should not vote for Trump.
- (3') It is being taken for granted that you are patriot.
- (26) It is not the case that if you want to make America great again, you should not vote for Trump.

Table 1

Type of conditionals	Domain of quantification	Triggered Ps projection on q
Indicative conditionals	Inside context set	Hold in q (q is true)
Subjunctive conditionals	Partly outside context set	Hold in q (q is true)
Fallacy conditionals	Outside context set	Suspended (q is false)

Table 1 reveals that one notable difference that distinguishes the fallacy from the indicative and subjunctive conditionals is in the domain of quantification. The fact that the conversationally triggered presupposition is suspended/not projected onto the consequent clause q shows that the fallacy marks the presupposition that we are quantifying over some x -worlds outside the context set C .

Notably, making the function D reach outside the context set C can be seen as introducing a speaker's context set C' into the context of the utterance. Adding a C' to the actual context is equivalent to kicking out of the context set C . This gives rise to the meaning of fallacy to implicate the negation of context set C /actual world, and the possibility of the fallacy of a speaker's claim. Therefore, it is possible to think that (1) implicates (27), (2) implicates (28) and (3) implicates (29).

- (1) If communists win in Vietnam, Indochina at large will be communized.
- (27) We must win.
- (2) If PCR testing is increased, the Japanese medical system will collapse.
- (28) PCR testing is not effective.
- (3) If you want to make America great again, you should vote for Trump.
- (29) Become MAGA.

5. Conclusion

I have presented an analysis of fallacy based on the Stalnakerian view of presupposition and common ground. The intuition is simple, fallacy implicates that the context set C in which the presupposition p is satisfied is not relevant. I have shown that the fallacy marks the presupposition that we are quantifying over some x -worlds outside the context set C . My explanation shows that the implicature of the fallacy is exactly the meaning derived by shifting the context set in which the presupposition of fallacy is satisfied. More broadly, the present analysis builds a unified, pragmatic perspective on presuppositional phenomena in conditionals more generally, mirroring theories built for projection behavior.

Notes

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¹ In English, subjunctive conditionals are morphologically characterized by signals that include a modal *would* or *might* in the consequent and the backshifting of tense marking.

- ² Note that these implicatures are context-dependent, they do not always arise but are likely to arise.
- ³ The conversational implicatures such as (1'-3') that are taken for granted arise in some contexts but not in others. The different background assumptions and beliefs are made by different participants in the same conversation; there exist many individualized contexts. For example, it is possible that (3') can be linked to the consequent of (3) as a premise that characterizes the context in which consequents can be felicitously uttered.

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