Motivating the Relevance Approach to Conditionals

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Abstract: The aim is to motivate theoretically a relevance approach to (indicative) conditionals in a comparative discussion of the main alternatives. In particular, it will be argued that a relevance approach to conditionals is better motivated than the suppositional theory currently enjoying wide endorsement. In the course of this discussion, an argument will be presented for why failures of the epistemic relevance of the antecedent for the consequent should be counted as genuine semantic defects (as opposed to be relegated to pragmatics). Furthermore, strategies for dealing with compositionality and the perceived objective purport of indicative conditionals will be put forward.

1. Introduction

Due to accumulating psychological evidence of poor logical performance (Evans, 2002; Manktelow, 2012), and difficulties in making sense from an evolutionary perspective of an ability to deal with necessities as opposed to uncertainties (Oaksford and Chater, 2007), there has been a paradigm-shift in the psychology of reasoning (Evans, 2012). Whereas earlier research used deductive logic as the main normative model, recent research has started to use probabilistic, Bayesian models. In the study of conditionals this is seen by a shift away from approaches that analyze the natural language conditional in terms of the material implication ('⊃') towards probabilistic models that represent our understanding of the natural language conditional as a conditional probability (Evans and Over, 2004; Oaksford and Chater, 2007, ch. 5; Oaksford and Chater, 2010a; Pfeifer, 2013). In the following, we shall cover some of the background for making this move and add to the discussion by motivating the relevance approach to conditionals. Since our main objective is to contribute to the normative discussion about which theory is better philosophically motivated, a full comparative discussion that engages with the empirical literature will be left for another occasion. (In Olsen, 2014, and Skovgaard-Olsen, 2016, some first stabs are taken, however.)

1.1 The Horseshoe Analysis
The traditionally held view that the semantic content of the natural language indicative conditional is determined by the truth conditions specified by the table below has somewhat disparagingly been called the 'horseshoe analysis':

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A	C	$A \supset C$
⊤	⊤	⊤
⊤	⊥	⊥
⊥	⊤	⊤
⊥	⊥	⊤

One of the theoretical difficulties with accepting this account is that it forces us to analyze conditionals with false antecedents as true no matter what the consequent. As a result, both of the following conditionals are to be treated as true in spite of intuitively felt problems with treating (2) as true and the fact that treating both as true would violate an intuitive requirement of conditional consistency:

(1) If the Sahara is covered with ice, it is cold in the Sahara.
(2) If the Sahara is covered with ice, it is warm in the Sahara.

A further difficulty is that the abovementioned analysis validates a number of argument schemes that are hard to accept. One case in particular is the so-called paradoxes of the material implication. Since the material implication is guaranteed to be true, whenever either the antecedent is false or the consequent is true, the following argument schemes are valid according to the horseshoe analysis:

$$[1] \qquad \frac{\sim A}{\therefore \text{if } A, \ C} \qquad \frac{C}{\therefore \text{if } A, \ C}$$

This gives rise to paradoxical outcomes, when natural language content is substituted into [1], as it would permit the formulation of arguments with any arbitrary degree of absurdity such as 'it is not the case that Anders Fogh is the prime minister of Denmark. Hence, if Anders Fogh is the prime minister of Denmark, then Konstanz has direct access to the Bodensee' and 'Konstanz has direct access to the Bodensee. Hence, if Anders Fogh is the prime minister of Denmark, then Konstanz has direct access to the Bodensee'.

But in rejecting the validity of [1], one has to be aware that one is thereby also committed to rejecting the universal validity of the *or-to-if inference*, as its validity would entail the validity of [1] (Gauker, 2005, ch. 3; Douven, 2015, ch. 2):

$$[2] \qquad \frac{A \vee C}{\therefore \text{if } \sim A, \ C}$$

However, although this inference may be reasonable in contexts where one has evidence for either A or C without knowing which one holds, and one is in the process of eliminating alternatives, it cannot be accepted as a general

principle of reasoning (cf. Spohn, 2013). The reason is that in combination with disjunction–introduction, it would validate the following argument schema:

$$[3] \quad \frac{\begin{array}{c} A \\ A \vee C \end{array}}{\therefore \text{if} \sim A, \ C}$$

Accordingly, if one is in a position to treat A as true, then one would have to accept the conclusion that if A were not true, then C—*for any arbitrary proposition C*. But then we are back at the absurdity that [1] left us with.

In addition to [1] and [2], the horseshoe analysis also validates a number of further argument schemes with conditionals in the conclusion like strengthening of the antecedent (if A, C $\therefore$ if A & B, C), contraposition (if A, C $\therefore$ if ~C, ~A), and transitivity (if A, B; if B, C $\therefore$ if A, C), which have counterexamples that are well-known in the literature (cf. Bennett, 2003: ch. 9).

1.2 The Suppositional Theory of Conditionals

In rejecting the horseshoe analysis and favoring a probabilistic model, the experimental literature is following a philosophical tradition that has, *inter alia*, found expression in the works of Adams (1965), Edgington (1995, 2003, 2006), Woods (1997), and Bennett (2003). Although there are individual differences, these theoreticians are unified by a commitment to the *suppositional theory of (indicative) conditionals*, which consists of the following core claims:

> *The Ramsey Test*: conditionals are assessed by temporarily adding the antecedent to one's knowledge base and evaluating the consequent on the supposition that the antecedent is true.[1]
>
> *Adam's Thesis*: P(if A, C) = P(C|A), where 'A' and 'C' are not allowed to be conditionals in turn. Or rather: Acc(if A, C) = P(C|A).
>
> *P-validity*: the validity of arguments containing conditionals in the conclusion is to be evaluated on the basis of p–validity. The inference from the premises, A_1, A_2, … , A_i, to the conclusion, B, is *p-valid* just in case the uncertainty of the conclusion cannot exceed the sum of the uncertainty of the premises: $[1\text{-}P(A_1)] + [1\text{-}P(A_2)] + … + [1\text{-}P(A_i)] \geq 1 - P(B)$.

One issue deserves comment. One reason why one might prefer to replace P(if A, C) = P(C|A) by Acc(if A, C) = P(C|A) in Adams' thesis is Lewis' triviality results, which showed that in general no proposition can be found, whose probability is equal to P(C|A) for all probability distributions, without their being subject to

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[1] Refinement: to avoid counterexamples like 'If my business partner is cheating me, then I will never find out', Bennett (2003, p. 29) introduces further refinements, which are skipped here.

trivializing features such as only being able to assign positive probabilities to two pairwise incompatible propositions and collapsing P(C|A) to P(C) (Bennett, 2003:, ch. 5; Woods, 1997, ch. 4, pp. 114−8). But if indicative conditionals don't express propositions, then they can hardly be assigned probabilities in the literal sense, and it is thus arguable that Adams' thesis should be formulated in terms of the *assertibility* or *acceptability* of a conditional, instead of in terms of its probability. Hence, strictly speaking P(if A, C) = P(C|A) should be replaced by Acc(if A, C) = P(C|A) in formulating the suppositional theory of conditionals (cf. Douven, 2015, ch. 3).[2]

However, there are some differences over whether Lewis' triviality results should make us reject the idea that conditionals have truth values altogether, or whether it is possible to maintain a deflationary sense in which conditionals can have truth values according to the de Finetti truth table:[3]

A	C	If A, C
⊤	⊤	⊤
⊤	⊥	⊥
⊥	⊤	*void*
⊥	⊥	*void*

If the latter position is adopted, a three-valued logic would have to be formulated that extends the third value to A and C and that provides truth tables for all of the other logical connectives. In Baratgin, Politzer and Over, 2013a, 2013b, some first endeavors to embark on such a project are made from a psychological perspective.

One attractive feature of the suppositional theory of conditionals is that the notion of p–validity allows us to reject the argument schemes that were found problematic in Section 1.1. In contrast, arguments not containing conditionals in the conclusion will be valid according to p–validity, if they are classically valid.

As Bennett (2003, p. 139) says in relation to the paradoxes of the material implication, the present theory does:

> … imply that when my value for P(A)=0, I should have no value for P(if A, C); and that when my value for P(C)=1, my value for P(if A, C) should be 1. But nothing follows about the value for P(if A, C) when P(A) is low but > 0, or when P(C) is high but < 1.

[Notation changed to yield uniformity.]

However, a case could be made that the suppositional account doesn't invalidate [1] for the right reason. The most natural analysis of its defect is that the problem lies in: (a) validating inferences to conditionals that seem unsupported by the

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[2] Lycan (2001, ch. 4) makes much of this point in his criticism of the suppositional theory.

[3] Some attempts at specifying a sense in which conditionals have trivial truth values include Blackburn, 1986; Bennett, 2003, ch. 8; Edgington, 2003; and Politzer, Over and Baratgin, 2010.

premises, and (b) allowing the antecedent to be *irrelevant* for the consequent in the conditionals introduced.

So although it preserves truth from the premises to the conclusion to make inferences like those involving Anders Fogh from Section 1.1, making them would violate our expectations about the epistemic relevance of the antecedent for the consequent to such a degree that it might be doubted that the speaker really understood what he was saying.

Viewed from this light, the ability of the suppositional theory to invalidate [1] by pointing out, as Bennett does, that no constraints on $P(C \mid A)$ are made, when $P(A)$ is low but > 0 and $P(C)$ is high but < 1, is a small victory as it likewise fails to accommodate (a) and (b). Furthermore, as the same quote reveals, the suppositional theory is actually committed to the permissibility of the inference to 'if A, C' from 'C', whenever $P(C) = 1$. But, of course, then the door is once more open to the introduction of absurd inferences, where the antecedent is irrelevant for the consequent. Moreover, if the conclusion consists of conditionals containing candidates for 'analytical' connections between the antecedent and the consequent, p-validity permits that they be inferred from any premise where $P(A) \leq 1$.[4] Hence, the inference to 'if England has a queen, then the royal family in England has at least one female member' from any arbitrary premise (no matter how irrelevant) is sanctioned. So not only does the suppositional theory of conditionals fail to render [1] invalid due to (a) and (b), but it would appear to have its own problems with satisfying these constraints as well.

A further related worry is that the de Finetti truth table seems to be a small improvement, when it comes to handling our pair of Sahara conditionals from Section 1.1. The reason is that holding that (1) and (2) take the truth value 'void' due to their false antecedents leaves us unable to explain the defect of (2) with its insinuation that the Sahara's being covered by ice somehow constituted a reason for thinking that the Sahara is a warm place to be. Moreover, it leaves us unable to account for the semantic defect that arises once both (1) and (2) are simultaneously held to be true.[5]

It should finally be noted that although I didn't include these further claims among the core theses above, often the suppositional theory is stated by saying that:

(i) assertive uses of conditionals are to be understood as *conditional assertions*, where one is only prepared to assert the consequent under the supposition of the antecedent being true (Edgington, 1995; Woods, 1997; Bennett, 2003, ch. 8; and Oaksford and Chater, 2007, ch. 5), and

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[4] Qualification: In the quote above, Bennett says that P(if A, C) is undefined for $P(A) = 0$. But Pfeifer (2013) presents a version of the suppositional theory, broadly conceived, which allows for assignments of values to P(if A, C) for $P(A) = 0$.

[5] Refinement: however, as one of the reviewers points out, the suppositional theory can explain why the combination of holding both (1) and (2) to be true is problematic, if Jeffrey's suggestion is adopted of replacing 'void' by the conditional probability in the de Finetti truth table (cf. Baratgin, Politzer and Over, 2013a, 2013b).

   (ii) the suppositional theory captures Ryle's (1950) idea of conditionals serving
        as inference tickets (Bennett, 2003, p. 118; Oaksford and Chater, 2007,
        ch. 5)

However, in appealing to intuitively attractive ideas like (i) and (ii), the proponents
of the suppositional theory are invoking auxiliary hypotheses that are not systemati-
cally related to what has been identified as the core claims of the theory above. For it
would appear that a more natural home for (i) and (ii) would be an account empha-
sizing that the antecedent must be (epistemically) relevant for the consequent—and
that the antecedent may favorably be thought of as a reason for the consequent in
assertive uses of conditionals—which is the kind of account we now turn to.[6]

1.3 The Relevance Approach

There is an older tradition in philosophy of understanding the paradigmatic cases of
natural language conditionals as expressing inferences, where the premise is a reason
for the consequent, which has, *inter alia*, been articulated by Kant (Log, AA 09, §
25 in Jäsche, 1800 [1923]), Goodman (1991, [1947]), Ryle (1950), Rott (1986),
Strawson (1986), Brandom (1994), Douven (2008, 2013, 2015), and Krzyżanowska
(2015) and made precise using the formal tools of ranking theory in Spohn (2013,
2015). Until now this view has found little play in psychology of reasoning. But
some promising first steps are taken by Douven (2015), Krzyżanowska (2015), Olsen
(2014), and Skovgaard-Olsen (2016).

   Viewed from the present perspective, p-validity shares the same problem with
deductive validity in that it defines validity in terms of a formal property that
permits us to draw inferences to conclusions that don't preserve reason relations
from the premises to the conclusion. Historically, the realization that the premises
must somehow be relevant for the conclusion was first captured by Alan Ross
Anderson and Nuel Belnap in relevance logic by the syntactical requirement that
the premises are actually used in the construction of a proof for the conclusion (cf.
Mares, 2007, pp. 6 ff.).

   A more recent approach that is in a better position to connect to the turn
towards modeling reasoning under uncertainty in psychology of reasoning is the
ranking-theoretic approach to conditionals advanced in Spohn (2013, 2015).
Briefly stated, ranking theory is a comprehensive, formal epistemology that has
been developed in parallel to Bayesian epistemology with the goal of providing a
unifying framework for full beliefs and degrees of beliefs (Spohn, 2012). Its axioms
are as follows:

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[6] On the severity of the problem: This problem is actually quite severe for the suppositional theory
of conditionals, if Kölbel (2000) is right that denying that indicatives have truth conditions
commits the proponents of the suppositional theory to holding that conditionals are to be
understood as a syntactical device that functions as a complex force indicator indicating that the
consequent is only asserted conditionally on the antecedent being asserted.

Definition 1: let $\mathscr{A}$ be an algebra over W, the set of all possible worlds. Then k is a *negative ranking function* for $\mathscr{A}$ iff κ is a function from $\mathscr{A}$ into $N \cup \{\infty\}$, the set of natural numbers plus infinity, such that for all A, B $\in \mathscr{A}$:

[4] $\kappa(W) = 0$ and $\kappa(\emptyset) = \infty$

[5] $\kappa(A \cup B) = \min\{\kappa(A), \kappa(B)\}$

where $\kappa(A)$ is called the *negative rank* of A. From the above it follows that:

[6] $\kappa(A) = 0$ or $\kappa(\bar{A}) = 0$ or both

If $\kappa(A) < \infty$, then the *conditional rank* of B given A is defined as follows:

[7] $\kappa(B \mid A) = \kappa(A \cap B) - \kappa(A)$

Negative ranks are said to represent degrees of disbelief. If we want a unifying representation of full beliefs, degrees of disbelief, and degrees of beliefs, then two-sided ranks can be invoked, which are defined as follows:

[8] $\tau(A) = \kappa(\bar{A}) - \kappa(A)$

A is said to be believed whenever $\tau(A) > 0$, disbelieved whenever $\tau(A) < 0$, and the agent is said to be neutral whenever $\tau(A) = 0$. For a full discussion of the respective advantages of ranking theory, we will have to refer the reader to Spohn, 2012. But the basic point in stating a semantics for the conditional in it is that it provides us with a notion of (full) conditional beliefs, which allows us to side-step worries relating to the lottery paradox (cf. Spohn, 2013, 2015).

In Spohn (2012, ch. 6) an epistemic notion of relevance is introduced as follows:

[9] A is positively relevant to C iff $\qquad$ $\tau(C|A) > \tau(C|\bar{A})$
[10] A is irrelevant to C iff $\qquad$ $\tau(C|A) = \tau(C|\bar{A})$
[11] A is negatively relevant to C iff $\qquad$ $\tau(C|A) < \tau(C|\bar{A})$

This notion is used to analyze the notion of reasons by holding that A is a reason *for* C iff [9] holds and a reason *against* C iff [11] holds. On this basis, four types of reason relations are analyzed as follows:

[9a] Supererogatory reason $\qquad$ $\tau(C|A) > \tau(C|\bar{A}) > 0$
[9b] Sufficient reason $\qquad$ $\tau(C|A) > 0 \geq \tau(C|\bar{A})$
[9c] Necessary reason $\qquad$ $\tau(C|A) \geq 0 > \tau(C|\bar{A})$
[9d] Insufficient reason $\qquad$ $0 > \tau(C|A) > \tau(C|\bar{A})$

Now, the starting point for Spohn's (2013, 2015) semantics is that conditionals express conditional beliefs, which can be represented by $\tau(C|A) > 0$. But the suggestion is then added in Spohn (2013) that conditionals have a range of expressive functions that go beyond the Ramsey test such as expressing the reason relations above. Whereas these inequalities focus our attention on the extent to which the

antecedent is rank raising for the consequent, the Ramsey test merely consists in adding the antecedent to our knowledge base and evaluating the probability of the consequent on its basis. Hence, these constructions hold the promise of making the old idea precise that conditionals codify inferential relations and that the antecedent can be seen as a reason for the consequent in central applications of conditionals.

Now as both relevance logic and the ranking-theoretic approach to conditionals are based on the same intuitions, we can follow Mares (2007, p. 14) in citing the following examples as a way of motivating why the dimension of relevance should be integrated into our semantic analysis. Knowing that guinea pigs have no tails, we would probably find that there is some sort of semantic defect in the following indicative conditional:

(3) If I pick this guinea pig up by the tail, its eyes will fall out.

Since we know that the antecedent is false, it seems problematic for the conditional to suggest that there is some sort of connection between guinea pigs being picked up by their (non-existing) tail and their eyes falling out. Of course, opponents of the relevance approach would hold that it is just pragmatically misleadingly to use this conditional in certain contexts, because it carries this implicature. However, in reply we must ask why the opponent of the relevance approach is so certain that there is a layer of semantic competence in ordinary people, whereby a (literal) meaning can be attributed to conditionals of this type, without it appearing that there is some sort of semantic defect. This is surely an empirical question that cannot merely be decided by the intuitions of card-carrying theoreticians.

Moreover, as Mares (ibid.) points out, the indicative above also has a counter-factual analogue. So the problem cannot just be set aside as a local one without implications for the core theory:

(4) If I were to scare this pregnant guinea pig, its babies would be born without tails.

Again here it seems that this conditional should be treated as having some sort of semantic defect merely in virtue of the fact that the babies of guinea pigs will in any case be born without tails. In addition, there are the examples of semantic defects due to the antecedent's obvious irrelevance for the consequent, where both are true, which will have to be accepted as having a literal meaning, whereby they are perfectly fine, according to the horseshoe analysis and the suppositional theory (cf. Edgington, 1995, p. 267):

(5) If Napoleon is dead, Oxford is in England

Before justifying why lack of relevance should be considered a genuine *semantic defect* of conditionals in Section 2.2, Section 2.1 will provide an argument against attempts of restricting considerations of relevance to a pragmatic component that should not be allowed to enter into the semantic analysis.

2. The Semantics/Pragmatics Distinction

To set the stage, the following quote is instructive as it laments the tendency to ban items from our semantic analysis merely because the dominant semantic theory is unsuitable to handle them:

> *Method determines Matter*: If we are to say what an expression means by giving truth conditions, then 'Goodbye.' has no meaning. If we are to say what an expression means by describing its use, then 'Goodbye.' does have a meaning. I believe that the tendency to banish a wide variety of semantic regularities (including those of indexicals) to the netherworld of 'pragmatics' has been a direct consequent of the fact that the dominant forms of semantic theory are unsuitable for these expressions (Kaplan, draft, p. 4).

Many things are controversial in the philosophy of language. One thing in particular is the issue of where to draw the distinction between semantics and pragmatics. However, we are forced to confront this issue, as there is a tendency in the literature on conditionals to grant that there is a strong intuitive force in saying that there must be some sort of connection between the antecedent and the consequent (or that the first must be epistemically relevant for the second), but then to set this issue aside as a topic to be dealt with through pragmatic auxiliary hypotheses to our semantic account of conditionals (e.g. Edgington, 1995, p. 269).

One tradition in philosophy focuses on the descriptive use of language as the core of meaning to be accounted for first on which everything else builds (e.g. the account of speech acts and non-literal uses of language), and analyzes it in terms of truth conditions of sentences that are constructed on the basis of referential relations to the world. In this tradition, a strong distinction between semantics and pragmatics can be made by holding that truth conditions give the context-invariant meaning of sentences, which can then be modulated pragmatically through factors holding in particular contexts. Yet, the picture is complicated by the fact that even things like reference assignment and scope interpretation, which are needed for specifying the requisite truth conditions, may depend on pragmatic considerations (Riemer, 2010, p. 129).

Another tradition in philosophy holds that meaning is to be understood in terms of use and that we should understand the meaning of sentences in terms of an analysis of the pragmatics of their appropriate use (cf. Brandom, 1994; Khlentzos, 2004). Within this tradition, it will still be possible to draw a distinction between effects of *mere pragmatics*, and the general analysis of meaning, by holding that: (a) the pragmatics of appropriate use can be modulated by context-specific factors, and (b) there are norms of appropriate use like norms of politeness or prudence, which are not to be included in the analysis of meaning as the scope of the latter is restricted to epistemic norms. (And again the idea is that the assertive use of language is the core of meaning that is to be accounted for first on which everything else builds.)

In contrast, in linguistics we have an opposition between whether to understand semantic content as consisting in truth conditions, the conventional, or non-inferential meaning, and thus whether pragmatics should be thought in terms of the implicated meaning, the non-conventional meaning, or the inferential meaning (Birner, 2013, pp. 99−103).[7]

But in all cases it seems attractive to set aside effects of mere pragmatics in the general analysis of meaning, which is supposed to deal with contents that can be assigned to sentences on the basis of the standard interpretation of linguistically (e.g. syntactically and lexically) encoded information and only a bare minimum of knowledge about context-specific factors (cf. Bach, 2006). For present purposes, this will serve as our tentative explication of semantic content.

Notice, however, that we can still include indexicals (e.g. 'I', 'here') in the semantic analysis on the basis of this criterion by holding that the kind of pragmatic modulation referred to above involves overriding the standard meaning that can be assigned to a phrase/word/sentence on the basis of extra premises that only hold in a given context. In contrast, the context-dependency introduced by indexicals doesn't involve overriding the standard interpretation of the sentences in which they occur. Rather, their context-dependency merely consists in it being part of their standard interpretation to be treated as semantic variables whose arguments are supplied by the context. Hence, it is perfectly possible to understand that the function of 'I' is to refer to the speaker, whoever he/she is, in the sentence 'I took the last cookie' without yet being able to determine exactly who the sinner was in the absence of further information about who uttered the sentence.

2.1 Reason Relations as Part of the Sense Dimension of Meaning

While it remains controversial in philosophy of language whether both items in Frege's distinction between *sense* and *reference* are to be included in our theory of meaning, it is common in linguistics to adopt this distinction and to think of the latter as dealing with the relation between language and the world and the former as dealing with a relationship between elements within the vocabulary system (Saeed, 2003, sect. 1.6.1). In the case of word meaning, it is standard to take *sense* as encompassing lexical relations like synonymy, antonymy, and meronymy (i.e. whole–part relation) (ibid., chs. 2−3).

Of course, in this we are going beyond Frege, who mainly dealt with sense in relation to informative identity statements. But we can take him as having discovered the general need to include the cognitive role that linguistic content plays in information processing as part of the semantic analysis and then go beyond him in specifying which parts of linguistic content contribute to its cognitive utility. In doing so, we will moreover go beyond Frege in pointing to aspects of the sense dimension of meaning that don't play a role in determining reference.

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[7] Acknowledgement: I am here indebted to discussions with María Biezma.

One suggestion would be to include reason relations under the sense dimension of meaning. There are at least two reasons for making this move. One is that it is possible to consider synonymy and antonymy as themselves involving reason relations. So if 'autumn' and 'fall' are *synonymous*, then the proposition that it is autumn is a reason of maximal degree for the proposition that it is fall. And if 'large' is an *antonym* of 'small', then the proposition that x is large is a reason of maximal degree against the proposition that x is small. Another consideration in favor of including reason relations among our sense dimension of meaning is that there is a list of utterance modifiers like the following, which clearly have a meaning in terms of commenting on the dialectical role of assertions, which is not captured by the traditional truth-conditional accounts:

> 'after all', 'besides', 'be that as it may', 'furthermore', 'however', 'in conclusion', 'indeed', 'moreover', 'at any rate',[8] 'still', 'although', 'yet', 'the reason is that', 'on the one hand … , on the other, … ', 'thus', 'hence', 'in fact', 'to be sure', 'so', 'consequently', 'in spite of the fact that', 'despite', 'since', 'due to the fact that', 'provided that', 'as a result', 'on the contrary', 'in contrast', 'accordingly', 'whereas' and 'nevertheless' etc.

To introduce a term for building up a dialectical structure by means of these utterance modifiers, I would suggest that we talk about *the dialectical compositionality of an argument* in addition to the traditional, truth-functional compositionality of a sentence. The expression of reason relations makes up a central element of composing the dialectical structure of an argument, and it seems that it would be part of the linguistic competence of mature language users to be able to decode this dialectical structure on the basis of the modifiers listed above (even when provided with impoverished contextual information).

In the tradition of truth-conditional semantics, it has always appeared attractive to treat 'and' and 'but' alike in that both could be treated as contributing to the composition of sentences as the logical connective 'conjunction'. The caveat is then added that there was a pragmatic distinction between the two consisting in that the latter indicates a contrastive relationship, which was absent in the former as illustrated by sentences such as 'she was poor but honest'.

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[8] On the classification of utterance modifiers: The list up until this point is called *speech act adverbials* in Bach, 1997, and *utterance modifiers* in Bach, 2006. The items after it have been added by me. Whether the grammatical label is still adequate I am unsure. But it seems that one of their central functions is still to perform a similar role in making the dialectical structure of the text or conversation explicit. In Blakemore (2004), expressions like those included on my list are called *discourse markers*. But as she also points out, this class is a mixed bag in linguistics, whose extension differs from author to author. Some of the examples she considers have nothing to do with argument structure and they would thus not be covered by the present proposal. Moreover, in chapter 4 she highlights complications to the analysis such as that 'but', 'nevertheless', and 'however' are not always interchangeable, although they all appear to express the same reason against relation.

However, as we saw above, we already have a wider class of utterance modifiers, whose semantic content in building up a dialectical structure of a text or a conversation cannot be captured in terms of truth–conditional semantics. Hence, it would seem that there is no reason why we shouldn't include this contrastive content of 'but' in its semantic analysis by saying that an expectation about a relationship between being poor and dishonest is being contradicted in the assertion of 'she was poor but honest'.[9] So although the contrastive content expressed by 'but' makes no contribution to the truth-functional compositionality of sentences, it earns its keep in the semantic analysis through its central contribution to the dialectical compositionality of arguments.[10]

A further consideration in favor of thinking that this component should be made part of the semantic analysis of 'but' is that it is a context-invariant feature of its meaning, whose interpretation requires little contextual information. In fact, all we were provided with above was a single sentence and yet its content was fully understood.

Once we have accustomed ourselves to the general idea of including reason relations among the sense relations, the door is open to consider it part of the semantic content of conditional connectives like 'if … then' and 'even if' that they linguistically encode reason relations in a context-invariant manner, which ordinary speakers are capable of interpreting, when provided with even impoverished contexts. At least, there should be no general resistance to this idea on the grounds that it can only be part of the semantic analysis to ascribe truth conditions as this leaves us without a semantic analysis of the utterance modifiers mentioned above in any case. Ultimately, it must then be considered an empirical question, whether this semantic analysis is descriptively adequate with reference to the linguistic competence of ordinary speakers. (In Skovgaard-Olsen, Singmann and Klauer, 2016, and Skovgaard-Olsen, Kellen, Krahl and Klauer, in review, my co-authors and I have embarked on such an empirical invesitigation.)

2.2 On Semantic Defects

Having thus provided a general argument for why we should not be predisposed to reject the idea of the expression of reason relations as being part of the semantic analysis in general, we can now return to the explanatory challenge of accounting for why a failure of relevance should be counted as a semantic defect of conditionals.

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[9] An alternative analysis of 'but': In Iten, 2000, ch. 5, and Blakemore, 2004, ch. 4, one finds a comprehensive discussion of the different uses of 'but' in denial of expectation, making contrasts, making corrections, expressing compensation, its use in discourse to return to the main topic of discussion, and its use to initiate sentences and paragraphs, where it is argued that the latter can all be subsumed under the denial of implicit or explicit assumptions. While this is not quite the same as saying that there is a contrastive relationship between the conjuncts, because the assumption denied may remain implicit, it surely goes in the same direction.

[10] Reference: an important antecedent in the literature with respect to this topic is Merin (1999), who offers a decision theoretic semantics of 'or', 'not', 'but', 'even', and 'also', where the formal explication of relevance in terms of probability difference making plays a crucial role.

In general, complete, descriptive sentences that have a content that prevents them from being truth-evaluable are said to be defective. But the question of whether conditionals have truth conditions continues to remain a controversial issue. However, the discussion in the previous section opens up the possibility that sentences can be defective if they have a content that prevents them from playing the cognitive role that pertains to members of their class. Now, since we have already seen that proponents of the suppositional theory have flirted with the idea of conditionals being used as inference tickets, and of the speaker only being prepared to assert the consequent on the supposition that the antecedent is true, it seems that they cannot object to using the lack of literal meaning that would enable such uses as an indicator of a semantic defect.

Using this criterion, the proponents of the suppositional theory cannot object to treating the examples discussed in Section 1.3 as genuine instances of semantic defects as failure to express reason relations blocks the use of conditionals in sensible inferences and the desirability of making the corresponding conditional assertions. Presumably ordinary subjects would fail to identify a sensible commitment to answer justificatory challenges, which could be attributed on the basis of assertions of conditionals, where the antecedent is blatantly irrelevant for the consequent, as in (5). And presumably ordinary subjects would fail to take a line of reasoning seriously that involved making use of such conditionals. If so, then the problem with these conditionals is not just that it would violate some Gricean, pragmatic maxim of non-misleading discourse to introduce them in a conversation. Rather, their defect consists in having a literal content, which robs them of their cognitive utility both in conversational contexts and with respect to individual reasoning.

So to summarize, the argument for counting epistemic irrelevance as a semantic defect of conditionals has been:

(P$_1$) We should include sense (cognitive utility) as linguistically encoded in sentences in a context-invariant way, which can be interpreted on the basis of impoverished contexts alone (where little or no supplementing contextual information is provided), as part of the literal meaning of expressions.

(P$_2$) It is a sufficient condition for a sentence to be semantically defective that it has properties that prevent the assignment of the full, literal meaning that would pertain to members of its class.

(P$_3$) The ability to express reason relations is a central way of enabling cognitive utility of conditionals.

(C) Hence, if it holds for conditionals with antecedents that are blatantly irrelevant for the consequent that they don't enable the cognitive utility on the basis of their literal, context-invariant meaning that conditionals expressing reason relations would enable, then the former count as semantically defective.

As it stands, the argument only directly addresses the issue of whether cases of blatant irrelevance like example (5) should be counted as genuine semantic defects.

As such, it has been silent on examples (3) and (4). However, it can easily be extended to cover such cases as they suffer from the defect of stating spurious relationships involving the non-existent tail of guinea pigs, which will prevent such conditionals from having the cognitive utility that normal conditionals enjoy. Accordingly, there is no temptation to using such conditionals as inference tickets and it makes little sense only to be willing to assert the consequent under the supposition that the antecedent is true in these cases.

Finally, two qualifications should be added to the argument above. The first caveat is that the point is not that one cannot have special cases of conditionals like (6) and (7) (cf. Bach, 2006), which at first sight don't appear to express reason relations:

(6) If you can lift that, I'm a monkey's uncle.

(7) If Saddam Hussein wins the Albert Schweitzer Humanitarian Award, Dr Dre will win the Nobel Prize for medicine.

Rather, the point is to treat it as a default reading of conditional assertions that they express reason relations and that such special uses have to either bracket or modify this more paradigmatic use that we are concerned with. For examples like (6) and (7) can be dealt with by noticing that apparently the speaker takes the antecedent in each case to be so preposterous that if he found himself in a position of accepting it, then he might as well accept the consequent (which expresses a proposition that he takes to be equally outrageous). However, although the line of reasoning suggested by such conditionals is obviously not one that the speaker finds worthwhile, the antecedent is strictly speaking treated as a reason for the consequent by the suggestion that accepting the antecedent should make us accept some equally absurd proposition stated in the consequent. So, far from being a counterexample to the present account, as Bach (2006) suggests, it appears that this marginal use of conditionals to express one's outrage about the absurdity of the antecedent actually exploits the fact that conditionals are normally taken to express reason relations.

Another apparent counterexample[11] is the so-called non-interference conditionals such as 'if it snows in July, the government will fall', where the consequent is taken

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[11] Caveats: here I am not including so-called *biscuits conditionals* (e.g. 'there are biscuits on the table in the kitchen, if you want any') as a possible exception as they seem to take the form of a conditional *tip* and we have been concerned with conditional *assertions*. Similarly, I am not including sentences like 'If you ask me, he's Italian' (Dancygier, 2003, p. 312) as a possible counterexample for the same reason. In this case, the speaker is indicating his disposition to react to a request for information and would presumably be prepared to assert the consequent regardless of whether the antecedent holds (that is, regardless of whether the speech act is performed of requesting him for information). Of course, in the end it would be desirable to have a general theory that could cover all conditional speech acts. But for present purposes we are pursuing a more modest goal. If one were to pursue the more ambitious goal, then it appears that the relevance approach would have to be supplied with an account of conditionals as specifying conditions under which some deontic state of affairs hold (e.g. a promise being issued) to account for deontic conditionals. A classification of this type of conditionals in linguistics is 'purely case-specifying conditionals', where the antecedent clause specifies the condition under which the speech act in the consequent clause is felicitously addressed to the hearer (ibid., p. 319).

to be so obvious that it will hold regardless of whether the antecedent holds. As Douven (2015, pp. 10−11) points out, one way to identify this class of conditionals is through the possibility of substituting 'if' by 'whether or not', 'regardless of whether', and sometimes by 'even if'.

One strategy in dealing with non-interference conditionals is to follow the lead of Douven and many others in accepting that a distinction between normal and special conditionals has to be made, because the class of conditionals is apparently too diverse to allow for a generalization that fits all of them. Given the comprehensive, empirical classification of divergent conditionals in Declerck and Reed (2001), this may indeed be the wisest option. But even so, the view may still be retained that the relevance approach succeeds in accounting for most instances of normal conditionals.

However, I actually think that it is possible to adopt the stronger position outlined above, that a default reading of conditional asssertions is that they express reason relations and that special uses have to either bracket or modify this more paradigmatic use (at least in relation to the standard counterexamples discussed in the philosophical literature). So returning to the non-interference conditional above, one may speculate that the 'if' in non-interference conditionals is an abbreviation of 'even if', where the latter indicates that the antecedent clause expresses something that is taken to be a reason against the consequent (either by the speaker or some other party), which the speaker holds, however, *not* to be a *sufficient reason against* the consequent.[12]

Accordingly, the irrelevant antecedent clause in 'if it snows in July, the government will fall' would achieve its effect by serving as a placeholder for whatever the interlocutor would like to insert with the point being that the speaker would still continue to endorse the consequent (i.e. 'even if [whatever], the government will [still] fall'). In order to achieve this effect, the antecedent has to be obviously irrelevant to make it obvious that there is no particular reason why it was chosen over a different candidate. That is, what is expressed is that no matter which content is substituted for the antecedent, it would still not count as a sufficient reason against the consequent.

The second caveat is that the point of the argument above is not to make *every* expression of reason relations part of the semantic analysis. Under the assumption that the latter is concerned with context-invariant content that can be interpreted even on the basis of an impoverished context, it is possible that there will be cases, where propositions are connected in reason relations in ways that would normally be rejected as semantically defective, but where the epistemic situation introduces special contextual information, which introduces new reason relations. More specifically, the kind of cases I have in mind are when the agents have evidence that the

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[12] Correction: inspired by Douven and Verbrugge, 2012, I am here slightly correcting the analysis in Olsen, 2014, where it was said that the speaker held A to be an *insufficient reason against C*. The point is that one can deny that A is a sufficient reason against C in several ways; either by holding that A is an *insufficient* reason against C or by holding that A is not a reason against C to begin with.

true proposition is a member of a set, but they don't yet know which one it is. In such cases, eliminating possibilities will raise the rank of the remaining candidates. Hence, in this epistemic setting, propositions, that wouldn't normally count as reasons for the truth of the other propositions, will in fact raise their rank (as when a crime detective knows that the murderer was in a particular room, but doesn't yet know who it was). It is for such cases that instances of [2] have their justification. However, we cannot allow the validity of [2] to be treated as a general principle in our semantic analysis as it is only applicable whenever the context introduces evidence that the true proposition is a member of a set without yet allowing the assignment of 'true' to any of the candidates (cf. Spohn, 2013). Accordingly, the present approach compels us to reject the universal validity of [1] and [2] due to the fact that they don't generally preserve reason relations. At the same time, however, it still allows us to account for the special circumstances, where [2] is justified due to context-specific factors that it declares to belong to pragmatics.

3. Objective Purport and Compositionality

The purpose of this section is to sketch a strategy for dealing with the twin problems of accounting for compositionality and a sense in which there can be a factual dispute about conditionals on the basis of the relevance approach. I say that these are twin-problems, because traditionally the main strategy for dealing with compositionality has been to state the truth conditions for some proposition expressed by the linguistic content in question and then to allow that the semantic value of a more complex sentence, in which this content figures, is a function of the contribution to composing truth conditions that its elements make. And, of course, once one has truth conditions of propositions, then it is a small step to hold that factual disputes concern the satisfaction of these truth conditions.

Although this has indeed been the *main* strategy, it is not the only one. Indeed, when it comes to compositionality, the main strategy of the proponents of the suppositional theory has been to argue that: (1) genuine cases of compound conditionals are rare, (2) even positions that hold that conditionals express either a truth-functional or a non-truth functional propositions[13] have their own problems when it comes to dealing with compositionality, and (3) that apparent cases of compound conditionals can be explained away by a case-to-case use of paraphrases by means of sentences that don't involve compound conditionals (cf. Edgington,

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[13]   Explication: the distinction between the two is that between truth tables, where the truth value of the conditional is a function of the truth values of the components (e.g. the material implication) and truth tables, where the truth values of the components leave open the truth value of the conditional (e.g. possible world semantics holds that when the antecedent is false, the conditional may either be true or false depending on whether the consequent is true in the nearest possible world in which the antecedent is true) (Edgington, 2006).

1997, 2000, 2006; Woods, 1997, ch. 6; Kölbel, 2000; and Bennett, 2003, ch. 7). To illustrate:

(i) 'if A, (if B, C)' is paraphrased as 'if (A and B), C',
(ii) ‚it is not the case that if A, then C' is paraphrased as ‚if A, non-C‘,
(iii) ‚if A, C and if B, D‘ is paraphrased as ‚if A, C. If B, D‘, and
(iv) '(if A, B) or (if C, D)' is taken to be virtually uninstantiated.

Part of the reason appears to be that apparently three-valued logics is not in a better position to avoid counterintuitive cases (regardless of how the truth tables of the other logical connectives are fixed), as Edgington (2006) points out.

A further objection that one could have towards this strategy is that it is not based on systematic principles but rather involves a free use of artistic license in selecting suitable paraphrases, when dealing with the hard cases (cf. Edgington, 1997; Kölbel, 2000).

In dealing with these twin problems on the basis of the relevance approach, one possibility is to follow Kaplan (draft) in holding that we can get a handle on expressive content by substituting the corresponding propositions that would be needed to describe it. What Kaplan is driving at is that there is an inherent limitation in truth-conditional semantics suited for descriptive content, when it comes to dealing with expressive content like 'that bastard Kaplan', 'oops', and 'ouch', which displays some state or attitude, and is more adequately explicated in terms of rules of use. However, we can make progress in applying our standard model-theoretic techniques by noticing that there is an informational equivalence between such examples and the corresponding sentences with a descriptive content. Suppose that the semantic information conveyed by descriptive content is the set of contexts at which the sentence is descriptively correct (or true), and the semantic information conveyed by expressive content is the set of contexts at which the word (or phrase) is expressively correct. It will then hold that the semantic information conveyed by 'ouch' is equal to the semantic information conveyed by 'I am in pain', and that the semantic information conveyed by 'oops' is equal to the semantic information conveyed by 'I just observed a minor mishap'—or so Kaplan (draft) argues. However, he is careful to point out that they are not synonymous and they behave differently logically and with respect to compositionality.

Applied to our context, we could analogously approach our twin-problems on the basis of the assumption that the expressive content of conditionals could be stated by propositions of the kind that there is a reason relation between A and C (or alternatively: 'that A is a reason for C').[14] Presumably, it is propositions of

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[14] Comment on the analogy: as always, the analogy is far from perfect and there are disanalogous aspects as well. In particular, expressives like 'that bastard' behave differently with respect to compositionality than our propositions about reason relations. As Kaplan (draft) points out, although embedding in the antecedent clause in a conditional is normally taken to bracket the assertive force of the proposition, the derogatory effect of 'that bastard Kaplan' is still achieved

this kind that the hearer would attribute as commitments to a speaker uttering an indicative conditional.

Adopting this approach yields a systematic account of compositionality in that the logical connectives can now be applied to propositions of this kind in determining the content of compound conditionals. Accordingly:

  (v) 'It is not the case that if A, C' gets analyzed as 'It is not the case that there is a reason relation between A and C' or 'It is not the case that A is a reason for C'.
  (vi) 'If C, if A, then D' gets analyzed as 'There is a reason relation between (there being a reason relation between A and C) and D' or 'That A is a reason for C is a reason for D'.
  (vii) 'If A, then C, if B' gets analyzed as 'There is a reason relation between A and there being a reason relation between B and C' or 'A is a reason for that B is a reason for C', etc..

Moreover, adopting this meta-linguistic approach allows us do justice to the perceived objective purport of assertions of conditionals, which consists in the impression that one is aiming at the truth in their assertion and that factual disagreement is possible with respect to indicative conditionals. According to this line of thought, ordinary speakers should be depicted as aiming at asserting truths about A being a reason for C, when asserting indicative conditionals, and their disagreements over such conditionals should be depicted as intended factual disputes about, whether A is *really* a reason for C.

This view connects with the work of Brandom (1994, 2010, pp. 44−8, 104), who holds that (indicative) conditionals serve the function of making our dispositions to draw inferences explicit, and that one of the expressive advantages of having such a connective consists in enabling justificatory challenges that target the inferential transitions that we implicitly make. So not only can a speaker give 'if A, then C' as a justification for why he accepts 'C' in a context, where A is taken for granted. But in virtue of making his commitment to there being a reason relation between A and C explicit, his interlocutors can then subject the reason relation itself to further, critical scrutiny.

3.1 The Normative Foundation of Perceived Objective Purport

In making these points, the meta-linguistic approach is saying something about linguistic phenomenology and the semantic competence of ordinary speakers. It is then a separate issue, whether a suitable formal approach can be found, which vindicates ordinary language users in their perception of the objective purport of conditionals.

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in 'If that bastard Kaplan gets promoted, then … '. However, the analogy will still be useful to the extent that it allows us to transpose a solution from one domain to solve a problem in a different domain.

As the ranking-theoretic explication of reason relations was introduced above, it will be useful at this point to consider in a purely informal way, how it would respond to the issue at hand. As far as I can see, ranking theory offers two options for reacting to the meta-linguistic approach. On the one hand, it could hold that the proposition that there is a reason relation between A and C should really be taken as shorthand for 'according to the ranking function under consideration, there is a reason relation between A and C'. In most cases, this will amount to 'I take it that there is a reason relation between A and C'. But it is also conceivable that the interlocutors may build up a mutual ranking function in the course of a conversation as common ground.[15]

Adopting this version would make the present case fully analogous to Kaplan's way of handling expressive content. In this case, conditionals would be depicted as having the expressive content of displaying aspects of the epistemic state of the speaker, which would be expressively correct just in case that they were in fact part of the corresponding ranking function. However, the downside is that this development is committed to an error-theory analogous to Mackie's error-theory about ethical facts. Although it may appear to the language users *as if* they are aiming at stating objective truths about what is a reason for what in their assertions of conditionals—which is a matter that they are capable of having factual disputes about—the present approach would hold that what they were really doing was expressing a feature of their own epistemic states. Factual disputes could still be had about whether it really was the case that A is a reason for C according to a particular ranking function. But it would be factual disputes of a very different kind and disappoint hopes of finding a rational way of adjudicating disputes between agents with conflicting ranking functions.

On the other hand, the ranking theoretic explication of reason relations could be used to take *an objectivistic approach*, which would place the content expressed by indicative conditionals on the descriptive side of Kaplan's divide between expressive and descriptive content. To explain the rationale of this approach, it is required that we briefly state the main results of Spohn's (2012, ch. 15) rather technical objectification proofs. In an attempt to show that subjective ranking functions representing degrees of disbelief are capable of possessing objective properties, Spohn notices that although a belief is an epistemic state, its truth is an objective property of it. Accordingly, if different features of ranking functions (like their expressing conditional beliefs, reason relations, beliefs about causal relations) could be characterized in terms of the beliefs that they are minimally committed to, these features would have objective truth conditions corresponding to them. More specifically, the strategy is to demonstrate that there is a one-to-one correspondence between different features of ranking functions and the minimal propositions characterizing the features in question. If the underlying ranking functions can be uniquely reconstructed from these propositions, then their truth conditions are attributed to the former. As it turns out, it can be proven that this objectification strategy will fail

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for the ranking-theoretic explication of the reason relation. Yet, it succeeds for the ranking-theoretic explication of causal relations as a kind of reason relation conditioned on the actual history.

In reflecting on the significance of this result, Spohn (2012, p. 369) says that:

> Now in our subjectivistic approach (direct) causes simply were a particular kind of conditional reasons, and Sections 15.4−15.5 proved that if we assume a specific temporal and logical form for these conditional reasons, we can place them in a one-one correspondence with objective material implications. So, it seems the causal relation is just the well-formed objectifiable part of our much richer and more disorderly reason relation. In other words, if we want to objectify our inductive strategies, if we want to align our dynamics of belief to the real world, we have to attend to causation, to the objectifiable part of our reasons. This is what the notion of causation is for.

Accordingly, the success in showing that the ranking-theoretic explication of causal relations can be brought into a one-to-one correspondence with material implications, introduces the prospect of striving for objectivity in our reason relations by aligning them with the objectifiable causal relations.

Applied to the meta-linguistic approach, this result would vindicate the perceived objective purport of assertions of indicative conditionals to the extent that truth conditions of these causal relations could be ascribed to the propositions stating reason relations. Accordingly, ordinary language users would be justified in their perception that they were aiming at the truth in asserting (contingent)[16] indicative conditionals, and that it is possible to have factual disputes about them, to the extent that: (a) they were thereby aiming at stating reason relations that were capable of being identified with causal relations, and (b) such discussions are depicted as being discussion about whether the reason relation expressed by a given indicative can be considered a causal relation. So if, for instance, there is a dispute about the indicative 'If the glass is dropped, then it will break', this dispute can be reconstructed as a factual dispute about whether the corresponding counterfactuals expressing causal relations would be true (e.g. 'If the glass had been dropped, it would have broken') as the objectification strategy allows us to assign truth conditions to counterfactuals (cf. Spohn, 2015).

However, no matter whether the former subjectivistic or the latter objectivistic approach is preferred, it holds that they are attempts of *justifying* the perceived objective purport in asserting indicative conditionals using the resources of ranking theory by *regimenting* factual disputes over indicative conditionals as either concerning features of the agent's own ranking functions or objective, causal relations. In neither case should we view these regimentations as descriptions of the

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[16] On non-contingent conditionals: Notice that there is no problem in providing an objective basis for our non-contingent indicative conditionals (e.g. in mathematics) as the notion of deductive reasons that can be explicated on the basis of the subset relation is not relativized to doxastic states (cf. Spohn, 2012, p. 109).

linguistic competence of ordinary speakers. For the purposes of the latter, we need not go beyond the meta-linguistic approach that we started out with. That this is so can be seen by the fact that the subjectivistic approach ended up being committed to an error-theory about the objective purport of assertions of conditionals, and that the objectivistic approach ended up relying on some very technical proofs that employed the identification of minimal propositions as part of an elaborate proof strategy.

Hence, as compositionality deals with an aspect of linguistic competence neither the subjectivistic nor the objectivistic truth conditions should be used to account for the semantic content that ordinary language users associate with compound conditionals.

3.2 Further Hard Cases

The present approach should make us suspect that there will be a higher frequency of compound conditionals in conversations and texts, where the interlocutors get sophisticated about composing a dialectical structure. To illustrate, one can find the three following gems naturally occurring in an unpublished argumentative text by Kaplan (which is not on the subject of conditionals):

   (i) IF Grice is right about the descriptive content of the premise in Argument 5, then UNLESS it is not valid, then I am wrong and Grice is right about logic, OR information conveyed expressively cannot be converted into information conveyed descriptively (Kaplan, draft, p. 26). [If A, then, unless non–B, C and D, or non–E.]

   (ii) Analogously, IF the descriptive content of the second premise of Argument 6 includes the expressive content in the conclusion, then again, IF the argument is not valid, then I am wrong about logic, UNLESS information conveyed descriptively cannot be converted into information conveyed expressively. (ibid) [If A, then if non–B, then C, unless non–E.]

   (iii) If I am correct about parts of language being marked to *display* respect (or disrespect), then the use of such language, even if thought to be insincere, is *respectful behavior*, and should produce an affective response in its own right (Kaplan, , p. 31). [If A, then C, even if B, and D.]

Until now the proponents of the suppositional theory have not come up with any paraphrase of examples like this that I am aware of. But they can easily be accounted for on the basis of the present approach.

By making the following two assumptions, the rendering below is possible: (1) 'unless' serves the specific role of stating a condition that would undermine the reason relation (which might be called a 'disabler'), and (2) 'C even if A' serves the specific role of indicating that A is taken to be a reason against C in the context of the conversation (either by the speaker or by somebody else), yet the speaker denies that A is a sufficient reason against C:

   (i) Either there is a reason relation between A and (C and D), which would be undermined by non–B, or E is not the case.

(ii) There is a reason relation between A and there being a reason relation between non–B and C, which would be undermined by non–E.

(iii) There is a reason relation between A and (C and D), whereby B is an insufficient reason against C.

Furthermore, the example 'If Kripke was there if Strawson was there, then Anscombe was there' is often cited as demonstrating that compound conditionals can be harder to process than we would expect if there was a full-fledged account of the compositionality of conditionals. However, on the present account it can be rendered as: there is a reason relation between (there being a reason relation between Kripke being there and Strawson being there) and Anscombe being there. What is a bit odd about this example is why the speaker should assume there to be such a relationship. But suppose that Anscombe believed that Kripke was attending the conference, and that it is really Strawson that she wanted to see. If then Anscombe assumed that Kripke's presence raised the rank of Strawson's presence, then this might in turn have raised the rank of Anscombe's presence.

Or to take another example with the same syntactical form: 'If the glass broke if it was dropped, then it was fragile'. In this case we have no problem with supposing that the rank of the glass being fragile is raised in case the rank of the glass being broken is raised by its being dropped.[17]

Furthermore, Edgington (1995, 2006) has been claiming for some time by now that 'Either (if A, C) or (if B, D)' is virtually uninstantiated, whenever the speaker is open about either disjunct. However, it is not hard to cook up examples, where a speaker could take it that there is either a reason relation between A and C or a reason relation between B and D and be open about either disjunct. Suppose that a student is preparing for an exam and says to one of her fellow students that 'Either, if the question about Kant comes up, the correct answer is rationalism, or, if the question about Hume comes up, the correct answer is empiricism. I can't remember which' as a way of reporting what the teacher said. Although this way of talking is perhaps a bit convoluted, it is not hard to understand what is being communicated.

On the basis of this comparative discussion, I conclude that the present approach to compositionality is in a good shape. However, one technical challenge is that it made use of the idea of reason relations as themselves entering in reason relations. Yet, the ranking theoretic explication of the reason relation encountered above is only defined over propositions. As a result, the reason relation cannot itself enter as a relatum in other reason relations on this explication. But perhaps one solution to this problem would be to treat 'the proposition that there is a reason relation

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[17] Caveat: however, an asymmetry between the Anscombe and the glass example is that whereas fragility concerns a dispositional property that the glass would have if its properties were related by the reason relation in the antecedent of the compound conditional, Anscombe's presence concerns a property of a distinct "object". Consequently, the Anscombe example requires a further presumption that is superfluous in the glass case; to wit, that Anscombe believes that Kripke will attend the conference.

between A and C' as the requisite relatum. Yet the technical details still need to be worked out.[18]

In sum, what has been accomplished throughout this article is: (i) theoretically motivating the relevance account over against competing candidates under consideration in psychology of reasoning (Section 1−2), (ii) providing an argument for why irrelevance should be counted a genuine semantic defect of conditionals (Section 2), and (iii) developing strategies for how to deal with the notorious difficult topics of accounting for compositionality and the perceived objective purport on the basis of a relevance approach to conditionals.

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[18] In the manuscript Skovgaard-Olsen, draft, an attempt is undertaken by the present author, albeit from a very different direction.

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