SEMANTIC OPERATORS IN DIFFERENT DIMENSIONS

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To My Family

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ABSTRACT

SEMANTIC OPERATORS IN DIFFERENT DIMENSIONS

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This thesis studies the interface of truth-conditional and non-truth-conditional meaning by investigating constructions whose meaning and use differ because their semantic contributions are distributed differently over the semantic dimensions. The constructions in question are certain clausal adjuncts and complements.

For clausal adjuncts, I argue that two words for 'because' in German (*weil* and *denn*) contribute the same semantic operator (causality), but on different semantic dimensions. While *weil* operates in the assertion (or at issue) dimension, *denn* contributes instead a side comment (or conventional implicature). Consequently, the two words differ both in their range of use as well as in their semantic behavior as part of larger sentences. I point out the same empirical dichotomy for other adjuncts such as regular and relevance conditionals, *although*-clauses, and different kinds of adverbs. I show that for each of the constructions similar semantic differences result because an operator is contributed on the at issue dimension in one case, and as a conventional implicature in the other.

In the realm of complement clauses I investigate complements of attitude verbs. Of the large range of constructions that express the semantic arguments of attitude verbs, I study two in this thesis: slifting and embedded verb-second clauses. I show that these two constructions again mirror the situation as with *weil* and *denn* above: I propose that the two constructions contribute the same semantic pieces, but distribute them differently over the semantic dimensions of assertion and conventional implicature.

In multiple case studies, this thesis thus addresses some of the most important questions in linguistic semantics: What are the semantic pieces associated with a certain word

or construction? How are these semantic pieces distributed over the known dimensions of meaning? And what effects does the individual distribution of meaning parts over semantic dimensions have for the overall meaning, function, and discourse effects of complex utterances?

The issue of the dimensionality of semantic entailments is not bound to a particular language (group), and the phenomena I study are generally cross-linguistically well-attested. For practical reasons, though, the discussion in this dissertation concentrates mostly on examples from German and English.

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Introduction

This thesis studies the interface of truth-conditional and non-truth-conditional meaning. I investigate constructions whose meaning and use differ because their semantic contributions are distributed differently over the semantic dimensions. The constructions in question are clausal adjuncts and complements.

For clausal adjuncts, I argue that two words for 'because' in German (*weil* and *denn*) contribute the same semantic operator (causality), but on different semantic dimensions. While *weil* operates in the assertion (or truth-conditional) dimension, *denn* contributes instead a side comment (or conventional implicature). Consequently, the two words differ both in their range of use as well as in their semantic behavior in larger sentences. I point out the same empirical dichotomy for other adjuncts such as regular and relevance conditionals, *although*-clauses, and different kinds of adverbs. Based on this similar behavior, I extend the analysis to cover these parallel cases.

In the realm of complement clauses I investigate complements of attitude verbs. There exists a large range of constructions that express the semantic arguments of attitude verbs. In this thesis, I investigate two of these cases: slifting and embedded verb-second clauses. I show that these two constructions again mirror the situation as with *weil* and *denn* above: I

propose that the two constructions contribute the same semantic pieces, but distribute them differently over the semantic dimensions of assertion and conventional implicature.

In multiple case studies, this thesis thus addresses some of the most important questions in linguistic semantics: What are the semantic pieces associated with a certain word or construction? How are these semantic pieces distributed over the known dimensions of meaning? And what effects does the individual distribution of meaning parts over semantic dimensions have for the overall meaning, function, and discourse effects of complex utterances?

The issue of the dimensionality of semantic entailments is not bound to a particular language (group), and the phenomena I study are generally cross-linguistically well-attested. For practical reasons, though, the discussion in this dissertation concentrates mostly on examples from German and English.

1.1 Linguistic Meaning and Semantic Dimensions

The central topic of modern linguistic semantics is the determination of the compositional meanings of lexical items and syntactic constructions. The basic principle of modern semantics at least since the work of Richard Montague is Frege's *compositionality* principle:

(1) "The meaning of a complex expression is a function of the meaning of its parts and of the syntactic rules by which they are combined." (Partee et al., 1990, p. 316)

The syntax is represented in tree-form. For the semantic representation I will use the Lambda calculus as employed in the Montagovian tradition and standardized in (Heim and Kratzer, 1998). In this tradition, syntactic constructions and lexical items each make their individual semantic contributions, which are combined compositionally to yield the meaning of the entire sentence. The first and foremost task for the formal semanticist is therefore to determine the exact semantic pieces that each lexical item or syntactic construction con-

tributes to the whole of complex sentences.

During this process of establishing the particular semantic contributions of certain lexical items and constructions, it has been noted that not all semantic parts seem to be created equal. The focus of finding the meaning associated with a word or construction is on their external semantic behavior, that is, how it works together with other meaning components to yield the meaning of complex sentences. These final derived denotations of complex sentences are the basis for evaluation of a semantic analysis because they are more easily observed: They should match our intuitions about the meaning of utterances, and they can be tested in models and scenarios. Exactly in this compositional behavior, i.e., how a semantic piece behaves within larger constructions, several different classes of items have been identified.

Traditionally, the focus in formal semantics has been on the truth conditions associated with a sentence, i.e. what would make the sentence true. This dimension of meaning is also called assertion (since it is the asserted content in a regular declarative sentence), or at-issue content (Potts, 2005).[1] However, some meaning parts that can be identified show different compositional behavior.

As a well-known example, consider the following two sentences.

(2) Peter stopped eating meat.

(3) Peter didn't stop eating meat.

There are two contributions made by (2). First, that Peter currently does not eat meat. And second, that Peter used to eat meat previously. When (2) is embedded under negation, the first contribution is negated, while the second remains unchanged.

Although this has been the topic of hot discussion, the current consensus in linguistic semantics holds that such tests show that the two meaning parts of (2) are distinct kinds

[1] In this thesis, I will generally use the term "assertion" if this does not lead to any confusion in the context. I also use "at-issue content" synonymously.

of meaning from each other, they are on different semantic dimensions. While the first contribution (that Peter doesn't eat meat now) is the assertion of (2), the second (that Peter used to eat meat) is the presupposition. The formal analysis and behavior of presuppositions has been relatively well-studied (Beaver, 1997).

Another dimension of meaning that leads to different semantic behavior within larger utterances is the conventional implicatures (Grice, 1975; Potts, 2005). Among other items, nominal appositives, such as *a passionate animal-rights activist* in the following example, have been identified as contributing their meaning in the conventional implicature dimension. That Peter is an animal-rights activist is not asserted in (4). Rather, the speaker expresses this fact as a side comment on the main assertion (that Peter is a vegan).

(4) Peter, a passionate animal-rights activist, is a vegan.

At least three dimensions of meaning have thus been identified in the previous literature: assertion, presupposition, and conventional implicature. All these dimensions host semantic parts, i.e., parts of the meanings of words and constructions. But the dimensions differ with respect to each other in the way that these meanings behave within larger utterances. Thus, the second indispensable task of the semanticist after determining the individual contributions of words and constructions is to establish how these pieces of meaning distribute over the semantic dimensions.

Fulfilling this task for some case studies is essentially the topic of this dissertation. The basic insight from the perspective of formal semantics is that truth-conditional content (assertion) is not all there is to it. Other types of meaning need to be clearly distinguished and determined. Paying attention to the dimensionality of linguistic semantics will lead to better semantic analyses that more accurately capture the complex behavior of linguistic expressions.

In addressing this topic, this work meets the focus of descriptive linguists interested in meaning in the middle: Descriptively, near-synonymous words or constructions often

have notable differences in their usage and in constraints on their behavior within larger utterances or discourses. As one part of formal pragmatics, paying attention to the dimensionality of the meaning parts can lead to formal analyses of these observed facts. Even though the truth-conditional contribution of some items may be the same, differences in the meaning parts contributed in the other dimensions may lead to functional and usage effects. Alternatively, as observed repeatedly in this thesis, two items or constructions may contribute the same semantic parts, but arrange them differently on the semantic dimensions. This "dimension switch" consistently leads to usage differences between the two near-synonymous items that are only detected in rigorous testing.

1.2 Goals and Organization of This Thesis

This thesis aims to address the basic questions identified above: what semantic pieces are associated with certain lexical items or constructions, and how these pieces are distributed over the semantic dimensions. I look at operators which pose problems for the current semantic architecture because they show interesting compositional behavior. In this dissertation, I develop suitable multidimensional meanings for these items that account for their previously unexpected syntactic and semantic properties.

In the first part of this thesis, I study certain adjuncts that do not directly modify the denotation of their semantic argument. I show that these sentence adjuncts (adverbs, certain *because*-, *if*-, and *although*-clauses) can be utterance modifiers if they operate on the conventional implicature dimension. Building on previous work mainly by Potts (2005), I develop parallel analyses for a large range of cases that are intuitively similar.

(5) Frankly, John is the best poker player.

(6) If I may be frank, John is the best poker player.

(7) Since you asked me to be frank, John is the best poker player.

(8) Although this may be too frank, you're not the best poker player.

I argue that the adverbs, the discourse connectives (*because*/*since*, *although*) and the conditionals contribute the same meaning piece as in the regular case, but sometimes contribute this meaning as a conventional implicature instead of on the assertion dimension. This allows these operators to target utterances as their arguments instead of just propositions. Thus, I provide a semantic analysis of relevance conditionals, and utterance modifying readings of adverbs and discourse connectives, which accounts for the differences in their behavior with respect to regular conditionals, adverbs or *because*-clauses. The difference is not in the actual pieces of meaning that are associated with the lexical items, but in the distribution of these parts of meaning over the semantic dimensions.

In the case of complements, I make a similar discovery. I study complements of attitude verbs with verb second word order in German (9), as well as sliftings (10).

(9) Peter glaubt, Hans ist der beste Pokerspieler.
Peter believes, Hans is the best poker player.
'Peter believes that Hans is the best poker player.'

(10) Hans, glaubt Peter, ist der beste Pokerspieler.
Hans, believes Peter, is the best poker player.
'Hans, Peter believes, is the best poker player.'

In the common examples, these two constructions have a similar meaning and are part of a large paradigm of constructions through which an attitude verb can combine with its semantic argument. Again, I show that the semantic similarity of the two constructions follows from the fact that the semantic pieces at play are the same. However, these pieces are distributed differently over the semantic dimensions of assertion and conventional implicature, which leads to intricate differences in the syntactic and semantic behavior.

The results that I obtain in the course of addressing these topics are presented in the following way:

- In chapter 2, I link the semantic and syntactic properties of utterance modifying

adverbials like *frankly*.

- I then propose a semantic analysis of *denn* vs. *weil* ('because'), two causal connectives in German, accounting for their semantic differences and similarities (chapter 3).

- A new analysis of relevance conditionals that correctly captures their meaning, and successfully ties their non-conditional impact to their conditional form is developed in chapter 4.

- I discover a semantic shift paradigm according to which sentence modifiers can contribute their meaning on the conventional implicature instead of the assertion dimension, allowing them to take utterances instead of propositions as arguments. This paradigm that unifies relevance-type readings of *because*- and *although*-clauses with relevance conditionals as well as with utterance modifying adverbials, is presented in chapter 5.

- In the first part of chapter 6, I revise the generalization of attitude verb classes that allow for complements with verb second word order and the slifting construction in German.

- In the second part of chapter 6, this leads to my proposal of a unified analysis of verb-second embedding and slifting in German that accounts for their semantic closeness through common pieces of meaning and their behavioral differences through contrasting multidimensional semantics. Verb-second embedding and slifting are shown to be part of a paradigm of argument-taking for attitude verbs, with small differences between the multidimensional semantics of each of the constructions.

- Chapter 7 concludes.

Chapter 2

Sentence Adverbs

It has been observed repeatedly that some semantic adjuncts do not seem to modify the propositional content of their complements directly, but instead appear to modify a different, usually "larger" object, for example the speech act carried out by the utterance of their complement (Rutherford, 1970; Bach, 1999). These adjuncts are puzzling for compositional semanticists, since computing their semantic contribution must involve more than simple function application of the functor (adjunct) to its direct argument. In this chapter, I discuss a first group of such adjuncts, a subclass of sentence adverbials such as *frankly*, *honestly*. I present their telltale semantic and syntactic properties, which distinguish them from other S-adverbs. I show how they have been analyzed as conventional implicature items (Potts, 2005), using a variant of the performative hypothesis (Ross, 1970). After recapitulating how this analysis accounts for the semantic properties of these adverbs, I link it to their unusual syntactic behavior in German. Finally, I sketch an anaphoric approach as an alternative to the performative hypothesis. This alternative framework allows me to avoid some less elegant consequences of the performative approach.

The chapter is structured as follows: I introduce the topic of sentence adverbials in section 2.1. Section 2.2 demonstrates the semantic unembeddability of evaluative and ut-

terance modifying adverbs. Section 2.3 shows the lack of syntactic integration in German for sentence adverbials modifying the utterance relation. In section 2.4 I present the analysis of utterance modifying adverbs as a particular kind of conventional implicature items, and in section 2.5 I propose an alternative analysis as anaphors.

2.1 Types of Sentence Adverbs

There are many kinds of adverbs that adjoin to the sentence and take propositional complements (see e.g. Lang, 1979; Pittner, 1999). For the purposes of this chapter, at least the following types of adverbs with propositional complements are of interest (see also Potts, 2005, pp. 138–151):

(11) a. Regular propositional adverbs: *probably, necessarily, possibly*
b. Evaluative adverbs: *unfortunately, amazingly*
c. Utterance modifying adverbs: *frankly, man to man*

According to Lang (1979, p. 201), sentence adverbs are distinguished from other kinds of adverbs (such as manner adverbs) by at least the fact that sentence adverbs cannot be asked for using a *how*-question (a typical VP-level adverb question). This is borne out for the types of adverbs in (11).

(12) How did Peter pass the test? — *Probably./*Unfortunately./*Frankly.

The three classes of adverbs of interest here differ in interesting ways. The *probably*-type are regular sentence adverbs which modify the proposition contributed by their complement. Thus, (13) expresses that it is probable that Peter passed the test.

(13) Peter probably passed the test.

Evaluative adverbs of the *unfortunately*-type also modify the proposition contributed by the clause they adjoin to. Potts (2005) calls them “speaker-oriented” adverbs since

they express the attitude of the speaker towards the proposition in the complement. This becomes especially obvious when one compares the use of such adverbs in their evaluative, speaker-oriented meaning (14) to their use as a manner adverb (15):

(14) Luckily, Willie won the pool tournament. (Potts, 2005, ex. (4.121a))

(15) Willie luckily won the pool tournament. (Potts, 2005, ex. (4.122a))

In (14), Willie may have won the tournament entirely by skill. The adverb *luckily* is used merely to express the speaker's positive attitude towards this outcome. In contrast, the fact that Willie won is attributed at least in part to luck by (15).

The third type of adverbs, phrases such as *frankly* or *man to man*, do not modify merely the proposition expressed by their complement. Instead, they are used to make a comment on the speech act carried out by the utterance of this complement. For this reason they have been called utterance modifying. Thus, in (16), what is being described as frank is not the fact that you're not the best poker player itself, but rather my statement of this fact. I am being frank in saying that you are a bad poker player.

(16) Frankly, you're not the best poker player.

This last class of adverbs is the one that this chapter is most interested in. In the following, I point out some distinctive semantic and syntactic properties of utterance modifying adverbs, in particular, that they are semantically unembeddable and that they are not syntactically integrated in German. Further, I show how the analysis of these adverbs as conventional implicature items accounts for these properties in a natural way. This will be the basis for my new analysis of other kinds of adjuncts (certain *because*- and *if*-clauses) in later chapters of this thesis.

2.2 Semantic Unembeddability

The first important property of certain sentence adverbs is semantic unembeddability. It has been shown in the literature that some adverbs, even when they appear syntactically embedded under other operators, still contribute their meaning at the highest level. In particular, this property has been demonstrated for evaluative adverbs by Bonami and Godard (2005), who show that adverbs like *malheureusement* ('unfortunately') cannot be embedded in the antecedent of a conditional, in questions, under negation, and in the consequent of a counterfactual; and that they cannot be openly denied. In this section, I apply their tests to the other two classes of adverbs, and show that utterance modifying adverbs are similarly unembeddable (see also Potts, 2005, p. 145ff). In contrast, regular propositional adverbs such as *probably* are easily embeddable under other functors.

2.2.1 Antecedent of Conditionals

Bonami and Godard (2005) show that evaluative adverbs cannot be embedded in the antecedent of a conditional.

(17) # Si les otages sont, malheureusement, libérés, la France aura
If the hostages are unfortunately freed, the France will have
dû accepter des tractations avec les terroristes.
had to accepted the dealings with the terrorists.
'If the hostages are, unfortunately, freed, France will have had to accept transactions with the terrorists.'

According to Bonami and Godard, (17) (their ex. (16b)) is not natural, because it would imply that liberating hostages is unfortunate. The sentence cannot have a reading that "If it is unfortunate that the hostages are freed, then France will have had to accept transactions with the terrorists", because the adverb doesn't embed under the *if*-clause.

Similarly, utterance modifying adverbs may not be embedded in the antecedent of conditionals. Sentence (18) cannot have the sensible reading "If I'm frankly saying that John

is an idiot, then I'm just being honest", where *frankly* is embedded within the *if*-clause. Propositional adverbs on the other hand can be embedded easily. (19) has the interpretation "If it is possible that Hans will come as well, I'll already book a table (now)." The adverb *vielleicht* ('maybe') is semantically part of the *if*-clause.

(18) # If John is, frankly, an idiot, then I'm just being honest.

(19) Wenn Hans vielleicht auch kommt, reserviere ich schon einen Tisch.
If Hans maybe also comes, reserve I already a table.
'If Hans maybe comes as well, I will already book a table.'

2.2.2 Questions

In a question, evaluative adverbs are interpreted outside of the question operator (Bonami and Godard, 2005, ex. (11a)):

(20) Qui est, bizarrement, arrivé à l'heure?
Who is, strangely, arrived on time?
'Who has, strangely, arrived on time?'

The authors claim that this question can only be interpreted as "Who was on time? And if there was someone who was on time, it's strange that that person was on time." Although it is not quite obvious how to obtain such an interpretation in a compositional way, it is clear that the adverb *bizarrement* ('strangely') is not embedded under the question operator here.

Utterance modifiers have an addressee-oriented meaning in questions, as demonstrated by Potts' example (21). Here, the addressee is asked to answer the question in an honest way.

(21) Honestly, has Ed fled? (Potts, 2005, ex. (4.152b))

Potts (2005) concludes that utterance modifying adverbs are ambiguous between a declarative and a question meaning. Either way, both of these readings are semantically unembeddable. The question version of *honestly* is not embedded under the question operator.

In contrast, propositional adverbs like *likely* can be embedded in a question.

(22) (What do you think:) Who is (most) likely going to win the Eurocup?

(23) Wer gewinnt wahrscheinlich / am wahrscheinlichsten die EM?
Who wins probably / most probably the Eurocup?
'Who will probably / most likely win the Eurocup?'

2.2.3 Negation

If a sentence contains negation as well as an evaluative adverb, only one word order is possible in French, leading to only one scopal reading (the evaluative adverb on top of negation). Trying to force the other scope relation by changing the word order in French leads to ungrammaticality:

(24) * Paul n'est pas malheureusement / bizarrement venu.
Paul cl is not unfortunately / strangely come.
'Paul didn't unfortunately / strangely come.'

Bonami and Godard observe that sentence (24) (their ex. (22a)) is impossible because it would commit the speaker to two contradictory propositions: that Paul didn't come, and that it is unfortunate / strange that Paul came.

For English, only the scope order ADVERB $\gg$ NOT is allowed for evaluative and utterance modifying adverbs.

(25) John unfortunately didn't win the poker game.

(26) John frankly isn't the best poker player.

In contrast to evaluative and utterance modifying adverbs, propositional sentence adverbs are sometimes possible under negation, as shown by the French example given by Bonami and Godard (2005, ex. (22b)), or its English counterpart (28).[1]

[1]The propositional adverb *probably* is also apparently impossible under negation:

(i) Paul probably didn't win.

(27) Paul n'est pas forcément venu.
Paul cl is not necessarily come.
'Paul hasn't necessarily come.'

(28) John didn't necessarily win yet.

When evaluative and utterance modifying adverbs are syntactically embedded under negation, this often leads to a manner reading for the adverb. For example, consider the evaluative adverb *luckily* in (29–30). Normally, *luckily* behaves like *unfortunately* and othe evaluative adverbs, in that it takes scope outside of the sentence negation. Trying to force the higher scope for the negation as in (30) leads to only a manner reading. (30) expresses that Paul didn't win by luck. It does not say anything about the speaker's evaluation of this fact. In the true evaluative reading as in (29), the speaker regards it as their good fortune that Paul didn't win, but it is not stated whether Paul lost by luck or by skill alone.

(29) Paul luckily didn't win. (evaluative, LUCKY $\gg$ NOT)

(30) Paul didn't win luckily. (manner, NOT $\gg$ LUCKY)

2.2.4 Denial

Evaluative adverbs like *unfortunately* or the utterance modifier *man to man* cannot be overtly contradicted in the same way as assertions:

(ii) * Paul didn't probably win.

This is unexpected given the current classification. In fact, this may point to a semantic property of *probably*. *Probably* may already be used in an evidential function, to mark the epistemic evidence that a speaker has available. Evidentials, at least under the analysis proposed in chapter 6, have a multidimensional meaning. Only the assertion-level part of this meaning would embed under operators. Furthermore, chapter 6 discusses that evidentials seem to be incompatible with negation because the presence of negation often leads to clashes between the contributions in the two dimensions. This effect may be at play in the case of negation and *probably* as well.

(31) A: Paul a malheureusement perdu l'élection.
Paul has unfortunately lost the election.
'Paul unfortunately lost the election.'

B: # C'est faux, je trouve que c'est une très bonne nouvelle!
That's false, I find that this is a very good news!
'That's false, I think those are very good news!'

(32) A: Democrat to democrat, I really thought that recent speech wasn't so good.

B: # That's false, I'm an independent!

In contrast, propositional adverbs can be denied:

(33) A: Es wird höchstwahrscheinlich regnen.
It will most likely rain.
'It's most likely going to rain.'

B: Das stimmt nicht, die Regenwahrscheinlichkeit ist nur 20%.
That be right not, the chance of rain is only 20%.
'That's not right, the chance of rain is only 20%.'

2.2.5 Attitude Verbs

Bonami and Godard (2005, section 3.2) also discuss embedding of evaluative adverbs under attitude verbs. According to Potts' 2005 logic, CI items are generally unembeddable, including embedding under attitude verbs. This is what he finds for the CIs he studies, for example for expressive items like *damn* (Potts, 2005, p. 17). Potts notes that expressives that are syntactically embedded under attitude verbs nevertheless are understood as opinions of the matrix speaker. For example, in the following utterance, it is not implied that the clothes dryer company has a negative attitude towards its products:

(34) We bought a new electric clothes dryer. [...] Nowhere did it say that the damn thing didn't come with an electric plug! (Potts, 2005, ex. (2.19))

This expectation of semantic unembeddability is borne out for evaluative adverbs under certain attitude verbs. For example in (35), judging the win as lucky is not part of John's

belief or disbelief. The sentence contrasts with (36), where the manner adverb luckily is semantically embedded under the attitude. (36) means that John didn't believe that we won in a lucky way (although our team may still have won, for example by skill). (35) with an evaluative adverb doesn't have this reading. Instead, *luckily* here can only be a judgment by the speaker on the fact that the speaker's team won.

(35) John didn't believe that our team, luckily, won.

(36) John didn't believe that our team won luckily.

However, Bonami and Godard (2005, ex. (26)) find that the French adverbs are sometimes embeddable under certain attitude verbs, most notably saying verbs like *expliquer* ('explain'):

(37) Marie expliquait que le prêtre, bizarrement, avait perdu la foi.
Marie explained that the priest, strangely, had lost the faith.
'Marie said that, strangely, the priest has lost his faith.'

Bonami and Godard (2005) claim that in (37), the speaker does not have to share the judgment that the priest's losing his faith is strange. It could be entirely Marie's opinion. This data suggests that there are two types of evaluative adverbs, of which one cannot be embedded at all, whereas the other allows limited embedding under saying verbs.

For utterance modifying adverbs, Potts (2005, ex. (4.140)) shows that they are semantically unembeddable under attitude verbs:

(38) # Bill said that, confidentially, Al's wife is having an affair.

Propositional sentence adverbs are of course easily embeddable under all kinds of attitudes:

(39) Bill said that Al's wife is probably having an affair.

(40) Bill denied that Al's wife is probably having an affair.

	probably	*unfortunately*	*frankly*
conditionals	✓	–	–
negation	✓	–	–
questions	✓	–	–
attitude verbs	✓	(–)	–

Table 2.1: Semantic (un)embeddability of sentence adverbs.

2.2.6 Semantic (Un)embeddability of Three Types of Sentence Adverbs

In this section, I have tested the three classes of sentence adverbs for their ability to embed semantically under other semantic operators, such as negation, questions, conditionals, as well as attitude verbs. The data show that evaluative and utterance modifying adverbs differ from regular propositional sentence adverbs in that they are semantically unembeddable. Table 2.1 sums up the findings in this section.

It has been argued for evaluative and utterance modifying adverbs that their unembeddability follows from their semantic status as conventional implicature items (Potts, 2005; Bonami and Godard, 2005). I will pursue this in section 2.4, but not before I consider another striking property of some sentence adverbs, syntactic unintegration.

2.3 Properties of German Sentence Adverbs

Verb-second word order (V2) in German main clauses is characterized by the fact that exactly one sentence-initial adjunct or argument is immediately followed by the finite verb. This phenomenon is shown in sentences (41–43).

(41) Der Junge hat auf dem Weg eine Ente gesehen.
The boy has on the path a duck seen.

(42) Auf dem Weg hat der Junge eine Ente gesehen.
On the path has the boy a duck seen.

(43) Eine Ente hat der Junge auf dem Weg gesehen.
A duck has the boy on the path seen.
'The boy saw a duck on the path.'

The subject is in initial position in (41), before the finite auxiliary *hat* ('has'). If an adjunct (42) or argument (43) is topicalized instead, the subject ('a boy') then appears after the finite auxiliary.

In German, propositional adverbs are usually integrated into the V2 main clause they modify: They can either appear in the initial topic position, in which case they are immediately followed by the finite verb, or the adverbs occupy a position in the *Mittelfeld*, somewhere after the finite verb. In this section, I investigate the properties of the three types of sentence adverbs mentioned above. I show that a class of sentence adverbs does not appear syntactically integrated in German: the utterance modifiers. Instead, these adjuncts stand outside of the main clause, which exhibits V2 word order independently (excluding the adverb). This distinguishes the utterance modifying adverbs from propositional as well as evaluative adverbs. At the same time, German evaluative and utterance modifying adverbs are unembeddable under semantic operators just as was shown before for English and French. The two properties of semantic unembeddability and syntactic unintegration distinguish utterance modifying adverbs from the other two types of sentence adverbs.

2.3.1 The *probably* Type

The first type of adverbs are propositional adverbs like *wahrscheinlich* ('probably'). This class of adverbs is obligatorily integrated in the V2 clause in German:

(44) Wahrscheinlich hat er es nicht ernst gemeint.
Probably has he it not seriously meant.
'He probably didn't mean it seriously.'

(45) * Wahrscheinlich er hat es nicht ernst gemeint.
Probably he has it not seriously meant.
'He probably didn't mean it seriously.'

As shown above for English, these are regular assertion-level adverbs that are semantically embeddable. Example (46) shows the German propositional adverb *wahrscheinlich* ('probably') embedded in the antecedent of a conditional.

(46) Wenn Peter wahrscheinlich morgen kommt, müssen wir heute
If Peter probably tomorrow comes, must we today
einkaufen.
go shopping.
'If it is probable that Peter will come tomorrow, we have to go shopping today.'

2.3.2 The *unfortunately* Type

The second class of adverbs includes speaker-oriented evaluative adverbs like *leider* ('unfortunately'). These adverbs are also obligatorily integrated in German:

(47) Leider hat er es nicht ernst gemeint.
Unfortunately has he it not seriously meant.
'Unfortunately he didn't mean it.'

(48) * Leider er hat es nicht ernst gemeint.
Unfortunately he has it not seriously meant.
'Unfortunately he didn't mean it.'

These adverbs cannot be semantically embedded, as noted for example by Lang (1979), and documented above in section 2.2 for their French counterparts. The same can be demonstrated for German by comparing for example the evaluative (unembeddable) adverb *leider* ('unfortunately') with the semantically related (embeddable) phrase *es ist schade* ('it is unfortunate'). Consider these two mini-dialogues:

(49) A: Schade, dass du schon morgen kommen willst.
Unfortunate, that you already tomorrow come want.
'It's unfortunate that you already want to come tomorrow.'

B: Wenn es schade ist, dass ich morgen kommen will, dann
If it unfortunate is, that I tomorrow come want, then
komme ich eben später.
come I (part.) later.
'If it's unfortunate that I want to come tomorrow, then I'll come later.'

(50) A: Leider willst du schon morgen kommen.
Unfortunately want you already tomorrow come.
'Unfortunately you want to come already tomorrow.'

B: # Wenn ich leider schon morgen kommen will, dann
If I unfortunately already tomorrow come want, then
komme ich eben später.
come I (part.) later.
'If I unfortunately want to come tomorrow, then I will come later.'

While the first interaction is fine and coherent, the second using *leider* ('unfortunately') fails for several reasons. It implies that the speaker considers their own plans unfortunate (since the evaluative adverb 'unfortunately' is attributed back to the speaker), and it states that if the speaker wants to come tomorrow, then the speaker will come later, which is incoherent. Both effects are due to the fact that *leider* ('unfortunately') is semantically unembeddable.

2.3.3 The *frankly* Type

Finally, the third class of sentence adverbs are utterance modifiers like *mal ehrlich* ('frankly, honestly') and *von Frau zu Frau* ('from woman to woman'). These adverbials cannot be syntactically integrated in the V2 clause in German.[2]

(51) * Mal ehrlich / * Von Frau zu Frau ist er wirklich nicht so
Honestly / From woman to woman, is he really not so
schlau.
smart.
'Honestly / From woman to woman, he really isn't that smart.'

[2]It is worth noting that this third class of sentence adverbs is also not prosodically integrated into the sentence, in contrast to other adverbs, including the evaluative adverbs such as *leider* ('unfortunately').

(52) Mal ehrlich / Von Frau zu Frau, er ist wirklich nicht so schlau.
Honestly / From woman to woman, he is really not so smart.
'Honestly / From woman to woman, he really isn't that smart.'

Just like the evaluative adverbs, and as has been documented in detail above, this type of adverbs may not be embedded under semantic operators. Even though these items are utterance modifying, they do not need to appear at the top of the tree. They can be syntactically enclosed in a larger construction. Even in those cases, they contribute semantically at the top level, showing their semantic unembeddability. There are at least two kinds of cases where utterance modifying adverbs appear syntactically embedded.[3]

First, they are possible in nonrestrictive relative clauses and other supplemental phrases (see also Potts, 2005, p. 146):

(53) John, who frankly did not lift a finger to help me, complained about dinner later.

Second, they can show up under other operators if the speaker is the embedded subject:

(54) I have to go now, because I'm frankly tired of this discussion.

(55) Ich gehe jetzt, weil ich hiervon ganz ehrlich die Nase voll habe.
I leave now, because I of this really honestly the nose full have.

[3] The impossibility of examples such as (i) may lead one to believe that utterance modifier cannot even be embedded syntactically (see Potts, 2005, p. 146).

(i) # Bill said to Al that, man to man, his wife was having an affair.

(Potts, 2005, ex. (4.140d))

According to Potts, the only available interpretation for this sentence is that *man to man* is a manner (i.e., propositional) modifier on *Al's wife is having an affair*. The reason for the unavailability of an utterance modifying reading is not a syntactic constraint however, but that the reading would be odd because the speaker is attributing the utterance "His wife was having an affair" to Bill, and the speaker is not actually uttering it himself, so that it cannot be modified by *man to man* (Potts, 2005, p. 149). This is because the utterance modifier *man to man* is not semantically embedded under *say*, and contributes its own side comment. The following examples in the text show that utterance modifiers may well be embedded syntactically, although their meaning is never embedded in those cases.

‘I’m leaving now, because I’m frankly done with this.’

In these examples, *frankly/ganz ehrlich* is syntactically embedded in a *because*-clause. It is not semantically embedded however, since the honesty is not the reason for why the speaker has to leave. Rather, the fact that the speaker is being frank in giving their reason is contributed as a side commment.

In the *frankly*-type of adverbials, the utterance modifiers, we have therefore found a class of adverbials that is not syntactically integrated, and cannot be semantically embedded.

Frankly Speaking

It is necessary to break for a small aside here before I turn to the next section. There is a group of adverbs in German with similar meaning as *frankly* that optionally appears syntactically integrated into the V2 main clause. The adverbials in this group all contain an overt participle of a saying verb, such as *ehrlich gesagt* (‘honestly speaking’) and *offen gestanden* (‘openly admitted’).

(56) Ehrlich gesagt habe ich keine Lust auf Eis.
Honestly said have I no mood for icecream.
‘Honestly, I’m not in the mood for icecream.’

(57) Ehrlich gesagt, ich habe keine Lust auf Eis.
Honestly said, I have no mood for icecream.
‘Honestly, I’m not in the mood for icecream.’

It is not entirely clear why this group of adverbials is an exception with regard to syntactic integration. I think the following may be happening here: The crucial difference between *(mal/ganz) ehrlich* (‘(once/very) honestly’) and *ehrlich gesagt* (‘honestly speaking’) is the presence of ‘speaking’ in the second case. This may lead to the adverbial being not a true utterance modifier, but instead taking a propositional argument just like the evaluative adverbs of the *unfortunately*-type. The “utterance” part after all is expressed overtly

as part of the modifier itself ('speaking'), so its argument can simply be a proposition. An argument for this is the fact that these adverbials can be semantically embedded under *say* even with a third-person subject (58). Recall that true utterance modifying adverbs such as *mal ehrlich* ('frankly') cannot be embedded under attitude verbs like *say* with third-person subjects (59).

(58) Paul meinte zu Peter, dass er ehrlich gesagt keine Lust mehr hat.
Paul said to Peter, that he honestly said no interest anymore has.
'Paul said to Peter that he honestly wasn't interested anymore.'

(59) * Paul meinte zu Peter, dass er mal ehrlich keine Lust mehr hat.
Paul said to Peter, that he honestly no interest anymore has.
'Paul said to Peter that he honestly wasn't interested anymore.'

Other kinds of embedding are impossible for these adverbials, though, showing that they behave like evaluative adverbs (similar to the French adverbs Bonami and Godard (2005) analyzed), and not like simple propositional adverbs such as *probably*. For example, in the following sentence the contribution of honesty is not part of the reason embedded under 'because'.

(60) Ich gehe nach Hause, weil ich ehrlich gesagt keine Lust mehr habe.
I go to home, because I honestly said no interest anymore have.
'I'm going home, because I'm frankly not interested anymore.'

2.3.4 Properties of Three Types of Sentence Adverbs

German sentence adverbs are syntactically and semantically rich and interesting. In this and the previous sections, I have shown that there are (at least) three types of sentence adverbs in German: (i) propositional adverbs of the *probably*-type, which can be semantically embedded and are syntactically integrated; (ii) evaluative adverbs such as *unfortunately*, which

	probably	*unfortunately*	*frankly*
embedding			
conditionals	✓	–	–
negation	✓	–	–
questions	✓	–	–
attitude verbs	✓	(–)	–
integration	✓	✓	–

Table 2.2: Semantic and syntactic properties of three types of sentence adverbs.

cannot be semantically embedded but are still syntactically integrated in German, and (iii) the *frankly*-type of utterance modifiers, which can neither be semantically embedded nor are syntactically integrated. This state of affairs is summarized in table 2.2.

From the standpoint of compositional semantics, adverbs of the first type are not surprising: they are sentence adjuncts that behave exactly like one would expect (embedding under other operators and integrated syntactically in V2 languages). The adverbs of types (ii) and (iii) are puzzling, however, since their semantic behavior within larger sentences begs an explanation. In the remainder of this chapter, I will outline the explanation that has been put forward for the semantic properties of these adverbs: their status as conventional implicatures. Then, I focus on the third type of adverbs, the utterance modifiers. I try to link their status as conventional implicature items with their special syntactic property (not being integrated into the V2 clause).

2.4 Utterance Modifiers and Conventional Implicature

Any analysis of speech act adverbs like *frankly* should pay attention to the three points observed above: First, these adverbs modify not the proposition to which they are adjoined, but the utterance (or speech act) expressed in their host sentence (for German, see e.g., Mittwoch, 1977; Thim-Mabrey, 1988; Pittner, 1999). Second, as discussed in section 2.2,

these adverbs are semantically unembeddable. And third, they are syntactically unintegrated in German. The first two observations are put together by Potts' (2005) analysis of utterance modifying adverbs. He analyzes them as conventional implicature items. Semantic unembeddability is the hallmark property of conventional implicature items.

2.4.1 Conventional Implicature

(Grice, 1975) first introduced the class of meanings called Conventional Implicatures (CIs). He briefly discussed the sentence (61), and noted that it commits the speaker to the claim that being brave follows from being an Englishman.

(61) He is an Englishman: He is, therefore, brave. (Grice, 1975, p. 44)

Grice does not dwell on this class of meanings for very long, but he does note that they are separate from ordinary assertions ("what is said"), and he intends them to be distinct from conversational implicatures in that they are conventionally bound to a word or phrase, and independent of context.

A precise definition of CIs was developed by Potts (2005). According to this formalization, CIs are a third dimension of lexical meanings, parallel to the at-issue content[4] and presuppositions. They can be distinguished from the other two dimensions by a range of tests about their compositional behavior as well as other characteristic properties. Potts identifies the following distinctive properties for CIs: (i) CIs are meanings conventionally associated with words or phrases; (ii) CIs are commitments made by the speaker of the utterance; (iii) they are logically independent of the at issue content, and thus do not influence

[4]Recall from fn. 1, page 3 that this useful term was introduced by (Potts, 2005, p. 23) in order to talk about the main (truth-conditional) content of an utterance. It is meant to cover both the asserted content in an assertion as well as the typical (non-presupposed) semantic content of questions and commands. In the following discussion, I will often use this term instead of plain "assertion" to make clear that my claims are not restricted to simple declarative sentences.

the basic truth-conditions for the utterance.

Potts (2005) then introduces a logic for conventional implicatures, which I am adopting below. It allows an utterance to trigger any number of CIs, which are provided as entailments independent of the main assertion. The type system of the logic does not allow for operators that take CI-type meanings as their argument—thus it follows that CIs cannot be embedded under any other operators in Potts' logic. Conversely, CIs can take assertion-type meanings as their arguments.

Potts for example identifies nominal appositives (62) as conventional implicature items.

(62) Ames, the former spy, is now behind bars. (Potts, 2005, ex. (2.13c))

In (62), the at issue content is just that Ames is now behind bars. That he is a former spy is a side comment contributed by the speaker as a conventional implicature.

Another typical example of this type of meanings are evaluative adverbs like *fortunately* or *obviously*. Their contribution is a comment by the speaker on the main assertion of the utterance (Bonami and Godard, 2005).

(63) John obviously loves Mary.

At Issue Content: p = John loves Mary.

CI: It is obvious that p.

Since a crucial property of CIs is their independence of the at issue (truth-conditonal) content, it follows that they are generally unembeddable under semantic operators. For evaluative adverbs, this has been observed by Bonami and Godard (2005). For example, compare the following utterances:

(64) a. It is obvious that John doesn't love Mary.

b. John obviously doesn't love Mary.

(65) a. Mary is upset because it is obvious that John doesn't love her.

b. Mary is upset because John obviously doesn't love her.

The two versions of (64) convey essentially the same content. However, trying to embed these sentences uncovers a striking difference. (65a) is sensible in a scenario where John and Mary are just pretending to be in love (e.g., to fool their friends). Mary is upset because John is playing his role badly. However, (65b) is completely out in such a situation. The meaning of (65b) is (i) that Mary is upset because John doesn't love her (the at issue content) and (ii) that it is obvious that John doesn't love Mary (the CI). The content contributed in the CI resists embedding under *because*, so it seems to "pop out" at the top level as a speaker's side comment.

Unembeddability has also been shown for other types of CIs. Potts (2005) discusses extensively what he calls the "scopelessness" of CI items. For example, nominal appositives do not embed properly under *believe*, as shown by the following contrast:

(66) a. Sheila believes that the agency interviewed Chuck, a confirmed psychopath, just after his release from prison.

b. $\not\approx$ Sheila believes that Chuck is a confirmed psychopath and that the agency interviewed Chuck just after his release from prison.

(Potts, 2005, ex. (4.52))

For the German discourse particle *ja* (roughly, 'you may already know this'), Kratzer (1999) shows that an operator like *because* must ignore an embedded *ja* in the computation of its meaning, i.e. *ja* is not semantically embedded under *because*. The at issue content of (67a) is given in (67b). The particles *ja* and *doch* are ignored because they contribute their meaning on another dimension. Thus, *ja* is not semantically embedded under *because*. It contributes its meaning independently (roughly 'You may already know that she has to take care of her twins').

(67) a. Sie kann ja nicht kommen, weil sie ja doch ihre Zwillinge versorgen muss.
She can JA not come, because she JA DOCH her twins take care of must.

'She JA cannot come, because she JA DOCH must take care of her twins.'

b. Relevant for the computation of descriptive meaning:

Sie	kann	nicht	kommen,	weil	sie	ihre	Zwillinge	versorgen
She	can	not	come	because	she	her	twins	take care of

muss.
must.
'She cannot come because she must take care of her twins.'

(Kratzer, 1999, ex. (7))

Since CI-type meanings can never be the argument of a function in Potts' logic, this guarantees that CI meanings cannot be embedded under any semantic operators, and thus always associate with the top level (the speaker). This "widest scope"-effect is the most striking property of CIs, and it has become the basis of the range of tests developed by Bonami and Godard (2005), and replicated above in section 2.2. Utterance modifying adverbs exhibit the semantic unembeddability of conventional implicature items. As speaker-related side comments they are a good candidate for a CI analysis.

2.4.2 Potts' Analysis of CI Adverbs

Evaluative Adverbs

Evaluative adverbs like *unfortunately* are conventional implicature items, as shown above. Potts (2005, p. 139ff; "speaker-oriented adverbs") notes that many adverbs are ambiguous between a (assertion-level propositional) manner adverb reading and a (CI-level propositional) evaluative reading. In that case, the manner versions (68) do not show a comma intonation, whereas the evaluative versions (69) do (they are phonologically unintegrated).

(68) Willie luckily won the pool tournament. (Potts, 2005, (4.122a))

(69) Luckily, Willie won the pool tournament. (Potts, 2005, (4.121a))

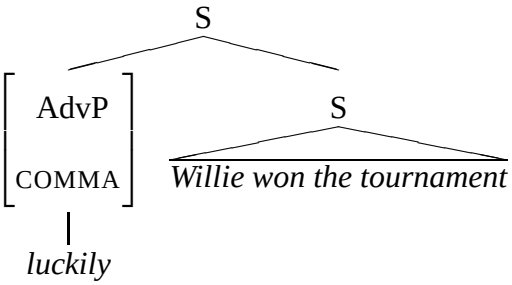
He argues for the existence of a semantic feature called COMMA, which takes assertion-type meanings to CI-type meanings. He postulates the following general translation for

COMMA, where superscript ^{a} means a type belongs to the assertion dimension and superscript ^{c} marks a CI type.

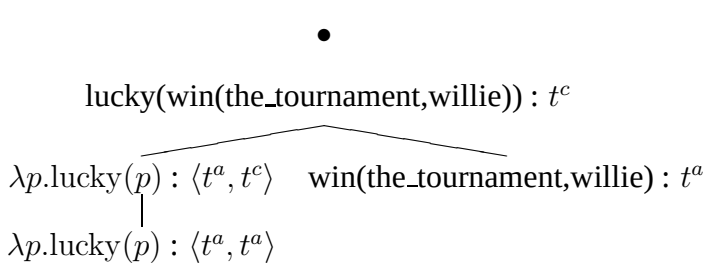
(70) COMMA $\rightsquigarrow \lambda X \lambda x.X(x) : \langle\langle \sigma^a, t^a\rangle, \langle \sigma^a, t^c\rangle\rangle$, where $\sigma \in \{e, s, t\}$ (ibd., (4.114))

The feature applies as a type shifter to phrases such as supplementary (non-restrictive) relative clauses and also to adverbs such as *unfortunately* or *luckily*. Given a sentence adverb such as *luckily*, the syntactic and semantic derivation for a sentence with an evaluative adverb, such as (69), proceeds like this:

(71)



(72)



As can be seen in (72), the meaning of *luckily* is first type-shifted to a CI-type meaning ($\langle t^a, t^c\rangle$). When this function applies to the proposition in its complement, two things happen. First, the assertion of the complement is handed up unchanged (this can be seen on the top of the tree as "win(the_tournament,willie) : t^a"). Second, a conventional implicature (side comment) is contributed as well, "lucky(win(the_tournament,willie)) : t^c". In the semantic tree, the CIs are separated from the assertion by a bullet. This way, the two-part meaning of (69) is captured. It can be read off the tree by determining the assertion from the root of the tree, and collecting any conventional implicatures, which are separated by bullets, from all nodes of the tree. The eventual meaning of (69) thus comes out, as desired,

as:

(73) Assertion: win(the_tournament,willie

CI: lucky(win(the_tournament,willie))

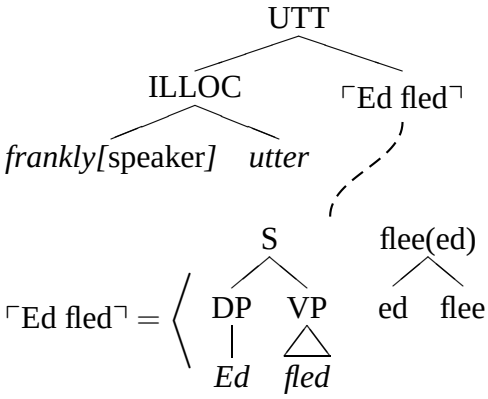
Utterance Modifying Adverbs

Utterance modifying adverbs are CI items as well, but they differ from evaluative adverbs in important ways, as observed above. First, they do not take the proposition associated with their complement as their argument, but an utterance. And second, utterance modifiers are syntactically unintegrated from their complement, which can be observed in German by the lack of integration with these adverbs.

Potts (2005) argues to take the term "utterance modifying" quite literally in that adverbs like *frankly* are understood to modify the relation between a speaker and an utterance. He introduces trees like the following (adapted from (Potts, 2005, ex. (4.148))[5]):

(74) a. Frankly, Ed fled.

b.



c. ⌜Ed fled⌝ = ⟨ DP VP ed flee ⟩

Ed *fled*

In the semantic tree (74b) above, the use of corner quotes ⌜ ⌝ marks that that node represents not a proposition, but rather the utterance of what is between the quotes.

[5]I have stripped off the semantics to make the underlying syntactic structure clearer.

As for the first property of utterance modifying adverbs, this kind of structure takes the intuition that *frankly* is a modifier of an utterance relation seriously. Note that according to Potts, the assertion of the sentence in (74a) is the one that is obtained by interpreting the parse tree (74c) up to the highest S node. The adverb *frankly* modifies the relation between the speaker and the utterance, but this is located in the conventional implicature dimension.

Contributing its meaning in the CI dimension makes the utterance available as an argument for *frankly*. An assertion-level predicate (such as the adverb *probably*) must attach below the highest S node, because this is where the assertion of the sentence is computed. Only a CI predicate can attach higher and thus modify the utterance relation. This explains why there could be a CI adverb which takes a propositional argument (such as *unfortunately*), but not an assertion-level adverb which takes an utterance argument.

In the same way, Potts' analysis of *frankly* explains why it is semantically unembeddable. First, CI items are never semantically embeddable, since there are no operators that can take CI type arguments, i.e., there are no operators that target the type σ^c. But more importantly, Potts (2005, p. 149) argues that utterance modifiers must be CI types and cannot be semantically embeddable, because they modify the relation between the speaker and an utterance. Recall the following example from footnote 3, repeated here.

(75) # Bill said to Al that, man to man, his wife was having an affair.

(Potts, 2005, ex. (4.140d))

In a sentence such as (75), the speaker is not in an utterance relation with the embedded clause "Al's wife is having an affair", so an utterance modifier such as *man to man* cannot modify it. Potts cites possible embedding examples with first-person subjects (76–77) as further evidence.

(76) I feel that, quite frankly (speaking), Ed is not trustworthy.

(Potts, 2005, ex. (4.149b))

(77) I swear that, (speaking) man to man, I did not sell your chihuahua into slavery.

(Potts, 2005, ex. (4.149c))

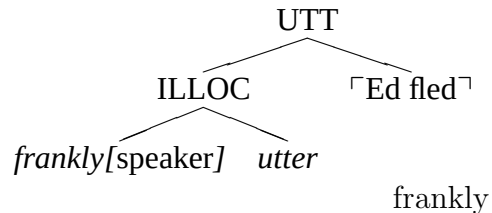
In these cases the utterance relation holds between the speaker and the embedded clause, since there is a first person subject. Therefore, this utterance relation may sometimes be modified by an adverbial.[6]

The cause for the third property of utterance modifying adverbs, unintegrated syntax (the lack of integration in V2 in German), cannot be just the fact that these adverbs contribute their meaning on the conventional implicature dimension, since CI adverbs such as *leider* ('unfortunately') appear integrated in German (see section 2.3). But contributing its meaning on the CI dimension makes the utterance relation available as an argument for adverbs. Assertion-level predicates cannot target the utterance relation because the assertion of a sentence is computed at its highest S-node. The utterance relation comes in higher than that. However, if a predicate is located on the CI dimension, it is outside of the assertion and can thus target the utterance which is located outside of the assertion as well. Targeting the utterance relation as an argument, then, leads to unintegrated syntax. According to Potts' analysis as shown above, an utterance modifier is not part of the sentence it appears in, neither in the syntactic nor semantic sense. *Frankly* modifies the relation between the speaker and the utterance of "Ed fled", but it is not part of this utterance. Thus, it cannot take part in the V2 word order in German, since the verb-second word order constraint works within the sentence (CP) level.

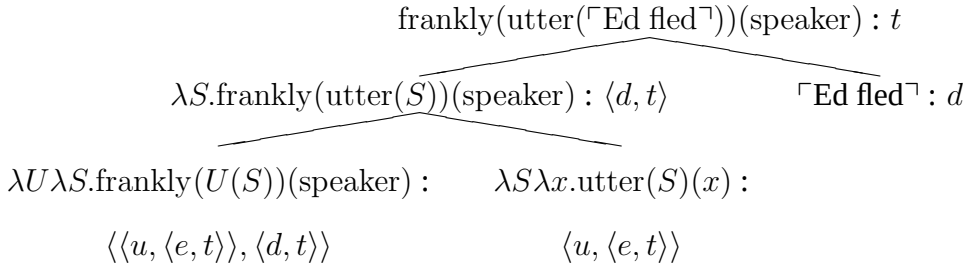
The semantic derivation for (74a) proceeds as in (79), with d the type of utterances. (78) shows the relevant syntactic structure again.

[6]This argument holds for the bare versions *frankly* and *man to man*. But see section 2.3.3 for comments on the versions modified by *speaking*.

(78)



(79)



Frankly modifies the uttering relation between an utterance (⌜Ed fled⌝) and the speaker. In this analysis, *frankly* retrieves this utterance from the tree: it is the sister of the illocutionary complex ILLOC. In the following section, I will point out one disadvantage of this account, and propose a possible alternative based on an anaphoric approach.

2.5 An Alternative to the Performative Hypothesis for Utterance Modifying Adjuncts

In the analysis of utterance modifiers described above, Potts uses the assumption of the performative hypothesis (Ross, 1970): the idea that speech verbs and the speaker are covertly present in the syntactic representation of each utterance. This speech verb is what is modified by the utterance modifying adverb according to (Potts, 2005). But Potts' syntactic approach is not crucial to the analysis described here. In this section I consider an alternative, anaphoric approach.

As an alternative to "utterance" nodes in the syntactic representation, one could argue that the semantic argument of the utterance modifying adverb is retrieved anaphorically. Such anaphoric references to implicit utterances are possible at least for overt anaphors: In (80), the anaphor *that* in B's exclamation arguably refers back to A's utterance.

(80) A: This guy is a lazy bum!

B: That's not fair! He couldn't help us because he was sick.

So far, this anaphoric approach seems just like an equivalent variant of the performative hypothesis. But there is one case where it may be more elegant. The relevant examples are those where the utterance modifying adverb modifies not the whole clause it appears in, but just a smaller chunk. For example, consider the syntactically embedded use of *frankly* in (81).

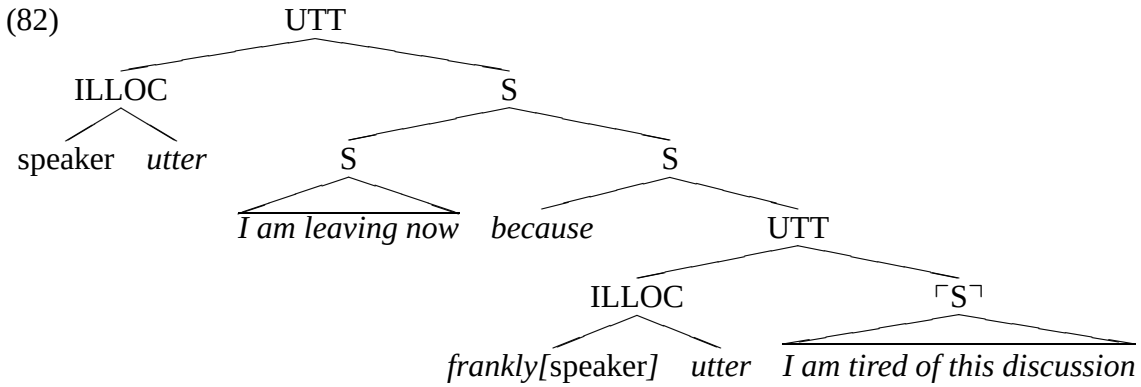
(81) I'm leaving now because I'm frankly tired of this discussion.

In this sentence, *frankly* applies not to the entire utterance, in particular not to the part "I'm leaving now". The speaker is merely expressing that their admission that they are tired of the discussion is frank.

Assuming the syntactic approach from (Potts, 2005), one would have to assume that there is an utterance node that encompasses just the complement clause "I'm tired of this discussion", since this is what is being modified by *frankly*. Since Potts does not discuss this case in detail, there is some guesswork involved here. I can envision two ways of extending his analysis to syntactically embedded utterance modifiers, which I will call version A and version B. Both solutions are not very elegant, since one would have to allow for the introduction of extra utterance nodes in many places in the grammar.

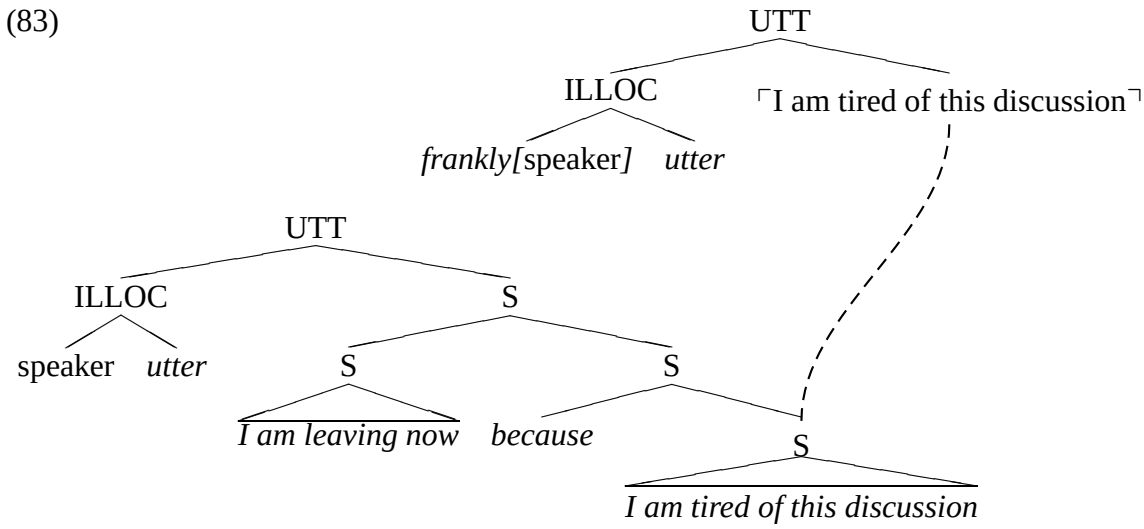
Version A is shown in (82). According to this option, the utterance node that is the argument to *frankly* is introduced in situ. This analysis cannot be correct because it suggests that *because* takes an utterance as its argument, not a simple proposition, as seen by the quotation marks ⌜ ⌝. But the sentence (81) simply does not mean that: it is not my (frank) utterance of the fact that I'm tired of the discussion that is causing me to leave.

(82)



Version B of extending Potts' analysis is maybe more true to his intentions, in that the utterance modifier is taken to be entirely outside the syntactic representation of the host sentence (83).

(83)



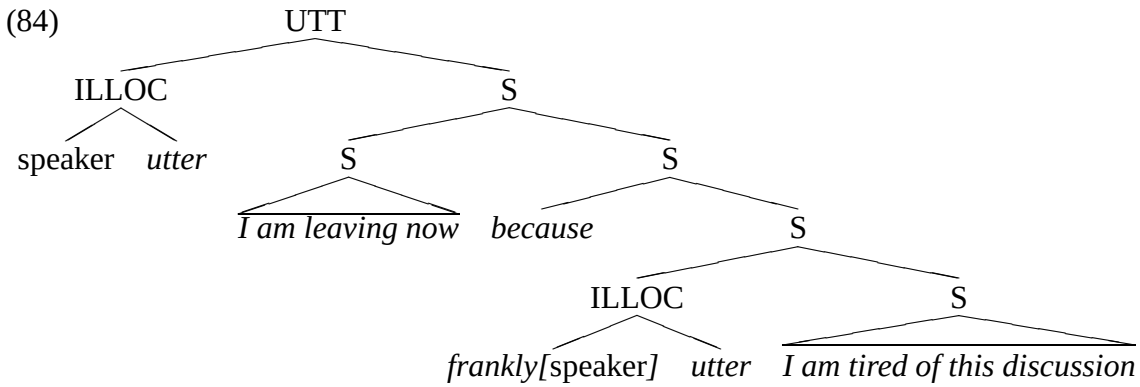
In this approach, the structure of (81) is a non-tree graph, where the clause "I am tired of this discussion" is multiply dominated. The syntactic unintegration of utterance modifiers falls out easily from this analysis, since they are outside of the syntactic tree of the host sentence. But the meaning of the dashed line is not entirely clear, and such graphs are at the least unusual syntactic representations.[7]

A third line for a purely syntactic account would be to appeal to a syncategorematic rule

[7]However, such non-tree representations have been proposed for example by van Riemsdijk (2006, and older work), who uses his notion of "grafts" for potentially related phenomena.

which converts a node in the tree into its utterance value. Under this variant, a tree such as (82) would be used but without the quotation marks. Instead, the function of the quotation marks (the fact that *frankly* applies to an utterance) would be built into the ILLOC complex by a syncategorematic rule. The tree is shown below.

(84)



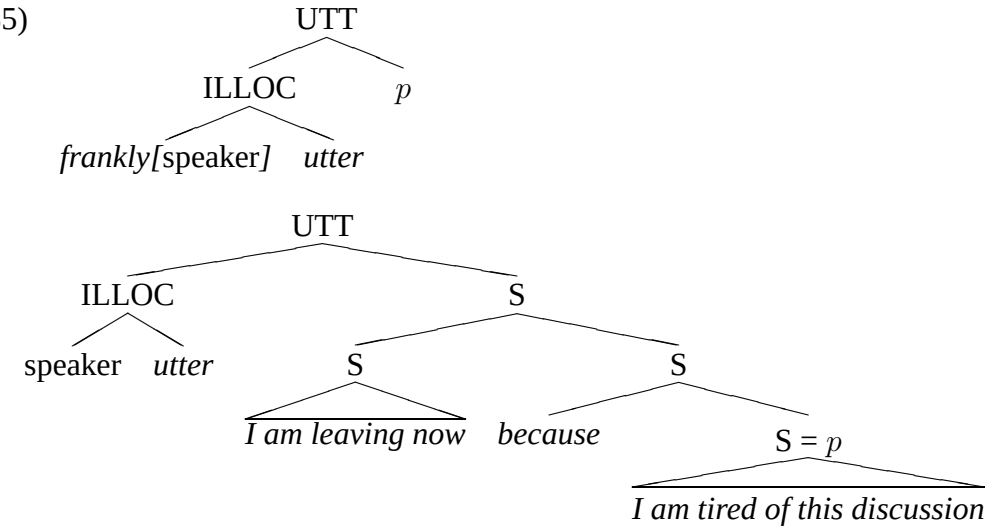
In this version *frankly utter* takes a regular S as its sister, but the ILLOC complex contributes not only the predication of *frankly*, but also the conversion of that sister into an utterance (previously done by the quotation marks). However, the syntactic facts from German show that this cannot work. As noted above in section 2.3.3, it is adverbials such as *ehrlich gesagt* ('frankly speaking') in German which have the double function of predication and type-shifting: *ehrlich gesagt* takes a proposition as its argument and with the 'speaking'-part of its meaning converts this into the utterance of that proposition, which is then modified by 'frankly'. We know that the argument of *ehrlich gesagt* is a proposition from the fact that *ehrlich gesagt* is syntactically integrated in V2 in German. But for the true utterance modifiers such as *frankly* (or *mal ehrlich* in German), its argument is already an utterance. This is the reason why syntactic integration is impossible – the utterance modifier is not part of the utterance it modifies. Therefore, while a syncategorematic rule within the ILLOC complex may well be at play for modifiers such as *ehrlich gesagt* ('frankly speaking'), this cannot be the right solution for true utterance modifiers.

The anaphoric approach is potentially more elegant in this instance. If one can assume that an utterance meaning can be derived from a whole or parts of a clause, this meaning

can serve as the antecedent of the argument of utterance modifying adverbs such as *frankly*. No extra utterance nodes are required. Again, there are two potential ways of implementing this. Version A of my alternative proposal is a variant of (82), without the need for the additional utterance node. *Frankly* can then be said to take the utterance value of its sister as its argument, wherever it is syntactically located. The semantic unembeddability is easily covered here, and this also nicely accounts for the possibility of utterance modifiers to appear syntactically embedded. But the syntactic unintegration of these adverbs in languages like German cannot be accounted for without additional stipulations: If *frankly* is just a sentence modifier in the same structural (syntactic) relationship with its sister as *unfortunately*, why doesn't it appear integrated into the V2 clause just like these other modifiers do?

Version B of the alternative anaphoric approach is syntactically more radical, a variation on (83). We could accept the fact that utterance modifiers are not part of the syntactic representation of their host sentence, as evidenced for example in German by the lack of integration.

(85)



Thus, as shown in (85), a sentence like (81) contributes essentially two syntactic trees, one for the host sentence and one for the utterance modifier contribution. The utterance

modifier *frankly* retrieves (the utterance value of) its argument anaphorically from the host sentence. The anaphor p will be resolved to the utterance "I am tired of this discussion".

In effect, this proposal spells out the meaning of the dashed line in the previous variant, without resorting to non-tree graphs as syntactic representations. The rest of the Potts' original analysis would carry over unchanged to this alternative approach. The utterance modifier stands outside the syntactic and semantic representation of the clause. In German, this is clear from the unintegrated word order. The utterance modifying adverb must be outside of the CP (sentence), since it would take part in the V2 word order otherwise. Since the adverb takes a CI meaning, its argument anaphor can be resolved to the utterance of the (semantic complement) clause. An anaphor that is in the assertion dimension would not have this option, since it would ultimately contain itself in its denotation, in a violation of referential principles. The clear advantage of this approach is that it accounts for both crucial properties of utterance modifiers (semantic unembeddability and syntactic unintegration) while at the same time allowing easily for the syntactically embedded appearances of these items. Further, it does not require any additional assumptions other than that utterance modifiers are not part of the syntactic structure of the host sentence, which Potts already argues. This is however also the disadvantage of this version with regard to version A of the anaphoric approach, since the syntactic structure here (two trees for (81)) is also non-standard.

Still, it is clear that the anaphoric alternatives sketched here differ only minimally from the approach in (Potts, 2005), especially for the standard (syntactically unembedded) cases. All crucial points carry over from Potts' analysis of utterance modifiers to the anaphoric versions. In the remainder of this thesis, I will therefore continue to use the utterance nodes in the syntactic representations, as done by Potts, for expository clarity. However, these utterance nodes do not have to be taken literally, since an alternative that avoids them is possible. In some sections, I will show what this anaphoric alternative approach would

look like.

2.6 Summary

In this chapter, I have discussed three types of sentence adverbs: propositional adverbs like *probably*, evaluative adverbs like *unfortunately*, and utterance modifying adverbs like *frankly*. I have shown that the three classes differ in their syntactic and semantic behavior. Propositional adverbs behave in an uninteresting way as expected of sentential modifiers: they are semantically embeddable and are syntactically integrated in the V2 main clause in German. Evaluative adverbs are integrated as well, but they cannot be semantically embedded. It has been shown that this is the case because they are conventional implicature items and contribute side comments on the main assertion. Utterance modifying adverbs are different still. They are semantically unembeddable just like the evaluative adverbs, pointing to their status as conventional implicature items. Contributing their meaning on the conventional implicature dimension allows these adverbs, as I have shown here, to target higher constituents, such as the utterance, as their arguments. This higher attachment is reflected in the syntax by unintegration in the V2 language German. Finally, I have pointed out a potential problem with the concept of the utterance level as a constituent in the syntactic tree (as proposed by Potts (2005) following Ross (1970)). Utterance modifiers can apply to syntactically embedded chunks as well as top-level clauses. I have argued that there is an alternative approach: the utterance modifying adverb has an anaphor as its argument, which can refer back to the utterance value of the entire matrix clause or the phrase which the adverb attaches to. This alternative can account for the syntactically embedded cases of utterance modifiers easily, but has more trouble explaining their obligatory syntactic unintegration.

Chapter 3

Because: *Weil* vs. *Denn*

As described in the introduction, this thesis aims to identify the lexical semantics of certain operators and constructions, paying special attention to non-truth-conditional meaning. The way that the lexical meaning is distributed over the semantic dimensions is hereby critical in explaining the items' syntactic and semantic behavior. In the previous chapter, I have reviewed sentence adverbials as one paradigm where semantic and syntactic differences are seen. I have shown which semantic properties cause these effects: adverbials that contribute conventional implicatures cannot be semantically embedded, and a subset of these adverbials modify the utterance of their complement, not the proposition. This causes the lack of syntactic inversion.

As a second case study, I analyze causal adjuncts with *denn* ('because') in this chapter. In German, *denn* and regular (verb-final) *weil* (both 'because') are two causal discourse connectives. However, they are by no means interchangeable. It has been observed in the previous literature (Sohmiya, 1975; Rudolph, 1980; Thim-Mabrey, 1982; Pasch, 1983a,b; Küper, 1984) that German *denn* can be used in a different set of sentences from *weil* (see (Pasch et al., 2003) for a thorough description of the syntax and usage of *denn* and *weil*). In particular, *denn* is used to mark epistemic inferences as in (86), or justifications of speech

acts as in (87).

(86) a. * Peter ist zuhause, weil sein Licht an ist.
Peter is at home, because his light on is.

b. Peter ist zuhause, denn sein Licht ist an.
Peter is at home, because his light is on.
'Peter is home, because his light is on.'

(87) a. * Willst du ein Bier? Weil ich noch eins übrig habe.
Want you a beer? Because I still one left have.

b. Willst du ein Bier? Denn ich habe noch eins übrig.
Want you a beer? Because I have still one left.
'Do you want a beer? Because I still have one left.'

In this chapter, I propose a new analysis of *denn* ('because') in German. My analysis sets out to explain the epistemic and speech act uses of *denn* as in (86–87). In a nutshell, I argue that *denn* is a coordinating conjunction that contributes its causal semantics on the conventional implicature dimension. In contrast, regular *weil* contributes the same causal meaning in the at issue dimension. I show that the switch to the conventional implicature tier allows *denn* to take utterances and epistemic inferences as its argument.

Adding some new observations to data from several decades of literature, I show that *denn* is felicitous in a superset of the contexts where regular *weil* can be used, except for three exceptions that make *denn* impossible. My proposal not only accounts for the superset relation in the general case. I also show that it predicts the three idiosyncratic restrictions on *denn*.

3.1 Data

Denn and *weil* are two connectives in German with a large overlap in meaning. Both ex-

press a causal relation[1], and they can be used interchangeably in a large range of sentences.[2] Example (88) shows one such case.

(88) a. Die Straße ist naß, weil es geregnet hat.
The street is wet, because it rained has.

b. Die Straße ist naß, denn es hat geregnet.
The street is wet, because it has rained.
'The street is wet because it rained.'

3.1.1 Epistemic and Speech Act Uses

Despite their interchangeability in many contexts such as (88), *weil* and *denn* are not completely synonymous. It has been observed in the previous literature (Pasch, 1983b; Pasch et al., 2003) that *denn* can be used in certain sentences where regular subordinating *weil* is impossible, and conversely, that *denn* cannot appear everywhere that *weil* can (Pasch, 1997). This section presents the abundant available data in a new way. In contrast to previous authors (e.g. Pasch, 1997, p. 257), I claim that *denn*'s possible uses subsume the possibilities for *weil*[3], with three exceptions to be discussed.

If the causal relation is expressed by *denn*, in contrast to *weil*, it can apply to the speech act of the main clause (Küper, 1984). The speech act use of *denn* is most obvious with

[1]In this chapter, I do not analyze the causal relation further, nor do I distinguish different kinds of causes. For an analysis of causation, see Lewis (1973). In addition, Ballweg (2004) discusses some causal and non-causal uses of German *weil*. I only consider causal uses of both *weil* and *denn* here.

[2]There is a third causal connective in German: *da*. It is an interesting topic because it shares many of the properties of *weil* and/or *denn*. See (Thim-Mabrey, 1982; Pasch, 1983a,b) for more details. However, *da* is almost exclusively restricted to the written register in contemporary German (Wegener, 1999, Table 1). In this chapter, *da* will not be considered further.

[3]The data in the previous section and below leads Pasch (1997) to the conclusion that *weil* can be used in all cases where causal relations are concerned. However, she includes both regular verb-final *weil* and verb-second *weil*. As I discuss in section 3.6.2, the two cases are different semantically, and are therefore not conflated here.

speech acts such as orders and questions, such as in this first example:

(89) a. ?? Ist vom Mittag noch etwas übrig? Weil ich schon
Is of lunch still something left? Because I already
wieder Hunger habe.
again hunger have.

b. Ist vom Mittag noch etwas übrig? Denn ich habe schon
Is of lunch still something left? Because I have already
wieder Hunger.
again hunger.
'Is there anything left over from lunch? – Because I'm already hungry again.'

Example (89b) can be paraphrased as 'I'm asking you whether anything is left over from lunch, because I'm already hungry again.'

Similarly, *denn* (but not *weil*) also has a usage that has been called 'epistemic' (Keller, 1995). For example in (90b), the abstract entity named by the *denn*-clause does not provide a reason or cause for the abstract entity in the main clause directly. Rather, it gives the reason or cause for the conclusion of the speaker that the main clause must be true:

(90) a. * Es hat geregnet, weil die Straße ganz naß ist.
It has rained, because the street completely wet is.

b. Es hat geregnet, denn die Straße ist ganz naß.
It has rained, because the street is completely wet.
'It was raining, because the street is wet.'

Thus, (90b) means 'It must have rained, because the street is wet.' This cannot be expressed using *weil*, as shown in (90a).

(Keller, 1995, p. 24) has claimed that epistemic and speech act readings are the same, with the epistemic readings arising from a speech act use of the causal conjunction when that speech act is an assertion. This would in principle be desirable, allowing us to concentrate on the regular propositional and the speech act (utterance modifying) use. However, Sweetser (1982, ex. (46)) cites declarative examples of speech act-modifying *because* like (91).

(91) a. * Die Antwort ist auf Seite 242, weil du sie von alleine wohl
The answer is on page 242, because you it by alone part.
nie findest.
never find.

b. Die Antwort ist auf Seite 242, denn von alleine findest du
The answer is on page 242, because by alone find you
sie wohl nie.
it part. never.
'The answer is on page 242, since you will never find it by yourself.'

Sentence (91b) is interpreted as 'I'm telling you that the answer is on page 242, because you'll never find it by yourself.'

Comparing the speech act use of *denn* with a declarative main clause (91b) and the epistemic use of *denn* (90b), an intuitive difference arises between the two cases that would make a unification difficult. It seems not enough to say that the epistemic (90b) really expresses a speech act reading 'I'm telling you that it was raining, because the street is wet.' The street's wetness is not a good enough cause or reason for my utterance that it was raining. This is especially obvious when compared to (91b), where your problems of finding the answer may well be the (only) reason I'm telling you where to find it. I therefore keep the epistemic and speech act readings of *denn* separate in this chapter.

Still, nothing in this dissertation hinges on this separation. I would like to stay open to the possibility that the two cases may be unified, since epistemic uses seem not to be attested for adverbs. Recall from chapter 2 that there are at least three types of sentence adverbs that need to be distinguished: propositional adverbs (92), evaluative adverbs (93), and utterance modifying adverbs (94).

(92) The answer is probably on page 42.

(93) John unfortunately didn't find the answer.

(94) Frankly, I don't know the answer.

We can observe that a type of these adverbs takes an utterance argument (while the

other two take propositional arguments). But there seems to be no adverb which takes an epistemic argument. In order to have a true epistemic argument in the domain of adverbs, one would need a word like *smartly* to mean 'I'm being smart to know p' in sentences such as the following:

(95) Smartly, the answer is on page 42.

But (95) does not have this meaning. The only way to make sense of (95) is by taking *smartly* as a manner adverb, which modifies the proposition. It cannot be taken to modify the epistemic judgment I'm expressing by uttering (95).

The lack of such "epistemic" adverbs is striking when compared to the reasonably clear epistemic uses of *denn* ('because') demonstrated above. In the following, I discuss epistemic and speech act uses of *denn* separately. The possible unification of these uses I leave for future work.

3.1.2 *Weil* with Verb-Second Word Order

It is important to note that in the examples so far, *weil* introduces a verb-final (VF) subordinated clause, whereas *denn* introduces a verb-second (V2) clause. More discussion on the syntactic differences follows in section 3.4. In spoken German, *weil* can also be used with V2-clauses (96).

(96) Die Straße ist naß, weil es hat geregnet.
The street is wet, because it has rained.
'The street is wet because it rained.'

In this syntactic configuration, *weil*-V2 can be used in epistemic and speech act readings. I conclude that *weil*-V2 is syntactically and semantically equivalent to *denn*.[4] In the

[4]There are certain dialect differences relevant to the causal connectives discussed here (see, e.g., (Mayer, 1993, p. 7), (Günthner, 1993, p. 54), (Wegener, 1999, p. 8)): *denn* is relatively uncommon in Southern dialects of spoken German. In those dialects, *weil*-V2 would be used instead. In the Northern dialects, *denn*

following, I use "*weil*" to refer to the regular, integrated, verb-final use of *weil* only (*weil*-VF). Throughout the main part of this chapter, when I discuss "*denn*", I am looking at the particular causal relation which can be expressed in three ways: lexically (*denn*), syntactically (*weil*-V2), or even phonologically (as non-integrated *weil*-VF with falling pitch on the main clause). I discuss *weil*-V2 and non-integrated *weil*-VF in some more detail in section 3.6.2.

3.1.3 Three Exceptions to the Use of *Denn*

From what we have seen so far, I generalize that the possible uses of *denn* and regular *weil* are in a superset relation:

(97) **Superset Relation:** "p weil / denn q" expresses

weil { q CAUSE p
q CAUSE MUST p
q CAUSE UTTERANCE OF p } *denn*

This simple relationship between the two sets of meaning is complicated by three exceptions (Pasch, 1983b): First, *denn* cannot be used if the CAUSE-clause (the q-argument) precedes the main clause (98):

(98) a. Weil es geregnet hat, ist die Straße naß.
Because it rained has, is the street wet.

b. * Denn es hat geregnet, ist die Straße naß.
Because it has rained, is the street wet.
'Because it rained, the street is wet.'

Second, *denn*-clauses cannot be used as answers to a why-question (Thim-Mabrey, 1982, p. 208):

---

is perfectly acceptable in all the examples given in this chapter.

(99) Warum ist die Katze gesprungen?

'Why did the cat jump?'

a.	(Sie	ist	gesprungen,)	Weil	sie	eine	Maus	sah.
	(It	has	jumped,)	Because	it	a	mouse	saw.
b.	* (Sie	ist	gesprungen,)	Denn	sie	sah	eine	Maus.
	(It	has	jumped,)	Because	it	saw	a	mouse.

'(It jumped) Because it saw a mouse.'

Third, *denn* is impossible if the q-argument (the content of the *denn*-clause) has been previously mentioned (100).

(100) Es hat heute sehr geregnet.

'It rained a lot today.'

a.	Ja,	die	ganze	Straße	steht	unter	Wasser,	weil	es	geregnet
	Yes,	the	whole	street	stands	under	water,	because	it	rained
	hat.									
	has.									
b.	* Ja,	die	ganze	Straße	steht	unter	Wasser,	denn	es	hat
	Yes,	the	whole	street	stands	under	water,	because	it	has
	geregnet.									
	rained.									

'Yes, the whole street is submerged under water because of the rain.'

Below, I develop an analysis of the additional epistemic and speech act meanings of *denn*. As a consequence of the proposed semantic and syntactic analysis, the account also provides straightforward explanations for the three exceptions to *denn*'s usage.

3.2 Previous Work

Several existing studies point to differences in the usage of the German conjunctions *denn* and *weil*. Some previous work has compared *denn* and *weil* not only syntactically, but also semantically (Sohmiya, 1975; Lang, 1976; Rudolph, 1980; Pasch, 1983a,b; Küper,

1984, among others). Furthermore, there is a sizable literature on *weil*-V2, which, as stated above, is equivalent to *denn*. Although not necessarily intended by the authors, the claims about the semantics of *weil*-V2 thus carry over to *denn* as well (Gaumann, 1983; Günthner, 1993; Keller, 1995; Pasch, 1997; Wegener, 1999). *Weil*-V2 has been of interest to linguists because this usage of *weil* is restricted to spoken German, and subject to large dialectal differences (Wegener, 1999).

3.2.1 The Performative Analysis

In an early approach to the semantic differences between *denn* and regular *weil*, Sohmiya (1975) employs the performative hypothesis (Ross, 1970). He states that *denn* is interpreted as semantically embedding covert illocutionary and epistemic functors, whereas *weil* is in the scope of these functors. This analysis in effect reduces the difference in meaning and use to a difference in scope. Schematically, the semantics of *denn* and *weil* can be depicted as in the two trees in Figure 3.1.

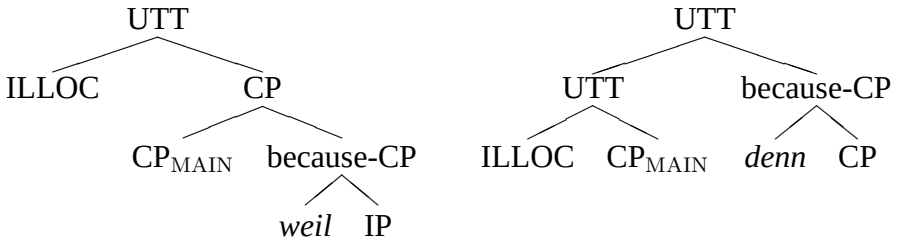


Figure 3.1: Syntax/semantics of *weil* vs. *denn* according to the performative analysis

Although this kind of analysis has been criticized (Mittwoch, 1977), it is still the basis of most of the previous accounts. Rudolph (1980) for example claims that *denn* gives a reason on the utterance level, whereas *weil* provides a content level reason. Similarly, Gaumann (1983) has argued that *weil*-V2 has a metacommunicative function, stating the reason for a certain illocutionary force. Küper (1984) identifies four separate uses for *denn*:

in addition to the regular propositional use, he names a parenthetical[5], symptomatic (our epistemic), and speech-act related use. Finally, Keller (1995) calls *weil*-V2 the "epistemic" *weil*, claiming that it answers the question "How come you know?" instead of "Why is that the case?". The epistemic and speech-act uses have also been noted for English *because* by Sweetser (1982). See section 3.6.1 for further discussion.

Another related view is based on Lang's (1976) analysis of argumentative texts. He argues that while *weil* is used to express deductive reasoning, *denn* expresses reductive reasoning. This view is related to the performative hypothesis in that Lang also claims that *denn* marks the epistemic reason (which may also be the "actual" reason at the same time) of the situation in the matrix clause, whereas *weil* only marks the "actual" (i.e., propositional) reason. The deductive/reductive distinction between *weil* and *denn* has later been used by Pasch (1983a,b) to show that while *weil* connects propositions causally, *denn* connects larger units, which in particular contain an epistemic operator.

3.2.2 Contra the Pure Performative Analysis

Attempts to explain the differences between *denn* and *weil* using the performative hypothesis in effect argue that it is an inherent property of *denn* that it attaches high (above the performative or epistemic operator), whereas *weil* inherently attaches low. There are two main problems with this proposal.

Most importantly, the performative analysis is unable to explain the very common uses

[5]This use of *denn* doesn't link two clauses, but instead interleaves a *denn*-clause in a main clause. The causee-argument of *denn* in this case is often a certain expression, rather than a whole clause:

(i) Dieser Betrüger, denn das ist er wirklich, hat schon wieder geschummelt.
This crook, because that is he really, has already again cheated.
'This crook, because that's what he is, just cheated again.'

The *denn*-clause here is used parenthetically, and it gives a reason for the use of the expression "crook".

of *denn* where it is virtually synonymous with *weil*. Most work on *denn* concentrates on its speech act and epistemic uses. However, three uses must be distinguished, as shown in section 3.1. That is, *denn* can be used to express ordinary propositional causal links as well. Another example is given in sentence (101). For sentences like this one, the illocutionary analysis does not apply. Other than the distribution across dimensions, this sentence seems completely synonymous with the parallel *weil*-sentence (102).

(101) Peter geht nach Hause, denn er hat Kopfschmerzen.
Peter goes to home, because he has headache.
'Peter is going home because he has a headache.'

(102) Peter geht nach Hause, weil er Kopfschmerzen hat.
Peter goes to home, because he headache has.
'Peter is going home because he has a headache.'

Furthermore, it has been observed in the literature that *denn* cannot be embedded under certain operators. For example, Pasch (1983a, p. 334) that *denn* (and also *da*, another causal connective) cannot be embedded under a "judgment" (assertion) operator or question operator. Similarly, Pasch et al. (2003, p. 176) note that *denn* is unable to appear in the scope of other functors. They claim that this is the case because *denn* takes an illocutionary act as its causee argument, not a proposition. One could be lead to think that the reason for this is that *denn* attaches high up in the tree, as argued by the performative analysis. However, this explanation is not enough. As shown in (Scheffler, 2005), even propositional *denn*-sentences turn out to be unembeddable.

For example, sentences (101–102) behave very differently when it comes to embeddability: (101) cannot be embedded, whereas (102) does not have such a constraint, as shown in (103) vs. (104). *Weil* is most naturally interpreted in the scope of NOT in (104).

(103) # Ich glaube nicht, daß Peter nach Hause geht, denn er hat
I believe not that Peter to home goes, because he has
Kopfschmerzen.
headache.

Intended: ‘I don’t believe the following: Peter is going home because he has a headache.’

(104) Ich glaube nicht, daß Peter nach Hause geht, weil er
I believe not that Peter to home goes, because he
Kopfschmerzen hat.
headache has.
‘I don’t believe the following: Peter is going home because he has a headache.’

In (103), *denn* cannot be understood in the scope of NOT. Here and in the rest of the chapter, I use the #-mark to indicate that a sentence does not have the intended reading as expressed by the translation or corresponding *weil*-sentences, although it may be grammatical under other, irrelevant interpretations.

The contrast between (103) and (104) shows that *denn* is semantically unembeddable under NOT even in its propositional reading. Under the performative analysis, *denn* would attach low (in the same position as *weil* usually does) in these propositional sentences. Thus, the semantic unembeddability of *denn* is a fundamental difference from *weil* that cuts across the level of attachment. This remains unexplained by the performative hypothesis employed by previous analyses. In my proposal, the unembeddability of *denn*-clauses is explained by the different compositional behavior of different semantic dimensions. It follows directly from *denn*’s status as a conventional implicature item. In the next section, it will become clear that this unembeddability of *denn* is much more far-reaching than has been observed before.

3.2.3 *Denn* and Antibackgrounding

Other works have concentrated on the different usage properties of *denn* and *weil*. A common claim has been that while the cause-argument for *weil* is presupposed (thematic, old), it is rhematic (new) for *denn* (Keller, 1995; Pasch, 1997; Wegener, 1999).

(105) A: Der Wetterbericht hat Regen angesagt.
The weather forecast has rain announced.

‘The weather forecast predicts rain.’

B: Die sind schon alle ganz traurig, weil es regnen soll
They are already all completely sad, because it rain should
/ * denn es soll regnen.
/ * because it should rain.
‘They’re already all sad because it is supposed to rain.’

In (105) (Wegener, 1999, (19)), the q-argument of *weil* or *denn* is mentioned in the previous discourse. This is possible with regular *weil*, but makes *denn* impossible, since *denn* does not tolerate a rhematic q-argument (cause). The new-ness of the q-argument of *denn* is one of the three exceptions to *denn*’s use already noted in the data section 3.1. It will be addressed by my analysis below.

3.3 Semantics of *denn*

Semantically, *denn* connects two events or propositions causally. Thus, “p, denn q” means “q CAUSE p”. Furthermore, I have shown above that a sentence of the schema “p, denn q” can also mean either “q CAUSE (MUST p)” (the *epistemic* reading), or “q CAUSE (UTTERANCE OF p)” (the *speech act* reading). This has often been explained by assuming two or three different kinds of *denn*.[6] In contrast, I will argue in this section that *denn* contributes the same (causal) meaning, which it shares with *weil*, in all three cases. The main difference, as I will show, is that *denn*, but not *weil*, contributes its meaning as a conventional implicature. It is this last fact that makes the additional readings available for *denn*.

[6]For example, claiming that *denn* expresses reductive reasoning, while *weil* expresses deductive reasoning, would lead to at least two kinds of *denn*, since *denn* can also be used in regular propositional uses of ‘because’. For *weil*-V2, Keller (1993) postulates a milder form of this ambiguity: He claims that the epistemic use is metaphorically derived from the propositional one. By this, he essentially establishes still two meanings for *denn* (or *weil*-V2), which are however related to each other.

3.3.1 Proposal: *Denn* as a Conventional Implicature Item

I argue that the causal meaning of *denn* is located in the conventional implicature dimension (Grice, 1975; Potts, 2005):

(106) In a sentence "p, *denn* q", *denn* has the following compositional semantics:

At Issue: p

Conventional Implicature: CAUSE(q, p)

In other words, *denn* conventionally implicates that the abstract entity p conveyed by the main clause is caused by the proposition q conveyed by *denn*'s complement clause. For *weil*, on the other hand, the causal relation is part of the at issue content.[7]

Thus, the meaning of a sentence with a *denn*-clause is the following:

(107) Die Straße ist naß, denn es hat geregnet.
The street is wet, because it has rained.
'The street is wet because it rained.' (ex. (3b))

(108) At Issue: wet(street)

Conventional Implicature: CAUSE(rain, wet(street))

The at issue content denoted by the main clause is left unchanged by adding a *denn*-clause. The effect of the *denn*-clause is to add a conventional implicature expressing the cause of the fact stated in the main clause.

This meaning for *denn* is structurally similar to the semantics proposed in (Potts, 2005, p. 97ff.) for nominal appositives such as *a cyclist*.

(109) Lance, a cyclist, is training. (Potts, 2005, (4.14))

In this example, the nominal appositive *a cyclist* contributes a CI meaning which applies to the NP *Lance*. The denotation of the NP itself is handed up unchanged for the

[7] Causal connectives like *weil*, *because*, and probably also *denn* are normally factive, that is, they trigger a presupposition that their complement is the case (Frege, 1892, p. 48). It remains an interesting question, orthogonal to the present argument, how presuppositions project in the CI dimension.

compositional computation of the at issue content of the sentence. The final interpretation of (109) is:

(110) At Issue: training(lance)

Conventional Implicature: cyclist(lance)

In both cases, *denn* and the nominal appositives, the CI item contributes only a side comment, while the at issue content of the entire utterance is the same as if the CI item had not been added. In this property, *denn* contrasts with other discourse connectives whose CI status has been argued before, such as *but*. Items like *but* make a contribution in the at issue as well as in the CI dimension. The compositional semantics of *but* can be given as in (111). Arguably, *but* contributes the same at issue content as *and*, and adds the side comment of a contrast between the two conjuncts.

(111) At Issue: $p \wedge q$

Conventional Implicature: CONTRAST(p,q)

(112) Shaq is huge, but he is agile. (Bach, 1999, (1))

(113) At Issue: huge(shaq) $\wedge$ agile(shaq)

Conventional Implicature: CONTRAST(huge(shaq), agile(shaq))

For example, the meaning of (112) is given in (113). The sentence asserts its two conjuncts, that Shaq is huge and agile. Furthermore, the use of but contributes a side comment that there is an implied contrast between being huge and being agile.

It follows from this discussion that there are at least two kinds of bona fide CI items: First, those like *but*, which contribute a conventional implicature in addition to making a regular contribution in the at issue dimension; and second, those like *denn* or the nominal appositives which leave the at issue content of the utterance untouched, and only contribute a side comment upon this at issue content in the conventional implicature dimension.

3.3.2 Unembeddability of *denn*

One of the most prominent properties of conventional implicatures is the fact that they cannot be embedded under other semantic operators. This yields the effect noted by Grice (1975) that they are always taken to be commitments by the speaker. It also contributes a feeling of "widest scope" for CIs (Potts, 2005, p. 42): the conventional implicature seems to be provided at the highest level in the utterance, no matter how deeply embedded it is in the syntax. Usually this does not cause the sentence to be ungrammatical, although in certain contexts that try to force embedding, the utterance may become infelicitous.

In this section, I apply Bonami and Godard's (2005) tests for conventional implicatures to establish differences in meaning between *denn* and *weil*. I show that *denn*'s causal meaning cannot be embedded under semantic operators. This contrasts sharply with *weil*: *weil* is freely embeddable under conditionals, questions, negation, attitude verbs, etc. In order to show the contrast with *weil* clearly, I will concentrate on the propositional readings in all cases, which are possible with *denn* as well as with *weil*. I also illustrate the unembeddability for *denn* with the epistemic and speech act readings. Unembeddability holds absolutely for *denn*, under any of the three readings.

Syntactic vs. Semantic Embedding

As briefly mentioned above, *denn*-clauses can appear syntactically embedded. In such cases, I argue in this section that the CAUSE-operator contributed by *denn* is not actually embedded in the semantics. The logical question is therefore what kind of semantics we obtain for the entire utterance in such a case. Consider the following clear example with propositional *denn*:

(114) Maria ärgert sich, weil die Straße naß ist, denn es hat geregnet.
Maria annoys self, because the street wet is, since it has rained.
'Maria is annoyed because the street is wet. The street is wet because it rained.'

At Issue: CAUSE (wet(street), annoyed(maria))
CI: CAUSE (rain, wet(street))

In example (114), *denn* is syntactically embedded under a because-clause introduced by *weil*. In the computation of the at issue content, the *denn*-clause is ignored, since it does not contribute to the at issue dimension. The at issue content is therefore 'Maria is annoyed because the street is wet.' At the same time, *denn* contributes its causal meaning on the CI dimension: 'The street is wet because it rained.' In effect, the two operators *weil* and *denn* are not scopally embedded here, but rather independent from each other.

Thus, even though *denn* cannot be semantically embedded, sentence (114) has a coherent meaning. *Denn*'s status as a CI derives the correct meaning for this example where *denn* is syntactically embedded, but must contribute its meaning independently. See section 3.5.1 for more discussion.

Conditionals

Conventional implicatures cannot be embedded in the antecedent of a conditional. The following examples show that while *weil* can be embedded under conditionals, sentences with *denn*-clauses in the same position are only felicitous when the *denn*-clause is understood as a parenthetical, standing outside of the conditional itself.

(115) a. Wenn Peter zu spät kam, weil er den Bus verpaßt hat, war
If Peter too late came, because he the bus missed has, was
es seine eigene Schuld.
it his own fault.

b. # Wenn Peter zu spät kam, denn er hat den Bus verpaßt,
If Peter too late came, because he has the bus missed,
war es seine eigene Schuld.
was it his own fault.
Intended: 'If Peter was late because he missed the bus, it was his own fault.'

Intended LF: IF (CAUSE (P. missed the bus, P. was late), it was his own fault)

(116) a. Wenn Peter zu spät kam, weil er den Bus verpaßt hat, hat
If Peter too late came, because he the bus missed has, has
er den Anfang des Films nicht gesehen.
he the beginning of the movie not seen.
'If Peter was late because he missed the bus, he didn't see the beginning of the movie.'
IF (CAUSE (P. missed the bus, P. was late), P. didn't see the beginning of the movie)

b. Wenn Peter zu spät kam, denn er hat den Bus verpaßt, hat
If Peter too late came, because he has the bus missed, has
er den Anfang des Films nicht gesehen.
he the beginning of the movie not seen.
'If Peter was late — he missed the bus (by the way) — he won't have seen the beginning of the movie.'
At Issue: IF (P. was late, P. didn't see the beginning of the movie)
CI: CAUSE (P. missed the bus, I utter "If P. was late")

In examples (115–116), the consequent clauses are chosen in order to support an integrated (115) and a parenthetical (116) reading of the causal clauses, respectively. It is obvious that *denn* cannot be understood to be in the scope of the conditional. The intended reading in example (115b) is that only some reasons for being late would be Peter's own fault, while others (like his car breaking down) are not. The sentence simply does not support this reading.

However, *denn* is possible in the antecedent of conditionals if it is understood as a parenthetical that contributes its meaning outside of the scope of the conditional, as in (116b). Here, it is unclear whether Peter was late for the movie, but he unquestionably missed the bus (he might have taken a taxi to the theater and made it in time). The *denn*-clause has the flavor of additional information that could be explicitly marked with *by the way* in English. It provides the reason for why the *if*-clause is uttered.

The same unembeddability applies not only to the propositional reading of *denn* as shown in (115), but also to the epistemic and speech act uses of *denn*. The epistemic use of *denn* can be approximated with the use of *weil* and an overt epistemic operator. This can

then be embedded under a conditional, just as expected (117a). However, using *denn* and a covert epistemic operator does not yield this reading (117b). Instead, it is understood that everybody must be home if Peter is at home.

(117) a. Wenn Peter zuhause sein muss, weil sein Licht an ist, dann
If Peter at home be must, because his light on is, then
müssen alle in diesem Haus zuhause sein (— alle Lichter sind
must all in this house at home be (— all lights are
an).
on).

b. # Wenn Peter zuhause ist, denn sein Licht ist an, dann müssen
If Peter at home is, because his light is on, then must
alle in diesem Haus zuhause sein (— alle Lichter sind an).
all in this house at home be (— all lights are on).
Intended: 'If Peter must be home because his lights are on, then all the people in this house must be home (— all lights are on).'

Intended LF: IF (CAUSE (Peter's light is on, Peter must be home), everybody must be at home)

Similarly, speech act *denn* cannot be embedded under conditionals. (118b) does not have the reading expressed explicitly in (118a).

(118) a. Wenn ich dir sage, daß die Antwort auf Seite 242 ist,
If I you.DAT tell, that the answer on page 242 is
weil du sie ja nie selbst findest, dann halte ich
because du it part. never yourself find, then consider I
dich für ziemlich dumm.
you.ACC as pretty dumb.

b. # Wenn die Antwort auf Seite 242 ist, denn du findest sie
If the answer on page 242 is because you find it
ja selbst nie, dann halte ich dich für ziemlich dumm.
part. youself never, then consider I you.ACC as pretty dumb.
Intended: 'If I tell you that the answer is on page 242 because you'll never find it by yourself, then I consider you pretty dumb.'

Intended LF: IF (CAUSE (you won't find the answer, I tell you the answer is on page

242), I consider you pretty dumb)

The only reading obtained for (118b) is one where the because-clause is not part of the conditional at all. This would have the speaker assert that ‘If the answer is on page 242, then I consider you pretty dumb’.

Negation

Similarly, the conventional implicature contributed by *denn* cannot be embedded under negation. Consider the example:

(119) a. Paul ist nicht zu spät gekommen, weil er den Bus verpaßt
Paul is not too late come, because he the bus missed
hat. [Sondern er hatte noch zu tun.]
has. [Rather he had still to do (work).]
‘Paul wasn’t late because he missed the bus. [But rather, because he still had work to do.]’
NOT (CAUSE (P. missed the bus, P. was late))

b. # Paul ist nicht zu spät gekommen, denn er hat den Bus
Paul is not too late come, because he has the bus
verpaßt. [Sondern er hatte noch zu tun.]
missed. [Rather he had still to do (work).]
Intended: ‘Paul wasn’t late because he missed the bus. [But rather, because he still had work to do.]’
NOT (CAUSE (P. missed the bus, P. was late))

Sentence (119a) is felicitous with the intended semantics. It can express that Paul’s missing the bus is not the reason for his being late. The same sentence with *denn* (119b) means something different: It conveys that the reason for Paul’s *not* being late was that he missed the bus: CAUSE (P. missed the bus, NOT (P. was late)). This meaning, in addition to being odd by itself, clashes with the clause that follows in brackets.

Unlike for *weil*, the example with *denn* in German is not ambiguous. In general, two scopings are in principle possible in a sentence of the form “¬p because q”: CAUSE(q, ¬p) and ¬CAUSE(q, p). Both interpretations are possible if the causal relation is asserted, as

(119a) above. With *denn* however, when the causal relation is conventionally implicated, only the wide scope for CAUSE is available.

Of course, embedding under negation is also impossible for *denn* in the epistemic and speech act readings:

(120) # Es hat nicht geregnet, denn die Straße ist naß.
It has not rained, because the street is wet.
'It didn't rain because the street is wet.'
NOT (CAUSE (wet(street), MUST(rain)))
CAUSE (wet(street), MUST(NOT(rain)))

(121) # Die Antwort ist nicht auf Seite 242, denn du findest sie ja
The answer is not on page 242, because you find it part.
selbst nie.
yourself never.
'The answer is not on page 242 because you won't find it by yourself.'
NOT (CAUSE (you don't find the answer, I utter 'the answer is on page 242'))
CAUSE (you don't find the answer, I utter 'NOT (the answer is on page 242)')

If the CAUSE-relation contributed by *denn* could be embedded under the negation, both examples (120) and (121) would have sensible interpretations. The intended meaning for (120) is 'It didn't necessarily rain just because the street is wet—They could have cleaned the streets recently.' However, the German sentence just does not have this reading. A sensible meaning for (121) is 'I'm not telling you that the answer is on page 242 because you won't find it by yourself (but because we're in a rush).' Again, this reading, where *denn* would be embedded under the negation, is impossible for the German sentence. The only possible readings for (120) and (121) are the ones where the CAUSE-operator contributed by *denn* is outside the negation.

Questions

If a conventional implicature is triggered within a question, the content that is implicated cannot be understood as being in the scope of the question operator.

(122) a. Wer kam zu spät, weil er den Bus verpaßt hat?
Who came too late, because he the bus missed has?
WHICH (x, CAUSE (x missed the bus, x is late))

b. # Wer kam zu spät, denn er hat den Bus verpaßt?
Who came too late, because he has the bus missed?
WHICH (x, CAUSE (x missed the bus, x is late))

Intended: 'Who was late because he missed the bus?'

Example (122a) can be asked in a situation where several people were late for different reasons. The question is asked to clarify who of these people was the one that was late because they missed the bus. Example (122b) cannot be used in such a situation. In fact, it is quite hard to imagine a situation that would render this sentence entirely felicitous. It seems to be possible only as an echo question.

(123) # Wer ist zuhause, denn sein Licht ist an?
Who is at home, because his light is on?
WHICH (x, CAUSE (x's light is on, I know that x is at home))

(124) Wo ist die Antwort, denn ich finde sie von alleine nie?
Where is the answer, since I finde it by alone never?
WHICH (x, CAUSE (I don't find the answer, I utter that the answer is at x))

As the examples above show, the epistemic and utterance modifying uses of *denn* cannot be embedded under question operators either. (123) does not have the embedded reading asking which person is such that their light being on caused me to know that that person is at home. Similarly, the embedded reading is lacking from the utterance modifying (124). This would have to be expressing the speaker's inquiry about the place for which the speaker's ignorance of the answer caused the speaker to utter that the answer is at that place. This is clearly not expressed by the sentence. Instead, a salient reading of (124) is the one where the question operator is instead under *denn*. Here, the causal relation expressed by *denn* applies to the speaker's utterance of the question "Where is the answer?". *Denn* is unembedded in this case.

Counterfactuals

Conventional implicatures cannot appear in the consequent of a counterfactual. Again, we have to be careful to construct our sentences right. In a sentence “If A, then B, because C”, two scopings are possible (corresponding to two distinct syntactic structures).

Of course, the reading ((if A then B) because C) is always available for *denn*, since the causal connective is not embedded there. An example of such a case with *denn* is the following:

(125) Wenn Paul zur Party gekommen wäre, dann hätte er sich gefreut,
If Paul to the party come had, then had he self be happy,
denn Maria war auch da.
because Maria was also there.
‘If Paul had come to the party, he would have been happy, because Maria was there as well.’
CAUSE (Maria was at the party, IF (Peter had come to the party, P. is happy))

Thus, we’re aiming for a clear reading of (if A then (B because C)). This can be facilitated for example if A = B. The message ((if A then A) because C) does not make much sense conversationally. However, for a counterfactual, (if A then (A because C)) does make sense (see (126a)). This reading is clearly unavailable with *denn* (126b).

(126) a. Wenn Peter zur Party gekommen wäre, dann (wäre er
If Peter to the party come had, then (would he
gekommen), weil du da bist.
come) because you there are.

b. # Wenn Peter zur Party gekommen wäre, dann wäre er
If Peter to the party come had, then would he
gekommen, denn du bist da.
come because you are here.
Intended: ‘If Peter had come to the party, he would have come because you’re here.’

Intended LF: IF (Peter had come to the party, CAUSE (you’re here, Peter comes to the party))

The unembeddability of *denn* in the consequent of counterfactuals of course also extends to its epistemic and speech act uses. In both cases, trying to embed the causal relation expressed by *denn* within the consequent results in utter garbage, although the intended meanings could make sense, as indicated.

(127) # Wenn es geregnet hätte, dann hätte es geregnet, denn die Straße
If it rained had, then had it rained, because the street
ist naß.
is wet.
Intended: 'If it had rained, then I would know that it rained because the street is wet.'

(128) # Wenn ich gesagt hätte, daß die Antwort auf Seite 42 ist, dann wäre
If I said had, that the answer on page 42 is, then were
die Antwort auf Seite 42, *denn* du findest sie von alleine nie.
the answer on page 42, because you find it by alone never.
Intended: 'If I had said that the answer is on page 42, I would have said so because you'll never find it by yourself.'

Attributions

As discussed in section 2.2, (Bonami and Godard, 2005, section 3.2) state that in some traditional views of Grice (1975), conventional implicatures are seen as being necessarily attributed to the speaker, and no other agent of an attitude. They find, however, that evaluative adverbs in French can be attributed to other agents, if those agents are mentioned in the discourse. What is the case for *denn*? Embedding *weil* under attributions is of course fine (129).

(129) Julia glaubt, daß Peter zu spät kam, weil er den Bus verpaßt
Julia believes, that Peter too late came, because he the bus missed
hat.
has.
'Julia believes that Peter was late because he missed the bus.'
BELIEVE (julia, CAUSE (peter missed the bus, peter was late))

In contrast, it is impossible to embed *denn* under *believe*, and quite marginal with *say*:

(130) Julia glaubt, daß Peter zu spät kam, denn er hat den Bus
Julia believes, that Peter too late came, because he has the bus
verpaßt. [# Aber ich weiß er hätte es trotzdem geschafft, wenn
missed. [But I know he would have it anyway made, if
er nicht noch Zigaretten kaufen gegangen wäre.]
he not still cigarettes buy go had.]
'Julia believes that Peter was late because he missed the bus. [# But I know he would have made it on time anyway, if he hadn't gone to buy cigarettes as well.]'
BELIEVE (julia, CAUSE (peter missed the bus, peter was late))

(131) Julia sagt, daß Peter später kommt, denn er hat noch zu tun.
Julia says, that Peter later comes, because he has still to do (work).
[?? Ich glaube aber, er hat nur keine Lust.]
[I believe however, he has only no interest.]
'Julia says that Peter will come later, because he is still working. [?? But I believe that he just doesn't feel like coming.]'
?? SAY (julia, CAUSE (peter is still working, peter comes later))

(131) is better than (130), because verbs like *say* have a less close embedding relation (we can interpret the things that were said unembedded as quoted quasi-verbatim). However, this version is still much worse than the perfect (129). I conclude that unembeddability holds absolutely for *denn*, even including attitude verbs. This is opposed to another type of CIs as discussed in (Bonami and Godard, 2005) which do embed under certain attitudes. How to work out the two types of CIs with a variant of Potts' logic or another formalism is an interesting question for future research.

Embedding under attitude verbs like *believe* is also impossible for the epistemic and speech act uses of *denn*.

(132) Julia glaubt, daß es geregnet hat, denn die Straße ist naß.
Julia believes, that it rained has, because the street is wet.
'Julia believes that it has rained because the street is wet.'
BELIEVE (julia, CAUSE (street is wet, it must have rained))

(133) Julia glaubt, daß die Antwort auf Seite 42 ist, denn du findest
Julia believes, that the answer on page 42 is, because you find
sie nie.
it never.

'Julia believes that the answer is on page 42, since you'll never find it.'
BELIEVE (julia, CAUSE (you'll never find the answer, I utter the answer is on page 42))

In the epistemic example (132), the clause that the street is wet (and that this is the reason for the conclusion that there must have been rain) cannot be attributed solely to Julia's beliefs. Instead, it pops out as a speaker's side comment to the top level, unembedded under *believe*. The only available interpretation for (133) also has the *denn*-clause semantically unembedded, modifying the entire utterance that Julia believes the answer is on page 42. *Denn* cannot be semantically embedded under *believe* in this speech act modifying example, either.

3.3.3 Summary: *denn* Semantics

In this section, I have shown a new analysis, presented in (106), of the causal connective *denn* in German. I argued that *denn* is a conventional implicature item: it contributes its meaning (a causal relation) on the CI dimension. Evidence for this is found in the comprehensive data that shows that *denn*-clauses cannot be embedded under other semantic operators, including conditionals, negation, questions, etc.[8] Previous analyses based purely on the performative analysis were unable to account for this unembeddability, especially in the cases where *denn* targets the same propositional argument as *weil*.

[8]I have shown that *denn* does not semantically embed under operators, because its entire meaning is contributed as a conventional implicature. In contrast, remember that other CI items such as *but* can have a contribution on both the at issue and CI dimensions. This can be easily confirmed by trying to embed a sentence with *but* under another operator. For example, *but* embeds fine in a question. However, only the at issue content contributed by *but*, the 'and'-part, is properly semantically embedded under the question operator. The contrast relation between the two clauses is not questioned:

(i) Is Shaq huge but agile?

Let's run the semantic derivation of an example sentence. In doing this I follow Potts' (2005) logic for conventional implicatures. As noted above, *denn* contributes the CAUSE-operator just like *weil* does. But in addition, *denn* indicates that this operator is contributed on the CI dimension. As we have seen in section 2.4.2, Potts (2005, ex. (4.15)) introduces the COMMA operator to switch at issue level meanings to CI meanings. For switching at issue properties to CI properties, the COMMA operator looks like this:

(134) COMMA $\rightsquigarrow \lambda f \lambda x.f(x) : \langle\langle e^a, t^a\rangle, \langle e^a, t^c\rangle\rangle$

This COMMA operator takes a property f of type $\langle e^a, t^a\rangle$ as its argument and returns a property of type $\langle e^a, t^c\rangle$, which yields a proposition in the CI dimension when applied to an individual. Analogously, Potts assumes other types of COMMA operators for other types of semantic functors that can switch dimensions. A COMMA operator that lifts clausal modifiers (such as *denn*-clauses) to the CI dimension would look like this:

(135) COMMA $\rightsquigarrow \lambda F \lambda r.F(r) : \langle\langle t^a, t^a\rangle, \langle t^a, t^c\rangle\rangle$

I assume the following translation for *denn* in the propositional case. *Denn* obtains the additional readings as in (97) by allowing different scopes (see section 3.5 below).

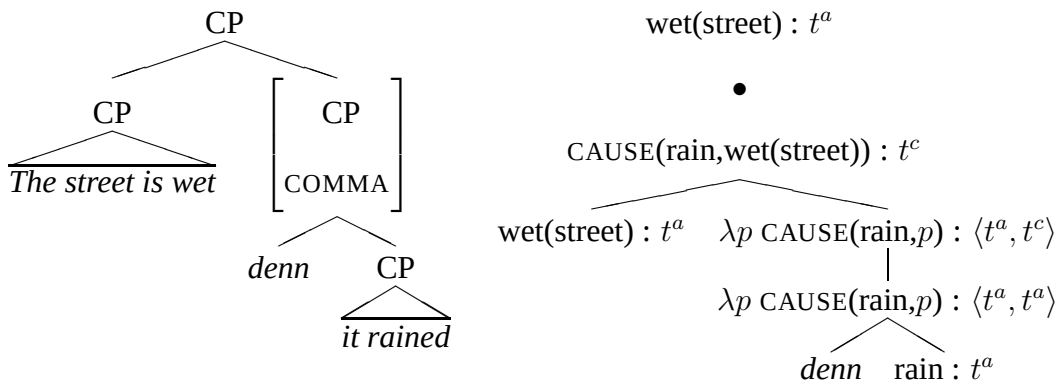
(136) *denn* $\rightsquigarrow \lambda q \lambda p.\text{CAUSE}(q, p) : \langle t^a, \langle t^a, t^a\rangle\rangle$

This translation is the same as for *weil*. The difference is that *denn* also contributes the COMMA feature which has its own interpretation as shown above. The feature is interpreted by the special unary rule "feature semantics" in Potts' logic (Potts, 2005, p. 98). Now we have all the pieces in place to derive the semantics of a *denn*-sentence.

(137)

Die	Straße	ist	naß,	denn	es	hat	geregnet.
The	street	is	wet	because	it	has	rained.

(138)



(138) shows the syntactic and semantic derivation of (137). On the syntactic side, *denn* combines two CPs (see the next section for discussion). It also contributes the COMMA feature. On the semantic side, the COMMA feature is interpreted by the special unary rule feature semantics, which leads to the extra type-shifting step after *denn* has combined with its q-argument. The result of the type-shifting is a CI predicate (type $\langle t^a, t^c \rangle$), which applies by regular CI function application to its p-argument ('the street is wet'). CI application has two effects, as defined by Potts. First, the at issue content is handed up directly (unmodified) from the argument. This is represented at the very top of the tree. Second, the CI function applies to its argument yielding a CI proposition. This proposition is separated by a bullet from the at issue content in the semantic tree. Reading off the final meaning of (137) from the semantic tree in (138) we obtain the at issue content 'wet(street)' and the CI 'CAUSE(rain,wet(street))'.

3.4 Syntax of *denn*

Denn's syntactic classification has been the subject of some discussion. While most studies mention it as a coordinating conjunction (e.g., Pasch (1997)), the most recent and comprehensive study of German connectives has a different opinion. Pasch et al. (2003) treat *denn* as a special case: according to their criteria, *denn* does not subordinate (i.e., it does not require verb-final word order in its own clause) nor embed (i.e., together with its clause, it

does not build a constituent of the main clause). Nor, however, do they think it is coordinating, as we will see below. In this section, I show that *denn*'s special properties can be explained even under a coordinating conjunction analysis.

It is clear that *denn* patterns with other coordinating conjunctions (*und* 'and', *oder* 'or', etc.) in two properties: First, unlike the subordinating conjunctions (for example, *weil*), *denn* does not embed the clause it appears in. That is, the *denn*-clause does not form a phrase that can be moved in the larger sentence, for example preposed into the German Vorfeld.

(139) Weil ich noch zu tun habe, komme ich nicht.
Because I still to do (work) have, come I not.
'Because I still have work to do, I won't come.'

(140) * Denn ich habe noch zu tun, komme ich nicht.
Because I have still to do (work), come I not.
Int.: 'Because I still have work to do, I won't come.'

(141) * Und ich bin müde, habe ich Hunger.
And I am tired, have I hunger.
Int.: 'I am tired and hungry.'

Second, like other coordinating conjunctions, *denn* does not require verb-final word order in its complement clause (142).

(142) * Ich kann nicht kommen, denn ich noch zu tun habe.
I can not come, because I still to do (work) have.
'I can't come, because I still have work to do.'

(143) * Ich habe Hunger, und ich müde bin.
I have hunger, and I tired am.
'I am hungry and tired.'

At the same time, there are two main differences between the behavior of *denn* and the other coordinating conjunctions such as *und*. First, *denn* easily tolerates two unlike clauses as conjuncts, whereas coordination of unlikes with *and*, for example, is not well-formed:

(144) Du kannst nicht erwarten, daß ich dir so viel Geld leihe,
You can not expect, that I you.DAT so much money lend,
denn bin ich Krösus?
because am I Croesus?
'You can't expect that I'll lend you so much money, because am I Croesus?'
(Pasch et al., 2003, p. 585)

(145) ?? Hier ist das Buch und bring es zurück zur Bibliothek.
Here is the book and return it to the library.
'Here's the book and return it to the library.'

Second, *denn* in fact prohibits its argument from having verb-final word order, in contrast to typical coordinating conjunctions that are fine with any word order in the complement (147).

(146) * Anna sagt, daß sie nicht kommen kann, denn sie noch zu
Anna says, that she not come can, because she still to
tun hat.
do (work) has.
'Anna says that she can't come because she still has work to do.'

(147) Anna sagt, daß ihre Tochter nicht kann und ihr Sohn keine Lust
Anna says that her daughter not can and her son no interest
hat.
has.
'Anna says that her daughter can't (come) and her son doesn't want to.'

The peculiarities of *denn*'s syntax can be explained in the following way: *Denn* is a coordinating conjunction. However, we noted above that unlike the other coordinating conjunctions, *denn*'s cause-argument (the *denn*-clause) can only be a main clause, i.e. a CP. The reason for this is that this argument of *denn* (the q-argument) is only used in the CI dimension (see (138)). CI meanings can never be semantically embedded (see section 3.3). Since there are no root (unembedded) clauses in German with verb-final word order, this could explain the requirement that the second conjunct be either verb-initial or verb-second.

The other difference with regular coordinating conjunctions is that the two arguments of *denn* do not have to match syntactically. *Denn*'s p-argument can be expressed by items

other than CPs. Again, this goes back to the fact that *denn*'s semantic status as a side comment is different from the at issue-level *and* and other coordinating conjunctions. *Denn* can relate propositions and speech acts, for example. If the p-argument of *denn* is an utterance, the *denn*-clause can even attach to a non-clausal phrase. Recall again the following example[9]:

(148) Dieser Betrüger, denn das ist er wirklich, hat schon wieder
This crook, because that is he really, has already again
geschummelt.
cheated.
'This crook, because that's what he is, just cheated again.'

Here, the *denn*-clause provides the reason why the phrase 'this crook' was used. *Denn*'s syntax seems to follow the semantics in this as well. Since *denn* can modify an utterance, any type is fine to provide this utterance argument. This could explain why different types of clauses can be coordinated with *denn*, while such a coordination of unlikes is at best marginal for a regular coordinating conjunction such as 'and'. In the following, I confine myself to cases where *denn* connects two clauses.

In summary, *denn* exemplifies a special case of coordinating conjunction. It is a conjunction because both of its arguments are realized structurally (they must be phrases that are syntactically linked by *denn*, cf. (Miltsakaki et al., 2003, p. 53)). It is clearly not a subordinating conjunction, as shown above, and shares most properties with the coordinating conjunctions. But it exhibits two special properties due to its conventional implicature semantics: the *denn*-clause must be a CP, and the other (causee) argument can be any phrase, leading to coordinations of unlike phrases.

[9] See footnote 5, page 49.

3.5 The Distribution of *denn* vs. *weil* Explained

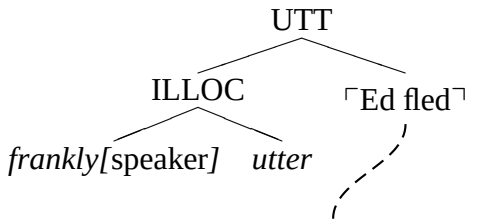
This section shows how the facts about *denn*'s semantics and syntax explain the differences between the uses of *denn* and *weil*. First, I discuss how *denn*'s semantics allows it to be used not only connecting regular propositional arguments as regular *weil* does, but it also allows for epistemic and speech act uses. Then, I turn to the three exceptional contexts where *denn*-clauses are not admitted.

3.5.1 *Denn* in Epistemic and Speech Act Causal Sentences

The main claim of my analysis is that while *weil* contributes the causal meaning in the at issue dimension, *denn* contributes it as a CI. In order to see how this explains why *denn* can express speech act causations and *weil* cannot, I will cast my analysis into Potts' (2005) general logic for CIs, which involves syntactic representations of the utterance level. Nevertheless, note that this step is not crucial for my account here, as the main point could be restated using anaphoric references as described in section 2.5 (see also the footnotes in this section).

Recall Potts' analysis of utterance modifying adverbs such as frankly (74):

(149) a. Frankly, Ed fled.

b.


c. ⌜Ed fled⌝ = ⟨ DP VP ed flee ⟩
Ed *fled*

This kind of structure takes the intuition that *frankly* is a modifier of an utterance rela-

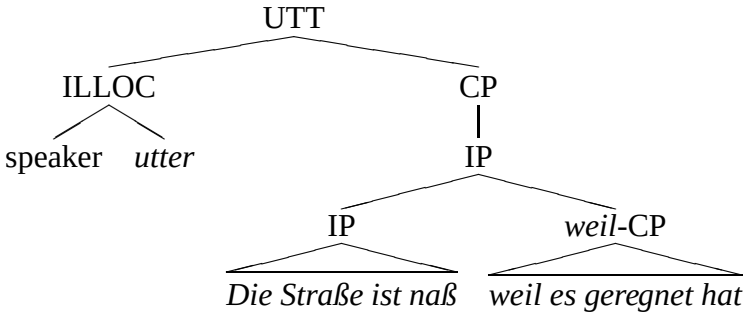
tion seriously. Note that according to Potts, the at issue content of the sentence in (149a) is the one that is obtained by interpreting the parse tree (149b) up to the highest CP node. The adverb *frankly* modifies the relation between the speaker and the utterance, but this is located in the conventional implicatures.

Weil

For the purpose of this chapter, I follow Potts' framework in assuming a similar structure for the causal sentences discussed here. *Weil*'s meaning is contributed completely on the at issue level. Since under this view, *weil* should find its argument in its sister, it must attach *below* the utterance level. Its highest possible adjunction target is the highest CP in the sentence (150)—this is where the at issue content of the sentence is computed. Thus, the *weil*-clause cannot modify the utterance of the main clause, just the plain content of it.

(150) a. Die Straße ist naß, weil es geregnet hat.
The street is wet, because it rained has.
'The street is wet because it rained.'

b.

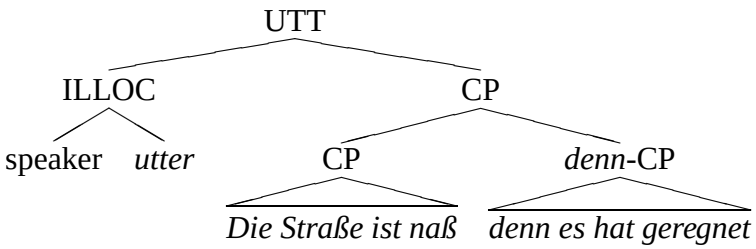


Propositional *denn*

The same structure is also used in the case of propositional *denn* (151). However, the semantics is still different in this case. Since *denn* contributes a CI meaning, it is ignored in the computation of the at issue content. The semantic derivation of this example was shown in (138).

(151) a. Die Straße ist naß, denn es hat geregnet.
The street is wet, because it has rained.
'The street is wet because it rained.'

b.



(151) shows that *denn* can target a proposition as its argument. In this example, it is the proposition expressed by the matrix clause. The logical question is whether propositional *denn* can also target an embedded proposition. This is indeed the case. For example, *denn* can modify just one conjunct of a conjoined proposition.

(152) Hans aß Tofu und Maria hatte Lachs, denn Hans ist Vegetarier,
Hans ate tofu and Maria had salmon, since Hans is vegetarian,
während Maria Fisch liebt.
whereas Maria fish loves.
'Hans ate tofu and Maria salmon, because Hans is a vegetarian while Maria loves fish.'

(153) Hans aß Tofu und Maria hatte Lachs, denn dieser war im
Hans ate tofu and Maria had salmon, since this was in
Sonderangebot.
special offer.
'Hans ate tofu and Maria salmon, because it was on special offer.'

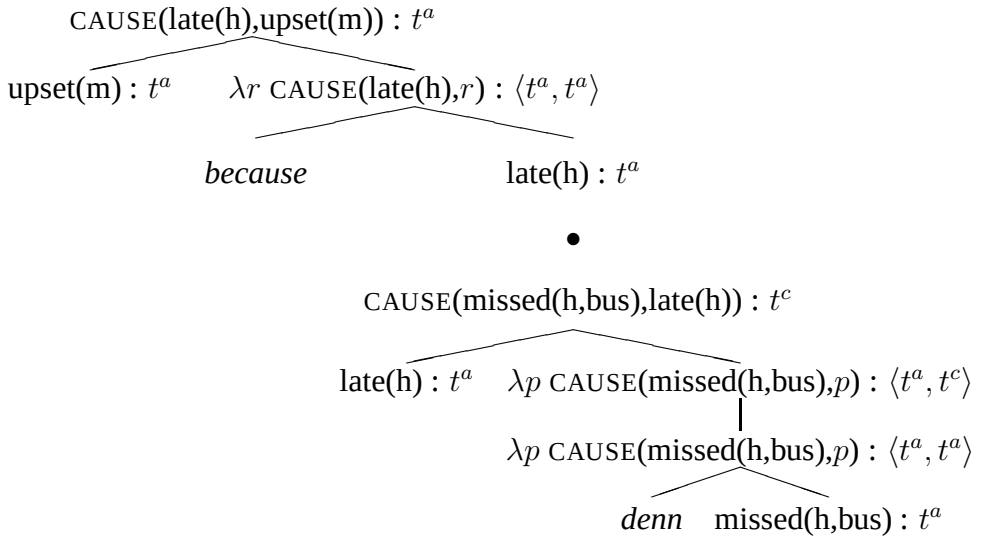
In (152), *denn* modifies the entire conjoined proposition that Hans ate tofu and Maria salmon. But *denn* can also just modify the second conjunct, as in (153). Salmon being on special offer was the reason why Maria ate it. Note that even though *denn* is syntactically embedded in this sentence, and modifies an embedded proposition, the predication contributed by *denn* is not itself semantically embedded. (153) has the at issue content "Hans ate tofu and Maria ate salmon" and the CI "Maria ate salmon because it was on special offer". The CAUSE-operator is not embedded under AND in the CI at all.

The same effect is also obtained with other potential embedders, such as *because*.

(154) Maria war sauer, weil Hans zu spät kam, denn er hatte den Bus
Maria was upset, because Hans too late came, since he had the bus
verpaßt.
missed.
'Maria was upset because Hans was late because he had missed the bus.'

The *denn*-clause is not part of the reason why Maria was upset here. That is, the sentence expresses that Maria was upset at Hans being late, no matter why. Further, a side comment by the speaker (CI) indicates that Hans was late because he had missed the bus. The semantic derivation proceeds in the following way.

(155)



According to Potts' (2005) rule for the interpretation of parse trees, the at issue content associated with the sentences is read off at the root (as usual). Furthermore, any conventional implicatures are collected from all the nodes of the tree as side comments. These CIs are (as explained above) set off by a bullet from the at issue content. Thus, the sentence has the two contributions CAUSE(late(h),upset(m)) and CAUSE(missed(h,bus),late(h)).[10]

[10]As discussed above, Potts' syntactic approach is not crucial to the analysis proposed here. As an alternative, one could hold that *denn*'s p-argument is retrieved anaphorically. The fact that certain discourse connectives take one of their arguments anaphorically has been well argued at least for adverbial connectives (Miltsakaki et al., 2003). An anaphor as *weil*'s p-argument could not refer to the meaning derived at the utterance level, because then it would contain the *weil*-clause and so ultimately itself in its denotation. This

The two examples with conjunction and *weil* ('because') on top of *denn* show that although *denn* cannot be semantically embedded because of its status as a CI, it can still appear in syntactically embedded positions. This should in principle be possible for any semantic operator, including negation, for example. The fact that at issue content and conventional implicatures are computed independently, together with the reasonable assumption that the at issue content and CIs belonging to the same utterance should be consistent with each other, explains why a sentence with both a *denn*-clause and negation nevertheless has only one reading, as pointed out in section 3.3.2. (156) shows a syntactically ambiguous sentence with propositional *denn* and negation, along with its two syntactic structures.

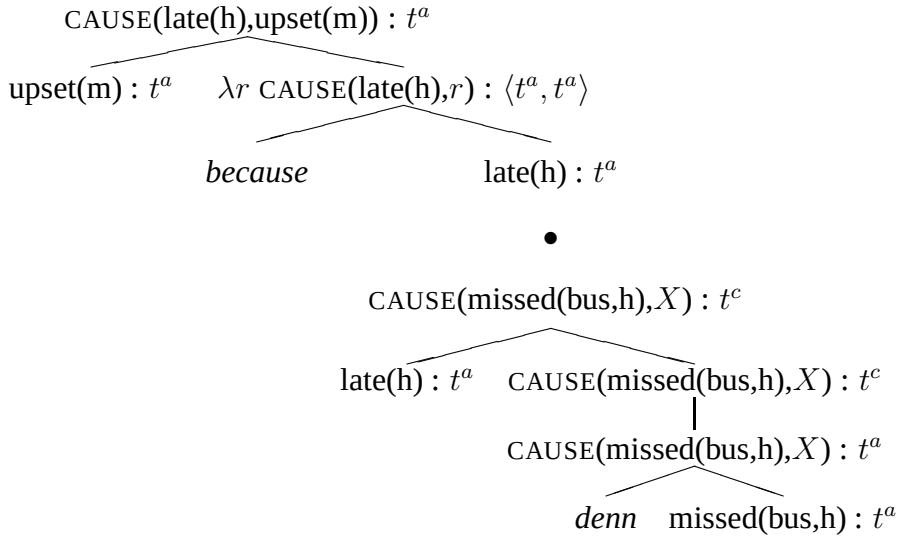
(156) a. # Paul ist nicht zu spät gekommen, denn er hat den Bus
Paul is not too late come, because he has the bus
verpaßt.
missed.

---

is a basic violation of referential principles.

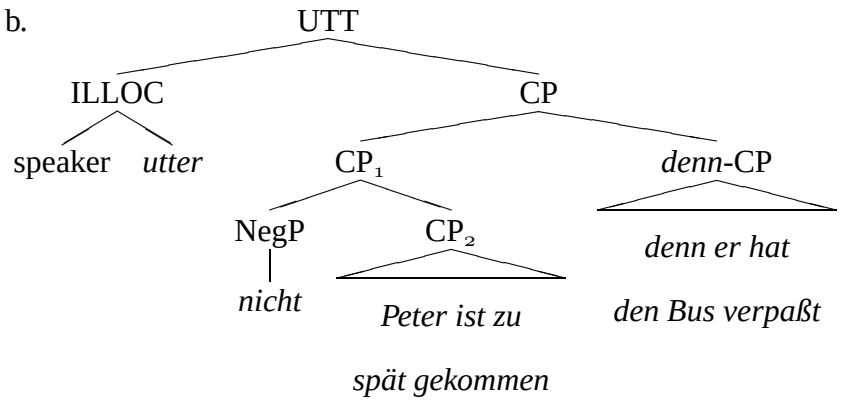
For *denn*, no such problem would arise: Since the causal relation is contributed in the CI dimension, an anaphoric argument can refer back to the utterance of the main clause, or a different element, such as the CP. The LF for (154) would look as in (i). The anaphor X can be resolved to the proposition that Hans was late as well as the utterance "Hans was late".

(i)

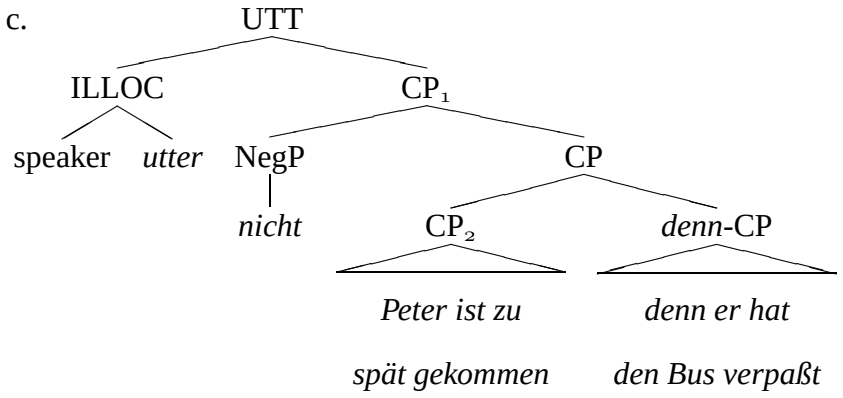


‘Paul wasn’t late because he missed the bus.’

b.



c.



Only the structure in (156b) yields a possible (if unlikely) reading. The at issue content is read off at the CP-level, but ignoring the *denn*-clause: ‘Peter wasn’t late’. In the CI, a CAUSE-relation is established between the *denn*-CP and its sister CP_1: ‘Because Peter missed the bus, he wasn’t late.’

The structure in (156c) exists, just like it would for the same sentence with *weil*. But in this case, it leads to a clash between the at issue content and CI: Since the local sister to *denn* is its argument, the CI contributes the CAUSE-relation between the *denn*-CP and CP_2: ‘Peter was late, because he missed the bus’. In the computation of the at issue content, though, the *denn*-clause is ignored. This yields: ‘Peter was not late’. At issue content and CI are thus contradictory, making this sentence (with this structure) infelicitous.

Again, this section demonstrates the important fact that although *weil* and *denn* can be used interchangeably in many contexts, the meaning obtained is not exactly the same: *denn*

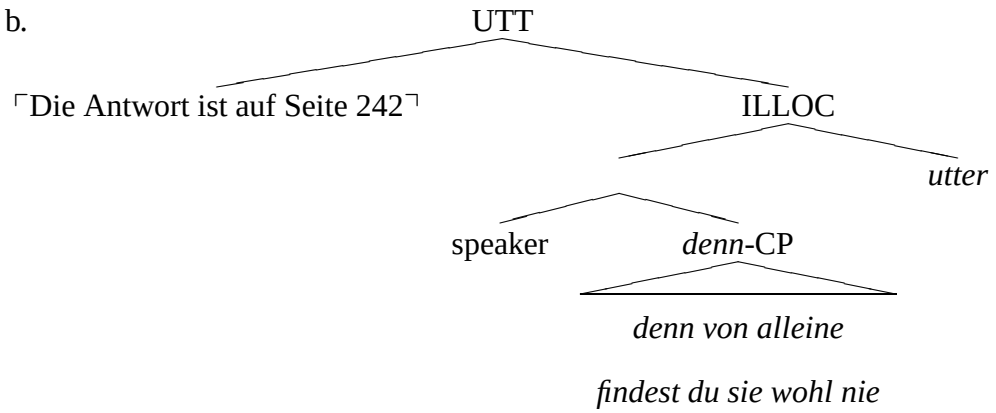
differs in its semantic behavior from *weil*, because it contributes its meaning on a different semantic dimension.

Speech Act *denn*

In the case of *denn*, the at issue content of a sentence "p, denn q" just has the content 'p'. The causal link is located on the CI level. Since the interpretation of the entire *denn*-clause itself is therefore outside of the at issue content, the clause is able to attach at the utterance level (157).[11]

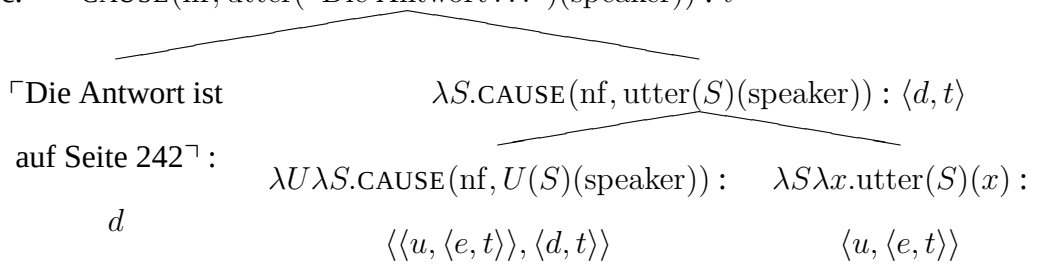
(157) a. Die Antwort ist auf Seite 242, denn von alleine findest du sie
The answer is on page 242, because alone find you it
wohl nie.
part. never.
'The answer is on page 242, since you will never find it by yourself.'

b.



[11]Assuming an anaphoric solution instead of the syntactic one adopted here, *denn*'s second argument would be a covert anaphor referring to the utterance level meaning. This is possible because the meaning of the *denn*-clause is completely on the CI level and thus not part of the at issue content. Consequently, it does not trigger a violation if this anaphor refers to the entire utterance. The possibility of referring back to utterances was documented in section 2.5.

c. $\textsc{cause}(\mathrm{nf}, \mathrm{utter}(\ulcorner \text{Die Antwort} \ldots \urcorner)(\mathrm{speaker})) : t$



$\mathrm{nf} = [\![$ Von alleine findest du sie wohl nie $]\!]$

In (157), the *denn*-clause modifies the utterance relation.[12] This produces the desired reading for the sentence: 'Because you'll never find it by yourself, I'm uttering "the answer is on page 242."'

Epistemic *denn*

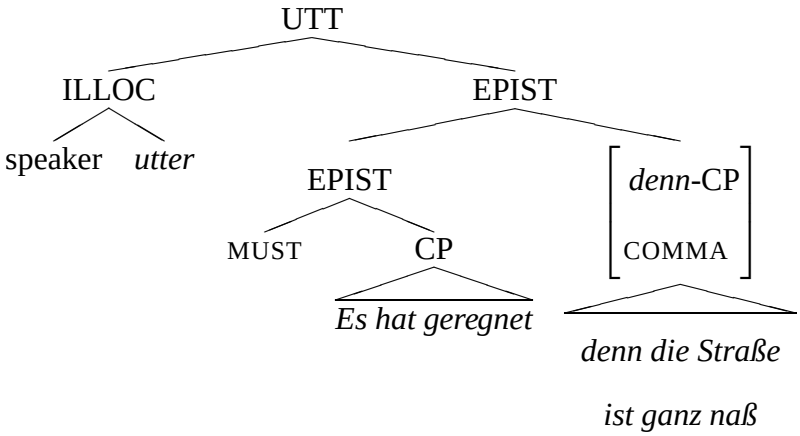
Since intuitively the sentences with epistemic readings like (90) behave exactly parallel to the speech act ones, it is desirable that the analysis should also proceed similarly. Adopting Potts' analysis for the speech act clauses, I have to assume another intermediate syntactic projection to host the covert epistemic modals, introduced by the context. Where do these epistemic modals come from? Covert modals are nothing new. Futhermore, the basic mode in which a discourse proceeds is an epistemic one: one is talking about knowledge and beliefs. Extending Potts' idea above, we have to observe that a typical utterance allows (at least) two inferences in addition to its actual asserted content: First, the fact that the speaker uttered this particular sentence; and second, the fact that the speaker believes the

[12] In the representation in (157), the illocutionary complex ILLOC represents the utterance relation between a speaker and a sentence. Having the *denn*-clause directly modify this utterance relation seems closest to Potts' analysis of utterance modifying adverbs like *frankly* in (Potts, 2005), although Potts does not go into detail explaining how exactly *frankly* combines with the illocutionary predication ("the speaker utters"). See also chapter 2 for a summary of Potts' analysis.

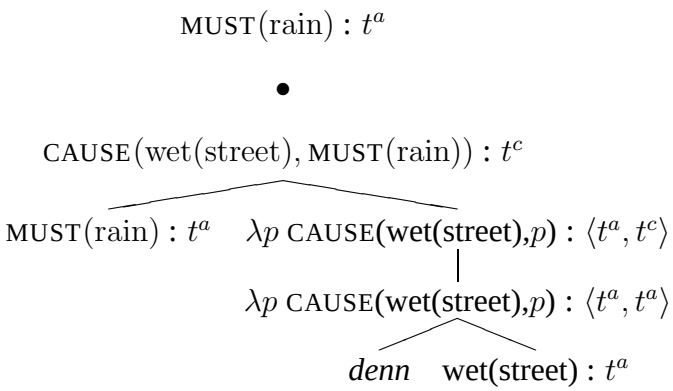
proposition in question. This is the epistemic level.[13] An example is shown in (158). The same argumentation as above explains why *denn*, but not *weil*, can target the implicit modal operators.

(158) a. Es hat geregnet, denn die Straße ist ganz naß.
It has rained, because the street is completely wet.
'It was raining, because the street is wet.'

b.



c. Semantic computation (up to the highest EPIST node):



The syntactic structure shows why these implicit epistemic modals always have wide scope over the at issue content itself. The analysis, following Potts' proposal for the utterance modifying cases, predicts that covert epistemic MUST is always high up in the tree,

[13] One might argue that it is maybe not the perfect solution to put all three contributions directly into the same semantic tree, as they seem to be contributed in parallel, not hierarchically on top of each other. This question has to remain open at this point. Note that this issue does not arise if we follow the anaphoric alternative discussed in section sec:adv-anaphoric above.

outside of where the at issue content is computed.[14]

Of course, epistemic modals like *must* can appear lower in the tree as well, if they are overt. Then they are part of the at issue content of the utterance and can of course also be in the scope of *weil*. In (159), for example, *muß* ('must') is in the scope of *weil*. The sentence conveys that a certain epistemic inferences holds because a light is on.

(159) ? Weil sein Licht an ist, muß Peter zuhause sein.
Because his light on ist, must Peter at home be.
'Because his light is on, Peter must be home.'

Given the analysis so far, it appears that the relations expressed by *weil* are a proper subset of the relations that *denn* expresses. Recall however, that there are three exceptions to the use of *denn*. The next section shows how these exceptions are in fact expected under the current analysis.

3.5.2 Three Exceptions to the Use of *denn*

The first peculiarity of *denn*-clauses in contrast to *weil*-clauses is that they cannot precede the main clause.

(160) a. Weil es geregnet hat, ist die Straße naß.
Because it rained has, is the street wet.

b. * Denn es hat geregnet, ist die Straße naß.
Because it has rained, is the street wet.
'Because it rained, the street is wet.'

[14]In fact, the analysis as described here predicts that covert epistemic MUST indeed cannot appear below the CP-level in the syntactic structure. If it did, then regular, at issue-level *weil* would be able to target it as its argument. However we have seen that it cannot (since regular *weil* lacks epistemic readings). This opens up interesting further questions. For example, a standard analysis of bare conditionals (without overt modals) holds that most of them contain covert epistemic MUST (Kratzer, 1991). This would mean that either *weil* cannot take such epistemic conditionals as its argument (since then it would have scope over covert MUST), or this standard analysis of conditionals is actually incorrect. I leave this investigation for future work.

This fact follows straightforwardly from *denn*'s syntax as proposed in section 3.4. All coordinating conjunctions must follow their first argument.

The second exception is the fact that direct answers to *why*-questions cannot be expressed with a *denn*-clause:

(161) Warum ist die Katze gesprungen?

'Why did the cat jump?'

a. (Sie ist gesprungen,) Weil sie eine Maus sah.
(It has jumped,) Because it a mouse saw.

b. * (Sie ist gesprungen,) Denn sie sah eine Maus.
(It has jumped,) Because it saw a mouse.
'(It jumped) Because it saw a mouse.'

Sohmiya (1975, ex. (21)) notes this property of *denn*:

(162) A: Warum ist Otto zu Hause? B: Weil [* denn] es regnet.
A: Why is Otto at home? B: *weil* [* *denn*] it rains.
'A: Why is Otto at home? B: Because it's raining.'

He argues that the *why*-question only operates on the propositional level, not on the epistemic or speech act levels. This would explain why the *weil*-answer can only have its usual (plainly asserted) meaning. That is, it can only give the reason for Otto's being at home. It cannot give a reason for my knowledge or suspicion regarding his location (the epistemic usage). Even though the answer is syntactically ambiguous between a verb-final (assertive *weil*) and verb-second (epistemic *weil*) structure, it cannot be understood to express the epistemic reading. Still, something more is happening here, since propositional *denn* also cannot be used to answer *why*-questions, as shown by the examples above. Thus, the level of attachment (at the propositional, epistemic, or speech act level) doesn't seem to explain the impossibility of *denn* as an answer.

Note that the causal relation between the proposition in the *denn*-clause and the other proposition (expressed in the question) is presented as a conventional implicature, and not

asserted. Conventional implicatures can never function as the direct answer to a question. This is to be expected because the CI functions as a side comment (Potts, 2005), so it cannot be the central point of the utterance it appears in.

For example, *even x, y* in English conventionally implicates that there are alternatives to x that also do y, and that x ist the most unlikely of the alternatives to do y (see Horn (2004) for discussion). However, a direct question cannot be answered by these conventional implicatures (163a). Similarly, *but* implicates that there is a contrast between the two coordinated properties (163b).

(163) a. Who is most unlikely to play the lottery? — # Even Bill plays the lottery.

b. What does being small contrast with? — # Ants are small but strong.

The third exclusion for *denn*-clauses is when the proposition in the *denn*-clause has been previously mentioned. New-ness is one of the central properties of CIs identified in (Potts, 2005, p. 43). (Potts, 2007a, ex. 16) shows for nominal appositions that CIs are generally infelicitous when their content is backgrounded:

(164) Lance Armstrong survived cancer.

a. # When reporters interview Lance, a cancer survivor, he often talks about the disease.

b. And most riders know that Lance Armstrong is a cancer survivor.

Thus, the proposed analysis explains not only why a CI causal connective (*denn*) can be used in speech act and epistemic readings, as opposed to an asserted causal connective (*weil*). But in addition, the three previously noted exceptions to the use of *denn* are also predicted by this account.

3.6 Further Issues

In this section, I discuss some further issues related to the approach to the semantics of *weil* and *denn* presented in this chapter.

3.6.1 English *because*

In English, *because* is ambiguous between the at issue content and conventional implicature use (see also Sweetser (1982), (Rutherford, 1970, p. 100) for some discussion). It can be used freely in epistemic or speech act causal sentences:

(165) John is home, because his light is on.

(166) Are you done, because I want to clear the table.

In the propositional use, *because* can be easily embedded.

(167) If you're getting married because you like the food processor Sarah had on her gift registry, then that's a pretty stupid reason.

If *because* is used in epistemic or speech act sentences, though, it cannot be embedded:

(168) # If John is home because his light is on, then everybody in this building must be home (seeing as all the lights are on).

Some preliminary tests suggest that English *since* behaves very similarly to *denn* in German, disregarding the different syntax.[15]

3.6.2 Epistemic and Speech Act Uses of *weil*

As briefly noted above in section 3.1, there are some utterances where *weil* can have epistemic and speech act readings, in particular in spoken German. This is possible only if

[15]Martin Kay (p.c.) suggested that *for* in English behaves in the same way as German *denn*.

weil is used with a complement clause with verb-second word order (169), or with a falling pitch on the preceding clause (170).

(169) a. Peter ist zuhause, weil sein Licht ist an.
Peter is at home, because his light is on.
'Peter is at home, because his light is on.'

b. Die Antwort ist auf Seite 242, weil du findest sie ja selbst nie.
The answer is on page 242, because you find it part. self never.
'The answer is on page 242, since you will never find it yourself.'

(170) a. Peter ist zuhause\↘, weil sein Licht an ist.
Peter is at home\↘, because his light on is.
'Peter is at home, because his light is on.'

b. Die Antwort ist auf Seite 242\↘, weil du sie ja selbst nie findest.
The answer is on page 242\↘, because you it part. self never find.
'The answer is on page 242, since you will never find it yourself.'

Importantly, these uses of *weil* are completely synonymous with *denn*, that is, they have all the same properties[16]. Most notably, semantic embedding of the sentence is not allowed:

(171) # Peter ist nicht zuhause, weil sein Licht ist an.
Peter is not at home, because his light is on.
'Peter isn't at home, because his light is on.'
NOT (CAUSE P's light is on, P. must be at home)

(172) # Peter ist nicht zuhause\↘, weil sein Licht an ist.
Peter is not at home, because his light on is.
'Peter isn't at home, because his light is on.'
NOT (CAUSE P's light is on, P. must be at home)

[16](Wegener, 1999, pp. 14–17) shows that *weil*-V2 is entirely functionally equivalent to *denn*, that is, it has exactly the same uses.

Therefore, I take *weil*-V2 and non-integrated *weil*-VF to be equivalent with *denn*[17], with a parallel analysis.

It follows, then, that the move of the CAUSE-operator to the CI dimension can be signalled in several ways: (i) lexically, using *denn*, (ii) syntactically, with V2 word order, and (iii) phonologically, with falling pitch. At this point it is worth noting that choosing (i) to encode CI-ness usually implies (ii) and (iii), and choosing (ii) usually implies (iii). Thus, although a simple phonological cue is sufficient to indicate that the operator is used on the conventional implicature dimension, instead of in the at issue dimension, oftentimes the speaker will use a redundant mechanism by providing syntactic and possibly lexical cues as well.

The fact that phonological or syntactic separation of the because-clause is used to indicate CI status is maybe not entirely surprising, given that the CI is a side comment, kept separately from the at issue content. However, the exact mechanism by which the switch of semantic content to the CI dimension comes about is an open question beyond the scope of this dissertation.

[17](Pasch, 1997, p. 259) argues that *weil*-V2 clauses can be used to answer questions, while *denn*-clauses cannot be so used. She gives the following example, which I find unacceptable:

(i) Warum bist du denn so erschrocken? – Weil ich habe dich nicht kommen hören.
'Why did you startle so much? – Because I didn't hear you.'

Pasch notes that *weil*-V2 can only be an answer if the main clause is not uttered in the answer. This seems to point to the conclusion that in the cases where a *weil*-V2-clause is uttered as a direct answer, it is really just the clause following *weil* that is taken as the answer (just like any main clause would be). This could be indicated by a pause after 'because': "Why didn't you call me earlier?" – "(Because:) I wasn't here."

3.6.3 Embedding under Non-Restrictive Relative Clauses

Finally, it has not been noted in the literature (to my knowledge) that the unembeddability of *denn*-clauses is not absolute. These clauses can be embedded in non-restrictive relative clauses:[18]

(173) Lance Armstrong, der sehr bekannt ist, denn er hat siebenmal die
Lance Armstrong, who very famous is, because he has seven times the
Tour de France gewonnen, engagiert sich heute für Krebskranke.
Tour de France won, involves self today for cancer patients.
'Lance Armstrong, who is very well known, because/since he won the Tour de France seven times, is now involved in the fight against cancer.'

The difference between this example and other types of embedding discussed above in section 3.3.2 is that non-restrictive relative clauses themselves operate on the level of conventional implicatures. Thus, there is not really a two-level embedding here, since the relative clause is contributed independently of the at issue content of the main clause. It is also common for several conventional implicatures to be associated with the same sentence. In that case, all the conventional implicatures and the plain at issue content of the utterance are independent of each other.

However, one interesting question remains: In Potts' (2005) logic for conventional implicatures, unembeddability is an axiom: there are no types that take a CI meaning as an argument. Therefore, how can the *denn*-clause take the CI type relative clause as its argument?

A solution could be found in the detailed semantic composition of the sentence: In (Potts, 2005), meanings start out as at issue-type meanings and are then type-shifted to the CI dimension by the COMMA operator (p. 98). Roughly, the propositional meaning for the

[18] If non-restrictive relative clauses are analyzed simply as main clauses, the *denn*-clause is not actually embedded (even syntactically) here, and the example may be completely predicted under any analysis. However, see (Arnold, 2007) for a recent argumentation that non-restrictive relative clauses are indeed syntactically embedded.

relative clause is first constructed in the usual way, and then shifted to become a CI. In this architecture, *denn* could target the propositional meaning *before* (or below, in the tree) the type shift as its argument. The multidimensional meaning derived for (173) would be:

(174) At Issue: Lance Armstrong is involved in the fight for cancer

CI 1: Lance Armstrong is very famous.

CI 2: Lance Armstrong is very famous, because he won the Tour de France seven times.

Note that the *denn*-clause is not embedded here.

More research is needed on apparent cases of embedding like the present one. Since the CI items identified in this chapter take clausal arguments, apparent embeddings can become very common. For example, other CI items like *frankly* can freely appear in *denn*-clauses (175). It is an open question whether the restricted logic employed so far fares adequately in all cases.

(175) Peter ist durchgefallen, denn, unter uns, er hat nicht so viel gelernt.
Peter is failed, since, among us, he has not so much studied.
'Peter failed because, just between you and me, he didn't study so much.'

The arguments in this section about the semantics of *denn*-clauses that are embedded within nonrestrictive relative clauses carry over to the alternative anaphoric analysis proposed in section 2.5 as well. However, as argued in section 2.5, an alternative to Potts' analysis using anaphoric arguments for CI utterance modifiers like *frankly* or *denn* may actually have advantages over the original proposal using utterance nodes in the tree in cases where the utterance modifier is syntactically embedded. Nonrestrictive relative clauses and *denn*-clauses present another case where this can be tested more extensively in future work.

3.7 Summary

This chapter shows that German *denn* ('because'/'since') is a conventional implicature item, and a coordinating conjunction. Because *denn* contributes its meaning outside of the at issue dimension, it can target higher semantic operators (epistemic MUST and illocutionary operators) as its argument, leading to epistemic and speech act readings of *because*-sentences. A different German connective which contributes the same meaning in the at issue dimension, *weil*, does not have these readings. Further, I showed that the status of *denn* as a conventional implicature item and its syntactic properties explain why at the same time there are some specific restrictions on the use of *denn*.

Chapter 4

If: Relevance Conditionals

In this chapter, I propose a new analysis of a particular type of conditional construction, relevance conditionals, in the light of the phenomena seen in the previous chapters.

4.1 Introduction

There is a type of conditional construction whose compositional semantics has puzzled semanticists for decades. A typical example is (176), from (Siegel, 2006).

(176) If you're hungry, there's pizza in the fridge.

Although (176) has the shape of a conditional, the consequent is not understood to depend on the truth of the antecedent. Intuitively, there is no conditional meaning there. So, what exactly is the contribution of the *if*-clause? Clearly, it must still be relevant somehow, as shown by the oddness of (177).

(177) # If you're hungry later, 2 plus 2 is 4.

A related question is how *if*-clauses obtain such a seemingly non-conditional meaning, especially given the fact that such readings of conditionals are widely attested in many languages.

(178) Wenn du Hunger hast, es ist noch Pizza im Kühlschrank.
If you hunger have, there is still pizza in the fridge.
'If you are hungry, there's still some pizza in the fridge.' (German)

(179) (Kimi-ga) yoi sirase-o kiki-tai-mono-na-ra, kinguzu-wa
You-NOM good news-ACC hear-want-COP-NOMIN-COND the Kings-TOP
uruhuzu-ni katta-mono-da-(nee).
the Wolves-DAT won-NOMIN-COP-(PRT)
'If you want to hear some good news, the Kings defeated the Wolves.'
(Japanese; after Siegel, 2006)

(180) Jesli ty goloden, v holodil'nike jest' picca.
If you.SING hungry.MASC.SING, in fridge there.is pizza
'If you're hungry, there's pizza in the fridge.' (Russian)

This special use of conditional constructions has been called "relevance conditionals" (RCs) in the linguistic literature (Iatridou, 1991; Bhatt and Pancheva, 2006).[1] In the past decades, several analyses of such conditionals have been proposed in order to address these questions. The task for the linguist is based on the background assumption of semantic compositionality: The minimal assumption is that *if* always contributes the same meaning typical for all kinds of conditional sentences. Some additional ingredients are then proposed in order to capture the semantic peculiarities of RCs. In my account, I uphold this basic precondition of a linguistic analysis of RCs.

In this chapter, I propose a new analysis of relevance conditionals claiming that the content of the *if*-clause is contributed as a conventional implicature, independently of the consequent, which is asserted straightforwardly. The two-dimensionality of relevance conditionals is, as I will argue, the crucial property that accounts for their unembeddability as well as other idiosyncrasies of use.

[1]Other names in philosophy and linguistics include "biscuit conditionals" (after Austin's (1961) original example), "conditional assertions", "nonconditional conditionals", "pragmatic conditionals", and "unconditionals" (Merin, 2007). I use the name "relevance conditional" and the abbreviation "RC" to refer to the entire conditional sequence. To refer just to the antecedent in RCs, I usually talk about the "*if*-clause".

The chapter is organized as follows: In section 4.2, I show three crucial semantic properties of relevance conditionals that have often been overlooked in the literature. I then propose the novel two-dimensional analysis of relevance conditionals in section 4.3. In section 4.4, I discuss some previous approaches to relevance conditionals, showing that they are unable to account for the three previously discussed properties, and/or are unable to reflect the parallelism between RCs and relevance uses of other connectives. Section 4.5 concludes the chapter.

4.2 Crucial Properties of Relevance Conditionals

RCs are characterized by a conditional form which doesn't seem to express a conditional meaning. Thus, if one utters (181), whether or not there are biscuits on the sideboard doesn't actually depend in any way on the wishes of the addressee.

(181) There are biscuits on the sideboard if you want them. (Austin, 1961)

In this section, I point out three other important properties of RCs which distinguish them from regular hypothetical conditionals. Since RCs share these properties with the utterance modifying *because*-clauses and adverbials I discussed in the previous chapters, I will then proceed to propose a novel analysis of RCs that emphasizes this parallelism and captures these peculiarities.

4.2.1 Semantic Unembeddability

One striking property of RCs that has sometimes been observed in the previous literature is their unembeddability under certain semantic operators. However, this has not been systematically documented yet. In the following, I show that RCs categorically resist semantic embedding, with the exception of a few attitude verbs like *say*.

Negation

In order to show that the *if*-clause of RCs is outside of the assertion associated with the sentence, Iatridou (1991) observed that in contrast to regular conditionals, RCs cannot be straightforwardly denied.

For regular conditionals, the causal link they express can be negated (182). This leads to infelicity in the case of relevance conditionals (183).

(182) A: If it rains, she'll be happy.

B: That's not true. She'll be happy if it snows.

(183) A: If I may be honest you're looking awful

B: That's not true. # I look awful if you may be deceitful

(Iatridou, 1991, p. 53)

This data also shows that the RC cannot be semantically embedded under negation.

Attitude Verbs

As described in (Bhatt and Pancheva, 2006), RCs typically cannot be embedded under attitude verbs, for example *believe*:

(184) # John believes that if you are thirsty there is beer in the fridge.

(Bhatt and Pancheva, 2006, ex. (102b))

Other examples include true factives such as *surprise* and *regret* (185).

(185) * The children were surprised that if they're hungry, there's pizza in the fridge.

Bhatt and Pancheva (2006) do observe that RCs can appear properly embedded under *say*. In (186), the RC is actually embedded under *say*: the whole RC is what John uttered. The sentence differs from (187), where John only uttered the consequent, and the *if*-clause is added by the speaker.

(186) John said that if you need him later he'll be in 418.

(187) If you need your TA John later, he said he'll be in 418.

Further, Siegel (2006) notes that although RCs are prohibited as complements of most attitude verbs, they are possible under *remind*, *remember*, and *realize* (she doesn't mention *say*). See for example:

(188) Dad called to remind us that if we're hungry there's pizza in the fridge. (Siegel, 2006, ex. (31a))

I conclude for now that RCs are unembeddable under most attitude verbs. Embedding is sometimes possible under two types of verbs: speech act verbs such as *say* or *ask* (189), and the cognitive factive verbs (Beaver, 2004) *realize*, *remind*, *remember*, and *know* (190).

(189) Peter asked me whether if he's hungry, there's pizza in the fridge.

(190) The children already know that if they're hungry there's pizza in the fridge.

I will come back to this behavior in section 4.3.3.

Other Semantic Operators

It has not, to my knowledge, been pointed out in the previous literature just how far-reaching the unembeddability of RCs is. In addition to the cases above, denial/negation and attitude verbs, it can be shown that RCs do not embed under other semantic operators either. Typical environments for semantic embedding include questions and *if*-clauses.

Questions Embedding an RC in a question does not necessarily lead to ungrammaticality. In (191), the RC is syntactically embedded under a spelled out version of the question morpheme (*whether*). The only available interpretation is one where only the consequent of the conditional is actually part of the question. The RC is therefore outside of the question, with the same interpretation as (192). That is, the question in (191–192) is whether or not

there is pizza in the fridge, the truth of which is understood as independent of the possibility of me being hungry later.

(191) Tell me whether if I'm hungry later, there's pizza in the fridge.

(192) If I'm hungry later, is there pizza in the fridge?

This data contrasts with the behavior of regular conditionals in questions. Embedding of regular conditionals in a question is straightforward:

(193) Will the street be flooded if it rains?

Conditionals Embedding an RC (syntactically) in the antecedent of another conditional (194) also yields interesting results.

(194) # If there's pizza in the fridge if you're hungry later, you should eat it.

In English, it is impossible to distinguish regular and relevance conditionals by their syntactic form.[2] Consequently, a given RC usually also has a regular conditional reading. This reading is often very odd – most often only a 'magic' interpretation remains. For example, consider the RC embedded in (194):

(195) There's pizza in the fridge, if you're hungry later.

This sentence has a second reading where pizza will magically appear in the fridge if (and possibly only if) you're hungry. This is the regular conditional or 'magic' reading.

We can observe now that true embedding of the RC within another *if*-clause is impossible: the only possible interpretation of (194) is the one where the RC is interpreted in its 'magic' reading, that is as a regular conditional. The unembeddability of RCs makes the RC under another operator (the conditional) so bad that only the regular conditional reading remains (which is normally very unlikely).

[2] In other languages, this is not necessarily the case: For example in German, RCs and regular conditionals are always unambiguously distinguished by their word order.

RCs are Unembeddable

To sum up, I have demonstrated here that relevance conditionals, in contrast to regular conditionals, are generally not semantically embeddable under other operators. This includes negation, questions, conditionals, as well as most attitude verbs. It appears that RCs can only be successfully embedded under speech act verbs and semi-factives.

4.2.2 Illocutionary Status of the Consequent

Maybe the most notable property of relevance conditionals is that the truth of their consequent is not dependent on the antecedent (Iatridou, 1991). Instead, in the declarative case the consequent behaves as if it is straightforwardly asserted:

(196) If you're hungry, there's pizza in the fridge.
⇒ There's pizza in the fridge

(197) If you need anything, my name is James.
⇒ My name is James.

However, in a recent analysis of relevance conditionals, Siegel (2006) contradicts this intuition, claiming that the consequent of a declarative RC is not, after all, asserted. She gives two main arguments, which will be discussed in this section.

Japanese 'yoku'

First, Siegel (2006) discusses the Japanese adverbial *yoku*, which expresses (positive) surprise about its complement by the speaker. It roughly translates as 'amazingly'. *Yoku* is interesting for this discussion because it requires a factual complement (McCready, 2004), that is, one that is straightforwardly asserted. It is therefore impossible in the consequent of regular conditionals (since there is no guarantee of actualization for the consequent).

(198) a. Kinguzu-wa yoku uruhuzu-ni katta-mono-da.
the Kings-TOP surprise the Wolves-DAT won-NOMIN-COP
'The Kings, amazingly to me, defeated the Wolves.'
(Siegel, 2006, ex. (15))

b. (Mosi) sensyu-ga kega-kara kaihuku-sita-mono-na-ra,
(If) player-NOM injury-from recover-did-NOMIN-COP-COND
kinguzu-wa yoku* uruhuzu-ni katta-mono-da.
the Kings-TOP surprise the Wolves-DAT won-NOMIN-COP
'If their players recovered from their injuries, the Kings, [amazingly to me*], defeated the Wolves.'
(Siegel, 2006, ex. (16))

In (4.2.2a), *yoku* ('amazingly') modifies the proposition that the Kings defeated the Wolves, which was straightforwardly asserted by the speaker. In contrast, *yoku* is impossible in (4.2.2b), because here the clause "the Kings defeated the Wolves" is just the antecedent of the conditional, and therefore only hypothetical, not a fact.

Siegel (2006) shows that *yoku* is also impossible in the consequent of the RC (199). This is entirely unexpected if the consequent of RCs is assumed to be straightforwardly asserted.

(199) (Mosi) (kimi-ga) yoi sirase-o kiki-tai-mono-na-ra,
(If) you-NOM good news-ACC hear-want-COP-NOMIN-COND
kinguzu-wa yoku* uruhuzu-ni katta-mono-da-(nee).
the Kings-TOP surprise the Wolves-DAT won-NOMIN-COP-(PRT)
'If you want to hear some good news, the Kings, [amazingly to me*] defeated the Wolves.' (Siegel, 2006, ex. (17))

However, a closer look at the properties of *yoku* shows that this data is not surprising. In (199), *yoku* is ruled out for reasons independent of the *if*-clause. McCready (2004) points out that *yoku* presupposes that its complement be already in the common ground:

(200) A: Who did Austin marry?

B: *Yoku Dallas to kekkon sita na!
YOKU Dallas with marry did PT
'He did a really good and surprising thing by marrying Dallas!'

(McCready, 2004, ex. (6))

In the ungrammatical (199), the complement of *yoku* is the 'news' that the Kings defeated the Wolves. This information is clearly marked as not being in the common ground, and therefore *yoku* is expected to be bad in such a sentence.

Once one controls for backgroundedness of *yoku*'s complement, RCs allow *yoku* just as expected.

(201) A: Our team defeated the Wolves yesterday! What do you say to that?!

B: (Mosi) watasi-no iken-o sir-itai-no-na-ra,
(If) I-GEN opinion-ACC know-want_to-NM-COP-if,
kinguzu-wa yoku uruhuzu-ni katta-mono-da-to
the Kings-TOP surprise the Wolves-DAT Won-NOMIN-COP-COMP
omou.
think.
'If you want to know my opinion, I'm amazed that the Kings defeated the Wolves.'

Thus, I have shown that the unavailability of *yoku* in Japanese RCs as presented by Siegel (2006) is due to independent reasons, not linked to the relevance conditional. An example where these factors are controlled for is fine with *yoku* in the consequent of the RC, indicating that the consequent of the RC is indeed asserted.

False Consequents in RCs

Siegel's (2006) second important argument against the fact that the consequent of an RC is asserted is based on examples like the following:

(202) [In front of the bar:] If they ask you how old you are, you're 21!

She correctly argues that in this case, the consequent of the RC is not entailed (indeed, in the most likely scenario it would be false that you're 21, since you're actually under age, and we're trying to smuggle you into the bar). Since the clause is not entailed, Siegel claims that it must not have been asserted (given a truthful speaker).

In (202), the consequent is unquestionably not a statement, since it expresses a more complex speech act. It conveys an order, approximately: 'Say/Pretend that you're 21!'. However, this complex speech act arises from the consequent itself, independently of the *if*-clause that precedes it. In the same situation, the speaker could have just uttered (203) to achieve the same effect.

(203) [In front of the bar:] (Oh and John,) you're 21!

The consequent in the RC (202) thus has the same meaning and force as it would have in matrix use. I take this as further evidence that the main effect of an RC is the same as just uttering its consequent. In most cases, this amounts to asserting the consequent, since this illocutionary act is very common. But other complex speech acts are possible in the consequent of an RC, as shown by (202), or as in the rhetorical question below (204). In each case, the speech act performed by the RC is equivalent to the one corresponding to just the consequent of the RC.

(204) If you think about it, why didn't he help her when she needed him? (Look, he's not such a great guy.)

The Consequent of RCs is Straightforwardly Asserted

Siegel (2006) proposes two main arguments against the intuition that the consequent of an RC is understood as being asserted straightforwardly. The data in this section showed that her arguments do not hold up to closer scrutiny: Indeed, the data provide further evidence that the main effect of uttering an RC is in fact to perform the speech act associated with its consequent. In the case of a declarative sentence, this usually amounts to asserting the consequent of the RC.

4.2.3 Syntactic Unintegration

The third important peculiarity of RCs is a syntactic one. In English, conditional sentences are structurally ambiguous between a hypothetical conditional and a relevance conditional, and they are usually disambiguated by context.[3] Real ambiguous utterances are also possible, for example:

(205) If you need me later, I'll stay at home all day.

Here, the speaker could be trying to convey that they will stay at home just in case the hearer might need them later (the hypothetical reading). Or the speaker could be staying at home in any case, and they might be informing the hearer because the hearer might need them later (the relevance reading).

In some languages like German and Dutch there is no ambiguity, because hypothetical and relevance conditionals are distinguished by the syntax. In German, the *if*-clauses in hypothetical conditionals are integrated into the main clause in that they occupy the first position in the main clause with verb-second order (206). They are immediately followed by the finite verb, just like other adjuncts. Relevance conditionals, on the other hand, do not count for V2 (207) (as noted for example by König and van der Auwera, 1988; Iatridou, 1991; Köpcke and Panther, 1989; Günthner, 1999; Bhatt and Pancheva, 2006). They are not integrated into the main clause syntax, and the finite verb doesn't immediately follow.[4] The ambiguous English example above (205) is disambiguated by the German syntax as follows (Handke, 1984):

[3]There is one syntactic peculiarity of RCs, that they do not tolerate *then* in the consequent (Iatridou, 1991). This may point to increased unintegration of relevance conditionals even in English.

[4]This clear-cut distinction of integrated hypothetical conditionals and non-integrated relevance conditionals only holds for indicative *if*-clauses. Subjunctive *if*-clauses can also optionally appear non-integrated in German. For more detailed discussion of subjunctive/counterfactual conditionals and RCs, see section 4.3.2.

(206) Wenn du mich brauchst, bleibe ich den ganzen Tag zuhause.
If you me need, stay I the whole day at home.
'If you need me, I'll stay at home all day.' (hypothetical conditional only)

(207) Wenn du mich brauchst, ich bleibe den ganzen Tag zuhause.
If you me need, I stay the whole day at home.
'If you need me, I'll stay at home all day.' (relevance conditional only)

RCs share this property with utterance modifying adverbials (see section 2.3). In fact, discussions of the syntactic properties of utterance modifying adverbials in German often includes the German relevance conditionals (Pittner, 1999). In the next section, I propose an analysis of RCs as an utterance-modifying version of *if*-clauses that explains these similarities.

4.3 The Analysis: 'If' on Two Dimensions

In this section, I propose a new, two-dimensional semantics for relevance conditionals. This analysis is motivated by the three properties of RCs observed above. RCs share the semantic property of unembeddability with conventional implicature items (Potts, 2005), as shown in chapter 2. I show in this section that the two-dimensionality of the meaning is crucial to obtain the correct compositional semantics for RCs, in particular, to explain the straightforward execution of the consequent in RCs. Finally, the fact that RCs are utterance modifying just like adverbs such as *frankly* as discussed in chapter 2 and speech act uses of *denn* (chapter 3) explains the syntactic unintegration of RCs.

I have shown that the *if*-clause in RCs is not embeddable under other semantic operators (see section 4.2.1). Unembeddability of this kind is a hallmark property of conventional implicature items (Potts, 2005; Kratzer, 1999; Bonami and Godard, 2005). I claim, therefore, that in a relevance conditional the conditional relation from the *if*-clause is contributed as a CI, instead of as part of the at issue content: it is a side comment on the main speech

act carried out by the utterance.

The second special property of RCs observed above is that the speech act in the consequent of an RC is straightforwardly executed (see section 4.2.2). This behavior is not surprising in the context of CIs: An utterance "Obviously p" or "Unfortunately p" yields the straightforward assertion that p, as discussed in section 2.4.1. In the same way, an RC "If p, q" carries out the speech act associated with the consequent. The content of the *if*-clause, as discussed above, is contributed as the CI. This move to another semantic dimension, I argue, is the main difference between a regular conditional and a relevance conditional.

4.3.1 Proposal

The discussion so far in this section leads to the main point of my analysis for RCs: In contrast to previous analyses, I argue that RCs contribute their meaning split on two tiers. I propose the following schema for the two-dimensional meaning of relevance conditionals:

(208) Semantics of a Relevance Conditional "If$_{RC}$ p, q":

At Issue Content: q

Conventional Implicature: If p, I utter(q)

According to this analysis, the at issue content of "If$_{RC}$ p, q" is taken to be exactly the same as just uttering "q". In addition, the conditional relation between the contents of p and q is contributed as a CI. This conditional relation is similar to the meanings proposed for RCs in previous analyses (Conditional Assertion Theories or Siegel's (2006) account; see section 4.4). While this conditional alone cannot capture the semantics of RCs correctly (for example, it does not guarantee that the speech act in the consequent is carried out), the crucial innovation in my proposal is the split of the RC meaning into two dimensions. This step yields a semantics that correctly captures our intuitions about the meaning of RCs, as

follows.

First, the truth or execution of the speech act of q does not depend on the *if*-clause, since it is just straightforwardly uttered (see section 4.2.2). Second, the *if*-clause contributes an unembeddable side-comment, that is, a CI (section 4.2.1). These two points, as we have seen, distinguish RCs from regular uses of conditionals.

For illustration, (209–211) show example RCs with their meaning, for a declarative (209), question (210), and a wish (211) in the consequent.

(209) [If you need me later]$_{RC}$, I'll stay at home all day.

At Issue Content: I will stay at home all day.

CI: If you need me later, I utter (I will stay home all day)

(210) If you're so smart, when was the constitution signed?

At Issue Content: When was the constitution signed?

CI: If you're so smart, I ask (when was the constitution signed)

(211) If I don't see you anymore, have a great vacation!

At Issue Content: Have a great vacation!

CI: If I don't see you anymore, I wish (you to have a great vacation)

The meaning proposed here for RCs is in essence parallel to the analysis of speech act uses of *denn* ('because') in German (see chapter 3). Recall that my analysis derives the following meaning for cases of utterance modifying 'because':

(212) Die Antwort ist auf Seite 242, denn von alleine findest du sie wohl nie.
The answer is on page 242, because alone find you it part. never.
'The answer is on page 242, since you will never find it by yourself.'

At Issue Content: The answer is on page 242.

CI: Because you'll never find it by yourself, I utter (the answer is on page 242)

Structurally, utterance modifying *denn*-clauses and RCs are similar: the main clause of the sentence is straightforwardly uttered, and the connective (*denn* or *if*) contributes its semantics on the CI dimension. In chapter 5, I come back to this point that RCs are part of a larger range of constructions with similar semantics.

My analysis of RCs proposed above thus has the advantage that the semantics of RCs and the meaning of utterance modifying *denn*-clauses as analyzed above are compositionally the same. This is desired because the examples in question are intuitively very similar, and they share semantic properties, too, such as unembeddability and the straightforward assertion of the main clause.

However, there is a difference between the CI use of 'because' (*denn*) and *if* in effect. The two-dimensional semantics of the *denn*-case is straightforward, since *denn* is factive about the main clause anyway. It is therefore clear what the CI-level *denn*-clause adds to the whole utterance. The *denn*-clause adds to the assertion of p the causal predication between p and q. The case is different for *if*. Normally, the consequent of an *if*-clause is not known to be true. In an RC, however, we know from the at issue content (208a) that it is true. The entire *if*-statement is thus also trivially true. In this point, my analysis is similar to Siegel's (2006), as well as the conditional assertion accounts (DeRose and Grandy, 1999). For example, Siegel's predicted meaning for RCs is also trivially true, and the actual contribution of the RC comes from the principle of relevance which requires that the two parts of the conditional sentence should be relevant to each other and the context (see section 4.4.2). The fact that the semantic conditional under all these analyses is trivially true may actually match well with our intuitions. This is probably the reason why RCs do not have a normal "conditional" feel to them. Still, I would like to claim that adding an RC *if*-clause to a sentence does have an informative contribution, or net effect. I explore this net effect in the following section.

4.3.2 Net Effect of the *If*-Clause in RCs

Indicative Conditionals

Let's consider again the simplest example of an RC with a declarative consequent:

(213) α: "If you're hungry, there's pizza in the fridge."

At Issue Content: There's pizza in the fridge.

CI: If Addressee is hungry, α utters (There's pizza in the fridge)

Given the at issue content (in this case, an assertion), the conditional in the CI is trivially true. Still, I claim that the *if*-clause is making a real, two-part contribution. In order to see how the first part of this net effect is obtained, I will use some findings about indicative conditionals proposed in (von Fintel, 1999b).

Conditionals come in different shapes. The most important syntactic/morphological distinction is between indicative and subjunctive conditionals. Subjunctive conditionals in English are distinguished from the default (indicative) by special marking in the *if*-clause, and the modal *would* or *might* in the consequent clause (in Romance languages, the *if*-clause is in subjunctive mood, hence the name). Compare the indicative (214) with the subjunctive (215).

(214) If Peter is sick, he stays at home.

(215) If Peter was sick, he would stay at home.

Von Fintel (1999) shows that indicative conditionals may never be counterfactual. The reason for this is a simple presupposition triggered by quantifications, together with the reasonable assumption that bare conditionals have an epistemic modal base. First, the presupposition against empty restrictors: Quantifications should not be vacuous, so quantifications in general carry existential presuppositions about their restrictor. For example, consider quantification over individuals (Heim and Kratzer, 1998). In (216), the quantifi-

cation over first-year students contributes a presupposition that some such students exist.

(216) Every first-year student likes semantics.

For quantification over worlds (as in *if*-clauses), the same kind of presupposition has been used by von Fintel (1999b). He calls it the compatibility presupposition.

(217) Compatibility Presupposition:

A conditional *if p, q* is only defined for a world w if the contextual domain of quantification D(w) includes p-worlds:

$p \cap D(w) \neq \varnothing$ (von Fintel, 1999, (C))

Second, I assume an epistemic modal base for the conditionals in all cases discussed in this paper. This is reasonable since bare conditionals (without an overt modal in the consequent) almost always have an epistemic modal base (Kratzer, 1991). For indicatives in particular, von Fintel (1999b) argues that the epistemic modal base must also be realistic. That is, the domain of quantification must be contained in the context set C (or common ground: the set of worlds currently held possible by the speaker):

(218) Indicative Conditionals (default):

$D(w) \subset C$ (von Fintel, 1999, (VF))

From this condition and the compatibility presupposition, it follows that there are some p-worlds in the context set; that is, the speaker considers it at least possible that p:

(219) (217) $p \cap D(w) \neq \varnothing$

(218) $D(w) \subset C$

$\Rightarrow p \cap C \neq \varnothing$

For our original example RC (213), this means that the CI introduces the presupposition that there are some belief-worlds of the speaker where you are hungry. In other words, the speaker considers it at least possible that you may be hungry. Since the conditional in the

CI itself is trivially true, it doesn't add any new entailments to the at issue content. Its net effect is therefore introducing the presupposition that the antecedent may be possible (according to the speaker).

A check reveals that this prediction is actually correct: the epistemic presupposition is introduced. (220) is odd if the speaker knows that Peter wasn't hungry (in the past).

(220) If Peter was hungry, there was pizza in the fridge.

Thus, the first, epistemic, net effect of the CI contributed by the *if*-clause p in RCs is that the speaker considers p possible. This epistemic net effect is a direct consequence of the conditional shape of RCs. Since they share this effect with regular hypothetical conditionals, this argues for the presence of a conditional operator, despite the fact that RCs intuitively do not feel conditional.

The second part of the net effect has figured centrally in intuitive discussions of RCs as well as some analyses as the notion of relevance. There is good evidence for one notion of relevance: RCs are only felicitous if the antecedent is relevant to the consequent, as demonstrated again in (221).[5]

(221) # If you're hungry later, 2 plus 2 is 4.

[5]Even though relevance has often been called into play for RCs, one may still call into question what should be relevant to what. The evidence presented here shows relevance of the two clauses of RCs to each other. Sometimes it has been claimed that, the antecedent of an RC provides a condition for the relevance of the consequent to the discussion at hand (Franke, 2007), without clear formal discussion of this point. It can be shown that this is not the case, since in most cases the consequent alone is relevant to the discourse and could be uttered by itself. For example, the wish in sentence (239), repeated here, could clearly stand on its own.

(i) If I don't see you anymore, have a great vacation!

In my analysis, this fact follows from the general application of the Maxim of Relevance (Grice, 1975). Clearly, if I choose to utter (221) instead of just "2 plus 2 is 4", the additional *if*-clause should be relevant to the conversation at hand. No special mechanism is needed to rule out (221). The example is odd just as (222) is odd, where two unrelated assertions are provided together.

(222) # You may be hungry later and 2 plus 2 is 4.

Indicative RCs therefore contribute a two-part net effect: First, the epistemic contribution that the speaker considers q possible, and second, the notion of relevance between the *if*-clause and the main clause.

Subjunctive Conditionals

What, on the other hand, happens with subjunctive conditionals? Subjunctive conditionals in English contain a modal *would* or *might* in the consequent and a backshifting of tense in the *if*-clause. They are usually (223), though not always (224), counterfactuals (Anderson, 1951).

(223) If the match had been struck, it would have lit.

(224) If Jones had taken arsenic, he would have shown just exactly those symptoms which he does in fact show.

(223) shows a typical subjunctive conditional which most naturally receives a counterfactual interpretation: the match has not in fact been struck in the actual world. In contrast, Anderson's famous example (224) is not counterfactual, although it shows subjunctive marking. This sentence could be uttered as part of an investigation into Jones' illness, the source of which hasn't been established yet. Thus, the speaker of (224) doesn't know whether Jones has taken arsenic, and it may in fact still be the case that he has (in the actual world). The sentence is even taken as supportive of the hypothesis that Jones has

taken arsenic, rather than as denying it.

RCs with a modal *would* or *might* in the consequent are impossible. For an example, consider (225), disregarding tense for now. This sentence only has a regular ("magic") counterfactual conditional reading, not an RC reading.

(225) # If you had been hungry, there would have been pizza in the fridge.

At Issue Content: There would have been pizza in the fridge.

CI: If you had been hungry, I utter (there would have been pizza in the fridge)

The reason for this is a morphological limitation: The subjunctive *would* cannot be modifying the covert utterance operator. Since *would* is part of the overt material in the clause, it must be below the utterance boundary. A true subjunctive RC (meaning "If p, I would utter q") is therefore unpronounceable. A sentence like (225) would then receive the CI "If you had been hungry, I utter that there would have been pizza in the fridge", and at issue content "There would have been pizza in the fridge". The subjunctive *would* is odd here. This is expected, since it would be equally weird if, out of the blue, after learning that your stomach has been grumbling before I utter "There would have been pizza in the fridge".

Thus, subjunctive RCs like (225) are impossible because the modal *would* is not in the right place. In his paper, von Fintel (1999b) considers the presence of the modal *would* or *might* the crucial marker for subjunctive conditionals. He acknowledges, though, that counterfactual uses of conditionals without a modal are possible, such as:

(226) If you had needed money, there was plenty in my bank account.

(von Fintel, 1999, fn. 2)[6]

Examples such as (226), which are counterfactual, but without the modal in the consequent to mark this, seem to point to the fact that the subjunctive marking in conditionals is

[6]Von Fintel attributes this example to Johnson-Laird via McCawley.

done jointly by the modal in the consequent and the tense shifting in the *if*-clause, after all. Without wanting to go into too much detail in the semantics of counterfactuals here, I think it is safe to say that (226) definitely is not "indicative" in von Fintel's sense (218). The quantification in (226) does involve a domain which includes non-context worlds, since it is counterfactual. The example furthermore seems to have a clear RC interpretation: the consequent is uttered straightforwardly and does not depend on the *if*-clause. What then does this type of RC mean?

Von Fintel (1999) argues that subjunctive conditionals extend the domain of quantification beyond the context-worlds. This potentially allows for counterfactual uses.

(227) Subjunctive Conditionals:

$D(w) \nsubseteq C$ (von Fintel, 1999, (VF′))

That is, the domain of quantification is partly outside the context set for subjunctives: we're at least partly considering worlds where things aren't the way we think (have agreed) that they are. This is the (only) difference between indicative and subjunctive conditionals. I take von Fintel's condition for subjunctive conditionals (227) to apply both to obvious subjunctives such as (223), as well as the less obvious case without *would* in (226).

Given this domain extension in subjunctives, the existential presupposition contributed by the *if*-quantification does not warrant a conclusion that antecedent-worlds are epistemically possible. Formally, from (217) and (218), (219) follows, but from (217) and (227), nothing about the possibility of antecedent-worlds can be concluded:

(228) (217) $p \cap D(w) \neq \varnothing$

(227) $D(w) \nsubseteq C$

$\nRightarrow p \cap C \neq \varnothing$

Thus, the conditional contributed as a side comment (CI) by the antecedent of the RC does not have the same net effect of epistemic possibility as the indicative RCs. The other

principle is however still at play here. This is the principle of relevance which has also been employed in previous accounts of RCs (Siegel, 2006). For the analysis presented in this paper, this means that at least the condition stated in the *if*-clause has to be relevant to the consequent. That is, we have the following meaning: The consequent is asserted straightforwardly. Furthermore, a conditional is uttered. This conditional is trivially true (because its consequent is known to be true). But adding the RC *if*-clause to the statement in the consequent still has a communicative effect, since the proposition in the *if*-clause is relevant to the matrix proposition.

To sum up this section 4.3.2: I have introduced a new semantics for relevance conditionals where, crucially, the semantic contribution of "If$_{RC}$ p, q" is split between at issue content and conventional implicature. This two-dimensional account, independently motivated by the semantic unembeddability of the RC and by the straightforward utterance of the consequent, produces a third result that characterizes RCs: given the at issue content, the contribution of the CI reduces to a two-part net effect for indicatives. First, the speaker considers the antecedent possible, and second, the *if*-clause must be relevant to the consequent. While true subjunctive RCs are impossible because of the morphological limitation regarding the placement of the modal *would,* counterfactual RCs may still be uttered (albeit without the modal). In that case, although the epistemic presupposition is not triggered, the conditional meaning in the CI dimension still contributes at least the second part of the net effect, that the *if*-clause constitutes a relevant proposition to the utterance.

4.3.3 Discussion

In this subsection, I discuss some further points regarding my analysis of RCs.

"Conventional" Implicature?

One question regarding the status of RCs might arise at this point. *Conventional* implicatures (CIs) are traditionally so-called because these meanings are typically associated with particular words or phrases by convention. Classical examples for CIs are discourse connectives like *therefore*, which always introduce CI-type meanings.

(229) He is an Englishman. He is, therefore, brave.

(Grice, 1975, p. 44)

The case of RCs is slightly different. A conditional expression is used to convey a CI-type meaning instead of its regular (assertion-type) meaning. In English, there is no syntactic or lexical difference between regular and relevance conditionals.[7] Finally, the exact conditional expression used is not crucial. Relevance readings are possible for conditional sentences without *if*:

(230) In case you're hungry, there's pizza in the fridge.

(231) Should you need me later, I'll be at home all day.

Nevertheless, this is no counterargument against the RC's status as conventional implicature items. There are some other specific constructions that have been argued to contribute their meaning on the CI dimension, for example nominal appositives (Potts, 2005) and non-restrictive relative clauses (Potts, 2002a). In these cases, just as for RCs, no specific lexical item with an exclusively CI-type meaning may be identified. Still, the constructions exhibit all the semantic properties of CI-hood (speaker-orientedness, independence of the assertion, unembeddability, etc.). In addition, although the traditional focus has been on both lexical items and constructions that unambiguously convey CIs, it has been shown that certain items can be ambiguous between CI and non-CI uses (see for example chapter 3

[7] In other languages, as noted, this is not necessarily the case. Word order clearly disambiguates between the two cases in German.

for English *because*). It is therefore clear by now that conventional implicatures constitute a separate dimension of meaning (distinct from assertions and presuppositions), on which semantic pieces (meanings of lexical items or constructions) can be contributed.

Embedding under Attitude Verbs

In his logic for conventional implicature, Potts (2005) assumes that CI items are always unembeddable under other operators. In fact, this is an axiom in the theory, since there are no semantic operators that take CI type meanings as their arguments. As an example, he analyzes expressive content such as *damn* and shows that these items are always unembeddable.

(232) If I look after Sheila's damn dog while she is on holiday, then I expect to get paid. (Potts, 2005, (2.37d))

(233) Bush: # Clinton says the damn Republicans should be less partisan. (Potts, 2005, (5.15b))

In (232), the speaker's negative attitude towards Sheila's dog (expressed by *damn*) is not part of the condition on whether he or she wants to get paid. *Damn* is not semantically embedded here. This unembeddability holds even for saying verbs, as shown by (233). The utterance is infelicitous for a member of the Republican party because the negative attitude contributed by *damn* cannot be attributed to the subject of *say*, but must go to the speaker.

Nevertheless, there are a variety of words that have been analyzed as CI items. Some of these are not entirely categorical in their unembeddability. In particular, it has been noted that some CI items *can* be embedded under certain attitude verbs.

For example, in her paper on the German discourse particle *ja*, Kratzer (1999) observes that although *ja* does not normally embed, it can appear embedded under verbs of reported speech, such as *say* or *claim*.

(234) Sie kann ja nicht kommen, weil sie ja doch ihre Zwillinge
She can JA not come, because she JA DOCH her twins
versorgen muss.
take care of must.
'She JA cannot come, because she JA DOCH must take care of her twins.'
(Kratzer, 1999, ex. (7a))

(235) Webster sagte, dass er ja niemanden gekannt habe.
Webster said, that he JA nobody known had.
'Webster said that he JA hadn't known anybody.'
(Kratzer, 1999, ex. (12))

The exact contribution of *ja* is still a matter of discussion, but Kratzer (1999) approximates "JA (p)" with "the addressee may already know that p". The particle *ja* in the *because*-clause of (234) is not properly semantically embedded under *because*: The reason why she can't come is just that she has to take care of her twins, not that this fact may be known to the addressee. On the other hand, *ja* is embedded under *say* in (235), since the meaning of *ja* may be part of the reported speech situation (part of what Webster said).

Similarly, Bonami and Godard (2005) show that evaluative adverbs in French like *malheureusement* ('unfortunately') can be embedded under some attitude verbs (see also section 2.2). Again, speech verbs are the most notable exception to the unembeddability of the evaluative adverbs. An example of embedding under a speech verb is given in (236). According to the authors, the speaker of (236) may find it not at all extraordinary that a priest may lose his faith. Thus, the strangeness is ascribed to the agent of the speech verb *explain*.

(236) Marie expliquait que le prêtre, bizarrement, avait perdu la foi.
Marie explained that the priest, strangely, had lost the faith.
'Marie explained that the priest, strangely, had lost his faith.'
(Bonami & Godard, 2005, ex. (26))

From these examples I conclude that not all conventional implicature items are equal. While one class of CI items, as discussed by Potts (2005), may refuse all semantic embed-

ding categorically, there is at least another class of CI items that allow for some limited embedding under certain attitude verbs, most notably speech verbs. This class of CI items includes the German particle *ja*, French evaluative adverbs, as well as the relevance conditionals discussed in this chapter (see examples (186), (188–190)). Since Potts' logic is hard-wired to account for only strictly unembeddable CIs, it is an interesting question for future research to determine the exact mechanism deriving the correct semantics of the limited embedding for the second type of CIs.

4.4 Previous Accounts

Relevance conditionals (RCs) have been studied for over 40 years in linguistics; accordingly, there are many proposed accounts for their syntactic and semantic properties. In this section, I review some approaches to RCs. The earlier accounts fail to characterize the semantics of RCs accurately. In the following, I will first discuss the conditional assertion accounts, paying closer attention to (DeRose and Grandy, 1999) as one example. Then, I review two recent proposals that differ significantly from these earlier approaches: Siegel's (2006) use of potential literal acts and Ebert et al.'s (2008) view of RCs as topics.

4.4.1 Conditional Assertion Accounts

A range of proposed analyses of RCs have employed a variant of a "Conditional Assertion" account (see for example (DeRose and Grandy, 1999)). Roughly, these analyses predict a meaning as in (237) for RCs.

(237) If you're hungry, I ASSERT (there's pizza in the fridge).

This approach tries to explain the fact that the truth of the consequent does not depend on the antecedent in RCs by claiming that instead what is dependent on the antecedent is

the performance of the speech act in the consequent (Franke, 2007). The speech act is performed if the antecedent is true.

It is relatively easy to see that this cannot be the correct semantics for RCs. Clearly, in (238), the statement of the waiter's name has been successfully carried out even if the guests won't need anything later.

(238) If you need anything else later, my name is James. (Siegel, 2006, ex. (4))

(239) If I don't see you anymore, have a great vacation!

Similarly, the wish expressed in the consequent of (239) has been felicitously carried out, even if the speaker runs into the addressee a week later. The conditional assertion approach predicts the wrong semantics for these and other cases (Siegel, 2006, see also).

4.4.2 Existential Quantification over Potential Literal Acts

In a recent paper, Siegel (2006) proposes that RCs are conditionals that involve existential quantification over potential literal acts (potential assertions, potential questions, etc.). Siegel's analysis has two main ingredients. First, the *if*-clause is taken as a plain *if*-clause as part of the assertion made by the RC (as opposed to the previous conditional assertion accounts). Second, for the consequent, Siegel motivates the introduction of existential quantification over potential speech acts. She justifies this move with her claim that the consequent of an RC is not straightforwardly asserted. Siegel argued that the consequent of an RC is not asserted based on examples like (202), discussed in section 4.2.2. The example is repeated here:

(240) [In front of the bar:] If they ask you how old you are, you're 21!

She claims that "you're 21" is not true in the given context, and therefore not entailed by the sentence (since the entire utterance may be true without the consequent being true). She concludes that the consequent is not asserted in (240).

According to Siegel's account, a typical RC like (241) is paraphrased as in (242).

(241) If you're hungry, there's pizza in the fridge.

(242) If you're hungry, there is a (relevant/salient) assertion that there's pizza in the fridge.

(242) claims that in case you're hungry, a certain assertion exists. This assertion is, according to Siegel, not necessarily an actual (carried-out) speech act, but merely a potential literal act.[8] In this sense, it is my understanding that any potential assertion must exist, even false assertions or assertions that never happen. Therefore, the meaning of (241) under Siegel's account is more explicitly represented as in the following:

(243) If you're hungry, there exists a potential assertion 'There's pizza in the fridge' and this assertion is relevant/salient.

In this paraphrase, since the potential assertion always exists, the second part (claiming relevance/salience of this assertion) is the main contribution of the RC.

There are some shortcomings to Siegel's approach. First, I illustrated in section 4.2.2 that the consequent of an RC is in fact, contra (Siegel, 2006), carried out straightforwardly. This is supported by the fact that, on the one hand, consequents of RCs can often be used independently of the *if*-clause, even when they are complex speech acts (like "You're 21!"). And on the other hand, the Japanese particle *yoku* which can only appear in straightforwardly asserted clauses can be used in RCs, if its unrelated backgroundedness-requirement

[8]It is unclear to me how Siegel (2006) would guarantee that the speech act in the consequent of an RC is actually carried out. This is especially important in cases where the speech act in question is not merely an assertion, such as for the wish in (239), which has clearly been offered no matter what. Another good example of this is found in RCs with question complements (i): these RCs compell the hearer to answer in just the way that unembedded questions do.

(i) If you're so smart, when was the constitution signed?

is controlled for in a suitable way. The proof that the consequent of RCs is in fact asserted thus yields the move to potential assertions introduced by Siegel unnecessary.

More importantly, Siegel's proposal cannot account for the other striking property of RCs demonstrated in section 4.2.1: RCs cannot be embedded under semantic operators (including negation, questions, conditionals, and most attitude verbs). If RCs are simply regular conditional sentences that involve quantification over potential assertions, unembeddability is completely unexpected. For Siegel, the meaning of an RC is simply the proposition that under some condition, a potential speech act is relevant (see (243)). This proposition can be embedded like any other proposition. For example, what would an RC under negation mean, according to this analysis?

(244) It's not the case that, if you're hungry, there's pizza in the fridge.

Keeping the meaning for the RC constant, one would predict that the meaning in (245) should be possible.

(245) The following is not the case: If you're hungry, there is a potential assertion 'There's pizza in the fridge' and this assertion is relevant/salient.

Now, a potential assertion 'There's pizza in the fridge' definitely exists. Still, this interpretation is not trivial or meaningless. It could be that pizza being in the fridge is irrelevant because it has gone bad or you don't like pizza anyway. However, no such meaning can actually be conveyed with (244), since the RC is impossible embedded under negation. Siegel's account cannot derive this, since it predicts a non-existent meaning for (244).

Consider now RCs that appear syntactically embedded within another conditional. The example discussed earlier is repeated here, along with its predicted meaning according to Siegel (2006).

(246) If there's pizza in the fridge if you're hungry later, you should eat it.

(247) If there is a potential assertion ‘There’s pizza in the fridge’ and this assertion is relevant if you’re hungry later, then you should eat the pizza.

The paraphrase (247) could be reasonably used to express that if there being pizza in the fridge would be relevant to you if you’re hungry later (e.g., because you like pizza), then you should eat it. However, this meaning is not conveyed by (246), since the RC cannot in fact be semantically embedded within another *if*-clause.

Finally, Siegel’s semantics would also predict a non-existent reading for RCs properly embedded under questions, such as (191), repeated here with its predicted meaning.

(248) Tell me whether if I’m hungry later, there’s pizza in the fridge.

(249) Tell me whether if I’m hungry later, there is a potential assertion ‘There’s pizza in the fridge’ and this assertion is relevant.

If (248) could have the paraphrase in (249), then it could be used to inquire whether a potential assertion “there’s pizza in the fridge” could be relevant to me in case I am hungry (for example “do I like pizza?”). But there is no such interpretation for (248): The only available reading is the one where the RC is not actually embedded under the question, and the *if*-clause is taken to be outside of the question operator.

In general, we can observe that Siegel’s proposal for the meaning of RCs makes the conditional sequence a regular assertion (of some conditional circumstance). Accordingly, RCs should then behave exactly like other conditionals when embedded. We have seen that this is not the case. While regular conditionals are readily semantically embedded, RCs refuse embedding.

To sum up, I have pointed out two shortcomings in one of the most recent accounts of relevance conditionals: First, I have argued that the move to potential speech acts is unnecessary, because the consequent of an RC can, consistent with our intuition, be taken as a straightforwardly executed – not just potential – speech act. Second and more importantly,

I have shown that the analysis does not account for the semantic unembeddability of RCs.

4.4.3 Relevance Conditionals as Topics

Another group of researchers has also recently noted that the semantics predicted for relevance conditionals by these previous analyses is too weak. Ebert et al. (2008) propose another new account of RCs, unifying them with a type of sentence topics. They observe a syntactic parallelism between hypothetical (indicative) conditionals and so-called aboutness topics on the one hand, and between relevance conditionals and frame-setting topics on the other hand.

Aboutness topics are generally marked by German left dislocation (GLD) as in (250), they express the entity that the sentence is about. Frame-setting topics can be marked by hanging topic left dislocation (HTLD), as in (251), establishing a frame according to which the following sentence is relevant.[9]

(250) Den Pfarrer, den kann keiner leiden.
The-ACC pastor, RP-ACC can nobody like.
'The pastor nobobdy likes.'

(251) As for the pastor, the wedding sermon was wonderful.

(Ebert et al., 2008) note the following two differences between GLD and HTLD: (i) GLD requires a resumptive weak d-pronoun (RP), while HTLD can have other types of pronouns or lack any pronoun referring back to the topic, as in (251). (ii) Binding into the topic phrase is allowed in GLD, but prohibited in HTLD:

(252) Seinen$_i$ Vater, den verehrt jeder$_i$.
His father, RP admires everybody.
'Everybody admires his father.'

(253) * Sein(en)$_i$ Vater, jeder$_i$ verehrt ihn.
His father, everybody admires him.

[9] Examples (250–255) from (Ebert et al., 2008).

Intd.: ‘Everybody admires his father.’

Based on these differences, one has two options in order to disambiguate between the two constructions. To get an (unambiguous) example of GLD, we can use binding (since HTLD doesn’t allow it). And in order to get a clear example of HTLD, we can use a regular pronoun or no pronoun (since GLD requires a weak d-pronoun). I will use these strategies in the following examples in this section to distinguish between the two topic-marking constructions.

(Ebert et al., 2008) propose an analysis of relevance and regular conditionals as two types of topics. To draw the parallelism, they argue that the particle *then* can be taken as the proform in conditionals. It can appear in hypothetical, but not in relevance conditionals. Furthermore, they note that binding is possible into the antecedent of hypothetical conditionals, as in (254), but not into the antecedent of RCs, as shown in the ungrammatical (255).

(254) Wenn man sie$_i$ gut pflegt, dann blüht jede Orchidee$_i$
If one it well groom, then blossoms every orchid
mehrmals im Jahr
several times in the year.
‘Every orchid blossoms several times a year if you groom it well.’

(255) * Wenn du etwas über sie$_i$ wissen willst, jede Orchidee$_i$
If you something about it to know want, every orchid
blüht mehrmals im Jahr.
blossoms several times in the year.
Intd.: ‘If you want to know something about it, every orchid blossoms several times a year.’

It turns out that regular conditionals share both properties, namely the presence of a pro-form, and the possibility of binding, with GLD. On the other hand, both HTLD and relevance conditionals do not contain a pro-form or instances of binding. Based on this parallelism between conditionals and topics, (Ebert et al., 2008) use an analysis of conditionals as definite descriptions by Schlenker (2004) and the interpretation of topics as

reference acts (REF) proposed by Endriss (2006), to argue for the following semantics of hypothetical (256) and relevance conditionals (257):

(256) a. If Peter went shopping, then there is pizza in the fridge.

b. $\text{REF}_X(\iota_{w_\text{o}} w[\text{went\_shopping}(w)(\text{peter})])$ & ASSERT(pizza_is_in_the_fridge(X))

(257) a. If you are hungry, (* then) there is pizza in the fridge.

b. $\text{REF}_X(\iota_{w_\text{o}} w[\text{hungry}(w)(\text{listener})])$ & ASSERT(pizza_is_in_the_fridge(w_o))

In both cases, the *if*-clause establishes a reference to the most similar world where the antecedent is true, call this world X. This referent X is picked up in the consequent of a hypothetical conditional by the pro-form *then*. This results in the part of the formula "pizza_is_in_the_fridge(X)" asserted by using a hypothetical conditional.

In a RC, on the other hand, there is no variable that could pick up the referent from the antecedent. This can be seen in the formula from the fact that "pizza_is_in_the_fridge" is predicated of w_o. The RC consequent is just asserted straightforwardly in the actual world (as I have shown in section 4.2.2 as well). As a result, the only connection between the antecedent and consequent in the RC is the fact that adjacent speech acts should be relevant to each other.

This analysis looks quite promising in terms of the empirical range it attempts to cover. It can account for the two syntactic facts. First, that RCs don't have the pro-form *then* in them, and second, the impossibility of binding into the RC *if*-clause, which points toward syntactic unintegration of the two clauses in RCs. Ebert et al. (2008) also note the straightforward assertion of the consequent in RCs, as I do above. Further, their proposal could probably account for the semantic unembeddability of RCs: since the consequent of the RC is always predicated of w_o, it refers to the actual world and cannot be bound by higher operators (but see below for more discussion of this). Finally, the approach to the feeling of "relevance" in RCs is identical to the one pursued in this thesis: relevance is a consequence of general Gricean principles governing coherent discourse.

Still, I would like to point out several empirical doubts about the proposed parallelism between the two types of conditional sentences and two types of topics, which is the backbone of the analysis.

First, while syntactic integration is mandatory in regular conditionals in German, GLD shows no syntactic integration into the main clause. See (258) for a clear verb-second (non-pronoun-initial) example of GLD.

(258) Seine$_1$ Frau, jeder Linguist$_1$ verwöhnt die anscheinend mit großer
His$_1$ wife, every linguist$_1$ spoils RP apparently with great
Freude.
joy.
'His wife every linguist apparently likes to spoil.' (Frey, 2005, (51a))

Recall that binding into the left dislocated element is only allowed with GLD, which guarantees that this is the correct construction. Using a different kind of pronoun would yield an example of HTLD, but then there can be no binding.

(259) Seine$_{*1}$ Frau, jeder Linguist$_1$ verwöhnt sie anscheinend mit großer
His$_{*1}$ wife, every linguist$_1$ spoils her apparently with great
Freude.
joy.
'His (i.e., John's) wife every linguist apparently likes to spoil.'

Second, the pro-form (d-pronoun) in German left dislocation is the obligatory marker of the construction, whereas the supposedly parallel pro-form *then* in conditionals is optional. The d-pronoun in GLD can appear in the Mittelfeld, immediately following the finite verb (261). In this case, another constituent must take up the preverbal position, between the left dislocation and the finite verb.

(260) Den Pfarrer, den kann keiner leiden.
The pastor, RP can nobody stand.

(261) Den Pfarrer, keiner kann den leiden.
The pastor, nobody can RP stand.

(262) * Den Pfarrer, keiner kann leiden.
The pastor, nobody can stand.
'The pastor, nobody can stand.'

As shown by (262), the resumptive d-pronoun cannot be dropped in GLD. In regular conditionals, the "d-pronoun" *dann* ('then') is optional (263). Furthermore, the *if*-clause is immediately followed by the finite verb because of obligatory syntactic integration.

(263) Wenn der Kater Hunger hat, miaut er.
If the cat hunger has, meows he.
'If the cat is hungry, he meows.'

Third, the free variable in HTLD is able to optionally refer back to the referent that has been established in the topic establishment speech act. For example, in (264), the pronoun *ihn* does refer back to the pastor, whose reference has been established by the topic. This sentence is clearly an example of HTLD, since the pronoun that appears is not a weak d-pronoun (the relevant form would be *den*), and since the left dislocated element can be in nominative case (not necessarily agreeing with its position in the main clause).

(264) Der/den Pfarrer, keiner kann ihn leiden.
$\text{The}_{\text{nom/acc}}$ pastor, nobody can him like.
'The pastor, nobody likes him.'

Complete parallelism for the conditionals would predict that there are RCs that have a regular conditional reading (where the world referent established by the *if*-clause is picked up in the consequent). This is impossible in German, as has been observed.

Fourth, the analysis of topics as speech acts crucially requires that the topic establishment occurs before the original utterance that makes reference to it. Changing the order is impossible, as shown here for HTLD:[10]

[10]With accusative case on the dislocated element, positioning this element to the right of the sentence is possible. But in this case, the dislocated phrase is an apposition. It just can't be a topic, if it appears to the right, as is also predicted by the speech act of topic reference.

(265) * Keiner kann ihn leiden, der Pfarrer.
Nobody can him like, the-NOM pastor.
'Nobody likes him, the pastor.'

In contrast, the antecedents of conditionals can be ordered after the consequent, both in hypothetical as well as in relevance conditionals:

(266) There's pizza in the fridge if Peter went shopping.

(267) There's pizza in the fridge, if you're hungry.

Beyond these empirical shortcomings I would like to point out some theoretical drawbacks of the proposed account. As we have seen in the previous chapter, and I will further discuss in chapter 5, relevance conditionals are a part of a more general phenomenon. Adverbs and discourse connectives have regular, propositional uses, and also a speech-act use. It is clear that RCs share the semantic and syntactic properties with *frankly*-type adverbs and with speech-act uses of *denn* ('because'). But the topic approach proposed in (Ebert et al., 2008) cannot apply to these other constructions. While there is an analysis that reduces (antecedents of) conditionals to a reference act, such a move is impossible for *because*. If one wanted to carry over the topic approach to sentences with *denn* ('because'), one could cover the fact that the matrix clause stands by itself as the assertion of the sentence. But one would still need to add the CAUSE-predication introduced by *denn*. Thus, one cannot do away with the conventional implicature. The same reasoning applies to *frankly*. Since we need the conventional implicature anyway, however, I have shown that the other properties of RCs follow from this alone: the fact that the consequent is asserted straightforwardly and the conditional meaning is added as a side comment in the CI

(i) Keiner kann ihn leiden, den Pfarrer.
Nobody can him like, the-ACC pastor.
'Nobody likes him, the pastor.'

dimension.

I would like to conclude that the topics as speech acts approach is a promising account for relevance conditionals that captures many of their syntactic and semantic properties. In contrast to previous accounts, it produces a semantics that is strong enough to cover the intuitive meaning of RCs. But according to the data I have shown, it unifies RCs with the wrong set of constructions. Therefore, this approach fails to account for the wide-reaching and much-noted parallelism between relevance conditionals and relevance readings of adverbs and other types of discourse connectives. My proposal does capture this parallelism, and predicts the same semantic and syntactic properties of RCs.

4.5 Summary

In this chapter, I propose a new analysis of relevance conditionals. In particular, I show two things. First, the semantic unembeddability of relevance conditionals demonstrates that the contribution of the *if*-clause in RCs must be located on the dimension of conventional implicatures. Second, I argue that the consequent is asserted straightforwardly. The proposed meaning of a relevance conditional "If p, q" is therefore the assertion of q and the conventional implicature "If p, I utter q". The side comment (CI) taken together with the assertion contributes a two-part net effect: First, that the speaker considers p epistemically possible in indicative conditionals, and second, that the *if*-clause is relevant to the content of the main clause.

This analysis of relevance conditionals correctly captures their semantic and syntactic properties: RCs are unembeddable under semantic operators other than selected attitude verbs and their consequent does not depend on the truth of the antecedent. The analysis explains why a conditional form does intuitively not lead to a conditional meaning in RCs. Furthermore, the obligatory syntactic unintegration of RCs in V2 languages like German is

explained by the fact that RC *if*-clauses are utterance modifying CI-type adjuncts.

Importantly, the approach proposed here allows for a parallel treatment of a type of sentence adverbs (chapter 2) and other connectives like *because* (see the previous chapter 3). I have shown that these items also have relevance (i.e., utterance modifying) readings with the same semantic and syntactic properties. A successful analysis of RCs should be able to account for this fact. In the next chapter, I will fill this need by bringing together the analyses in the previous three chapters. I will also examine the small differences in behavior that arise from the different lexical meanings of the studied items, and I will add a case study of *although* to complete the paradigm.

Chapter 5

A Paradigm of Adjuncts on Two Dimensions

In the previous three chapters, I have discussed several types of modifiers contributing their semantics on the two semantic dimensions of assertion and conventional implicature: sentence adverbs, 'because'-clauses, and conditionals. In this chapter, I bring together these individual analyses. I show that they are part of a paradigm where modifiers can be used on either dimension, with common syntactic and semantic properties across the different constructions.

5.1 Taking Stock

In the previous literature, the constructions analyzed in the previous chapters have sometimes been discussed together because they have intuitively similar meanings. For example, Rutherford (1970) looks at what he calls "restrictive" and "non-restrictive" subordination. The former includes regular uses of connectives such as *because* and *although*, as well as regular conditional uses of *if, unless, in case*, etc. The latter is a term for relevance

conditionals, as well as similar relevance-type readings for the other connectives.

In the previous chapters of this dissertation I have discussed several of the modifiers on this list, and given them analyses as conventional implicature items. For example, in chapter 3, we have already seen extensive discussion of uses of *denn* ('because') that are parallel to relevance conditionals (repeated in (210)). These are the speech act uses of *denn*. (268) shows again such an example of a relevance (or non-restrictive) use of the causal connective *since*.

(210) If you're so smart, when was the constitution signed?

At Issue Content: When was the constitution signed?

CI: IF you're so smart, I ask (when was the constitution signed)

(268) Since you're so smart, when was the constitution signed?

At Issue Content: When was the constitution signed?

CI: CAUSE (you're so smart, I ask (when was the constitution signed))

In (268), there is clearly a causal connection expressed, but the *since*-clause does not give the reason for the main clause. Rather, the sentence means approximately "Since you're so smart, *I ask you:* when was the constitution signed?". The crucial ingredients of the analysis are parallel to the analysis of RCs proposed in the previous chapter: It can be shown that the at issue content is merely the question "When was the constitution signed", and the causal relation between the *because*-clause and the utterance of that question is contributed as a side comment.

Similarly, in chapter 2 we have seen utterance modifying adverbs such as *frankly*. They have been given a parallel analysis: the at issue content ignores the contribution of the adverb, and the adverb introduces a side comment (CI) which modifies the utterance value of its complement:

(269) Frankly, I could care less what you think.

At Issue Content: I could care less what you think.

CI: I say FRANKLY (I could care less what you think)

In all three cases the analysis is essentially the same, and this reflects nicely the fact that the three cases share important semantic behavior, such as semantic unembeddability and the assertion of the main clause (at issue content).

5.1.1 Syntactic Unintegration

There is additional syntactic evidence from languages with verb-second word order like German for the fact that these different cases of utterance modifiers deserve a common analysis. Recall that relevance readings for German connectives are only available if the two clauses are syntactically separated from each other. In German, conditionals are thus unambiguously either of the regular (hypothetical) type, or the relevance type. Regular conditional clauses are integrated into the main clause and immediately followed by the finite verb (270a), whereas relevance conditionals are syntactically unintegrated (270b).

(270) a. Wenn du mich brauchst, bleibe ich den ganzen Tag zuhause.
If you me need, stay I the whole day at home.
'If you need me, I'll stay at home the whole day.'
(regular conditional only)

b. Wenn du mich brauchst, ich bleibe den ganzen Tag zuhause.
If you me need, I stay the whole day at home.
'If you need me, I'll stay at home the whole day.'
(relevance conditional reading only)

In the regular hypothetical conditional (270a), the initial *if*-clause takes up the obligatory first position in the German sentence structure, and is immediately followed by the finite verb *bleibe* ('stay'). In contrast, relevance conditionals as in (270b) are outside of the verb-second structure of the clause. Another constituent (argument or adjunct) occupies the first position and is then followed by the verb. The relevance conditional *if*-clause doesn't

count for V2 in German.

This syntactic unintegration was also shown for the utterance modifying adverbs in section 2.3. These adverbs cannot be followed by the finite verb, i.e., they cannot be in the initial topic position of the V2 clause:

(271) * Mal ehrlich / * Von Frau zu Frau ist er wirklich nicht so
Honestly / From woman to woman, is he really not so
schlau.
smart.
'Honestly / From woman to woman, he really isn't that smart.'

(272) Mal ehrlich / Von Frau zu Frau, er ist wirklich nicht so schlau.
Honestly / From woman to woman, he is really not so smart.
'Honestly / From woman to woman, he really isn't that smart.'

For German *denn* ('because'), this property cannot be tested because *denn* is a coordinating conjunction. The *denn*-clause therefore cannot appear initially in a sentence. But there is another way of expressing the same meaning: the subordinating conjunction *weil* can be used synonymously with *denn* (as a CI level connective) when it is sufficiently phonologically marked (phonologically separated). In that case, it can also appear initially, and we can test the syntactic (un)integration:

(273) * Weil du es selbst nie findest\↘, ist die Antwort auf Seite
Because you it yourself never find\↘, is the answer on page
242.
242.
'Because you'll never find it by yourself, the answer is on page 242.'

(274) Weil du es selbst nie findest\↘, die Antwort ist auf Seite
Because you it yourself never find\↘, the answer is on page
242.
242.
'Because you'll never find it by yourself, the answer is on page 242.'

This shows that even for 'because', an utterance modifying CI use is accompanied by syntactic unintegration, that is, failure to count for V2. This parallel further supports a

unified analysis of all these cases: utterance modifying adverbs and 'because'-clauses, and relevance conditionals. In the following, I show how the analyses put forward in the previous chapters match up and where there are small differences between the constructions.

5.1.2 Argument Types of CI Modifiers

A possible unified account for the utterance modifying examples with *because* and *if* states that, for each of these connectives, the piece of meaning (or semantic operator) associated with the connective stays the same, but it can be contributed on different dimensions: as an assertion in the regular case, or as a conventional implicature to yield a "relevance"-type reading. This confirms exactly the approach that I have proposed in this paper: relevance conditionals contain just a regular *if*, which is however contributed as a conventional implicature, and which applies to the utterance of the consequent. We have therefore identified what all the relevance-type uses have in common, namely contribution of the semantics on the conventional implicature dimension and the fact that they modify the utterance.

At the same time, there are some differences between the uses of *because* and *if* and the sentence adverbs that I have discussed in the previous three chapters of this dissertation. One notable open question is the number of distinct readings that are possible. For *because*, there is good reason to identify three separate CI-type meanings in addition to the assertion-level reading (*weil* in German) which is always propositional (275): there are propositional (276), epistemic (277) and speech-act (utterance modifying; (278)) readings for CI-type *because* (*denn* in German).

(275) Peter didn't go home because he has a headache (he left because he was bored).

(276) Die Straße ist naß, denn es hat geregnet.
The street is wet because it has rained.
'The street is wet because it rained.'

(277) Es hat geregnet, denn die Straße ist naß.
It has rained because the street is wet.

‘It must have rained, because the street is wet.’

(278) Die Lösung ist auf Seite 242, denn du findest sie sonst nie.
The solution is on page 242, because you find it otherwise never.
‘The solution is on page 242, since you’ll never find it otherwise.’

Now how many of these are attested for the sentence adverbs, as well as conditionals? In the chapter on sentence adverbs (chapter 2), we saw three types. First, propositional adverbs such as *probably*. These adverbs are semantically embeddable (see section 2.2) and are syntactically integrated in the V2 language German. Thus, they are an example of an assertion-level propositional operator (comparable to regular verb-final *weil*). Second, evaluative adverbs such as *unfortunately* are not semantically embeddable and have thus been analyzed as CI items. Their semantic argument is the proposition that their complement provides. Finally, utterance modifying adverbs such as *frankly* do just that: their semantic argument is the utterance value of their complement. Therefore, they do not count for V2 (since they are outside the utterance). Their semantic unembeddability follow from the fact that they are CIs. It is notable that the fourth kind of adverb seems not to exist. I have not found any adverb (in any language I know) that has an epistemic reading parallel to the epistemic use of *because* such as:

(279) John is home, because his light is on.

For adverbs, we would be looking for an adverb such as *smartly* so that the utterance “Smartly p” expresses roughly that p, adding a side comment “I am smart in knowing that p”. However, no such adverb seems to exist. This is of course puzzling. In chapter 3 I mentioned that the epistemic and utterance readings of *denn* (‘because’) have sometimes been analyzed as just one reading. The lack of adverbs with a separate epistemic interpretation seems to be a point in favor of this approach as well.

For conditionals, I have discussed only a binary contrast in this chapter: regular hypothetical conditionals versus relevance conditionals. While hypothetical conditionals are

	because	*if*	adverbs
assertion			
propositional	✓	✓	✓
CI			
propositional	✓	–	✓
epistemic	✓	–	–
utterance	✓	✓	✓

Table 5.1: Argument options for multi-dimensional operators (1).

assertion-level, and therefore semantically embeddable, I have argued in this chapter that RCs are CIs which modify the utterance value of their complement. Thus, comparing the three subjects of inquiry, *because*-adjuncts, *if*-adjuncts and sentence adverbs, we obtain the picture in Table 5.1.

Why haven't we observed the missing readings for *if*-clauses? So-called epistemic *if*-clauses (280) don't seem to differ from their regular hypothetical counterparts in their behavior. They certainly embed fine under semantic operators (and thus cannot be CI items; (281)).

(280) If the street is wet, it has rained.

(281) I don't believe that if the street is wet, it has rained.

It may be that epistemic and propositional CI-type conditionals exist, but that we cannot distinguish them easily from utterance-modifying CI-type conditionals by their semantics. Recall that a CI-type conditional would always assert its consequent straightforwardly. Therefore, the level of attachment of the *if*-clause in the CI part of the meaning is not really crucial. The net effect would be the same, since in every case the conditional in the CI would be true given the assertion:

(282) If you're hungry, there's pizza in the fridge.

a. propositional:

At Issue Content: There's pizza in the fridge.

CI: IF you're hungry, there's pizza in the fridge.

b. epistemic:

At Issue Content: There's pizza in the fridge.

CI: IF you're hungry, I know (there's pizza in the fridge)

c. utterance:

At Issue Content: There's pizza in the fridge.

CI: IF you're hungry, I utter (there's pizza in the fridge)

However, at least the propositional CI-type conditional, if it existed, is predicted to yield a relevance reading with integrated syntax (since the usual unintegrated syntax of relevance conditionals is caused by them being utterance modifiers). Such cases are not attested in German: in section 4.2.3 I documented that German regular conditionals are unambiguous and do not have an RC reading.

Thus, the separate propositional, epistemic and speech act readings that we distinguished for *because*-clauses cannot be observed for *if*. Why this is the case is an interesting open question. In the next section, I further investigate this topic. I will discuss a connective that has a similar meaning to *if*, but that does allow us to observe the distinct readings.

5.2 *Although*

Bach (1999) gave examples that show that there are relevance uses of *although* (284), which contrast markedly with the regular uses of this connective:

(283) Although the judge issued a gag order, my client will appear on Hard Copy.

(Bach, 1999, ex. (21))

(284) Although the judge issued a gag order, my client has an airtight alibi.

(Bach, 1999, ex. (22))

(283) is a regular *although*-sentence: The lawyer is saying that although the judge doesn't allow talking about the case in progress (a "gag order"), his client will appear on TV. In (284), there is no apparent contrast between the fact that the judge issued a gag order and the fact that the client has an airtight alibi. Instead, the speaker expresses a contrast between the gag order and the fact that the assertion in the main clause has been made. The examples in (283–284) suggest an analysis of relevance uses of *although* which is parallel to the one for the relevance conditionals: the main clause of (284) ("my client has an airtight alibi") is the assertion of the utterance, and the *although*-clause contributes its contrastive meaning as a side comment on this assertion.

The exact meaning of *although* is a matter of much debate, but conditionality has often played a role in explaining the meaning of *although*. In fact, *although* can be seen as a factive version of *even if*, and the two can often be used interchangeably.

(285) Tiger ready for Open, even if his knee isn't.[1]

(286) Tiger ready for Open, although his knee isn't.

Thus, if we see *although* as a factive version of *(even) if*, we may be able to observe the readings that are missing for simple conditionals. It is maybe not an accident that *because* is also factive. Indeed, all four variants can be observed with *although*. Bach's first example is a regular assertion-level use. For another example, see (287).

(287) Peter came although Sue didn't.

(288) Mary is upset because Peter came although Sue didn't.

(287) can be embedded under other operators, as shown by (288). Here, it is said that

[1]Headline for an article stating that Tiger Wood's knee is not fully healed. Found online, July 3, 2008, at http://www.sportsline.com/golf/story/10860825/rss.

Mary is upset because both Peter came and Sue didn't come. Peter's coming alone may not have been enough to bother Mary. On the other hand, the contrast part of the meaning of *although* seems always unembeddable. Just like for *but*, the contrast part of the meaning of *although* seems to be not asserted, but contributed as a side comment (CI) or presupposed (see e.g. Levinson, 1979). It is a background assumption. But it is obvious that both arguments of *although* are embedded under *upset* in (288).

In contrast, there is also a CI-level propositional use of *although*, as shown for example in:

(289) We're doomed because although he got up early enough, he missed the bus.

In this example, not even the *and*-part of the meaning of *although* embeds under the higher operator (*because*). Instead, the sentence expresses that we're doomed because he missed the bus. The contribution of *although* is made separately as a side comment in the CI dimension. One entire argument of *although* (that he didn't get up early enough) is not part of the reason that we're doomed, i.e. it is not embedded under because.

In addition, Mayer (1993, ex. (16)) gives the following example, claiming that it shows an epistemic use of *although*:

(290) Also, soviel ich weiß, gibt's auch blonde Italiener, obwohl,
Well, inasmuch I know, there are also blond Italians, although,
gesehen hab ich auch noch keinen.
seen have I also yet none.
'Well, as far as I know, there are blond Italians, too, although I haven't seen any yet, either.'

In the attested example (290), there is no real contrast between the actual facts that blond Italians exist and that the speaker has not seen any yet. The sentence does have an epistemic flavor instead: the contrast holds between the conclusion or argument of the speaker that there MUST be blond Italians, and the fact that they have not seen any yet. The fact that this is the epistemic version of the adversative relation expressed by *although* is

	because	*although*	*if*	adverbs
assertion				
propositional	✓	✓	✓	✓
CI				
propositional	✓	✓	?	✓
epistemic	✓	✓	?	–
utterance	✓	✓	✓	✓

Table 5.2: Argument options for multi-dimensional operators (2).

also reflected in the German sentence by the fact that *obwohl* ('although') is used here with a verb-second clause, and not a verb-final clause like usual (this effect was also observed with *denn*, the CI 'because', vs. *weil*, the assertion version).

Finally, Bach's second example above (284) shows a clear utterance modifying use of *although*. Thus, all four variants of use are attested for *although* (the factive version of *(even) if*), just as they are for *because*. The revised Table 5.1 summarizes the argument-taking options that the different connectives as well as the sentence adverbs show.

These examples show that *although* ties together the previously discussed cases of *because* and *if* in their referential options. But it also ties together the CI uses of connectives with the sentence adverbs that operate on the CI dimension. For the sentence adverbs, I noted that the propositional type of sentence adverbs such as *leider* ('unfortunately') are still syntactically integrated into the matrix clause (section 2.3). When used initially, they are immediately followed by the finite verb in German, a V2 language. Utterance modifying adverbs such as *mal ehrlich* ('frankly') on the other hand are not syntactically integrated. Even though I also argued that the CI version of *because*, *denn* must be unintegrated from the main clause, the matrix V2 order cannot be tested for *denn*, since *denn*-clauses cannot appear sentence-initially. For RCs, I have shown in section 4.2.3 that they must be unintegrated and do not count for V2 in German. This is expected since they behave like the utterance modifying adverbs. But we could not observe a true contrast, since clear

examples of a conditional in the CI dimension which nevertheless applies to the content level (not the utterance) do not seem to be attested. With German examples of *obwohl* ('although'), we can now test this paradigm: *although*-clauses can appear initially, unlike *denn*-clauses, and a propositional CI use is available for *although*, unlike for *if*.

Indeed, the prediction is carried out. Just like for the sentence adverbs, the utterance modifying uses of CI-*although* are not syntactically integrated, while the propositional uses of CI-*although* are.

(291) a. Obwohl der Richter ein Redeverbot erlassen hat, mein Klient
Although the judge a gag order decreed has, my client
hat ein wasserdichtes Alibi.
has a watertight alibi.
'Although the judge has issued a gag order, my client has an airtight alibi.'

b. * Obwohl der Richter ein Redeverbot erlassen hat, hat mein
Although the judge a gag order decreed has, has my
Klient ein wasserdichtes Alibi.
client a watertight alibi.
'Although the judge has issued a gag order, my client has an airtight alibi.'

(292) a. ? Wir haben ein Problem, denn obwohl er früh genug
We have a problem, since although he early enough
aufgestanden ist, er hat den Bus verpaßt.
got up is, he has the bus missed.
'We have a problem, because although he got up early enough, he missed the bus.'[2]

b. Wir haben ein Problem, denn obwohl er früh genug
We have a problem, since although he early enough
aufgestanden ist, hat er den Bus verpaßt.
got up is, has he the bus missed.
'We have a problem, because although he got up early enough, he missed the bus.'

Utterance modifying CI uses of *although* obligatorily do not count for V2, as shown in (291b). In contrast, propositional CI uses of *although*, as in (292b), are integrated in the

[2]This sentence is acceptable for some speakers of German since the *obwohl*-clause can be parsed as a parenthesis.

V2 clause. These facts match up with the behavior of CI adverbs such as *unfortunately* and *frankly* in German.

5.3 Modifiers on Different Dimensions

To sum up, this chapter shows that relevance conditionals are part of a larger class of constructions, where discourse connectives such as *because*, *although*, and *if* can be used in the CI dimension rather than as part of the at-issue content. A CI connective has more freedom for argument taking, allowing utterance-level (giving a reason, contrast, or condition of utterances) as well as epistemic use in addition to a regular content-level use.

I have also observed small differences in the behavior of the individual connectives. For example, clear cases of CI propositional and epistemic uses of conditionals do not seem to be attested. These small differences are due to the items' lexical semantics, which each connective retains. According to my approach, a discourse connective can optionally contribute its meaning on the CI dimension instead of as at-issue content. In that case, higher projections such as the utterance become available as the argument for this connective. The matrix clause is then asserted straightforwardly.

The same parallelism also holds with sentence adverbs. A sentence adverb can contribute its meaning on the CI dimension, in which case it can also target the utterance. An example for this is the utterance modifying adverb *frankly*. Here as well, the matrix clause is the only thing that is asserted, and the adverb contributes its meaning as a side comment. The utterance modifying adverb thus shares the RC's properties of semantic unembeddability and syntactic unintegration.

Chapter 6

Complement Clauses on Different Dimensions

The previous chapters of this dissertation have concentrated on what happens to the semantics and compositional behavior of sentence adjuncts when they operate on a different semantic dimension. This chapter will look at the same question for some complement clauses. In particular, I study German complements of attitude verbs. I concentrate on two ways that German attitude verbs can go together with their semantic complements: embedded verb-second clauses and sliftings. In the literature, it has been noted that not all verbs allow these two constructions, and the good and bad cases have been characterized. Furthermore, previous authors point out a parallelism between the two constructions. In this chapter, I improve on this work in two ways: First, I revise the descriptive generalization of verbs that allow verb-second complements and slifting. Second, I provide a unified analysis of the semantic contributions of these two constructions that at the same time accounts for the differences between the two, as well as their similarities.

6.1 Introduction

Sentence-embedding verbs can select their dependent clause type. This selection includes not only the major syntactic/semantic type like declarative vs. interrogative, but also indicative vs. subjunctive mood, and other criteria. In German, attitude verbs select their complement based on the word order or structure: While all verbs with declarative complements embed *that*-clauses (293), it has been noted that some but not all verbs, in addition, allow V2 clause complements, as in (294) (Reis, 1997; Truckenbrodt, 2006, and references therein).

(293) a. Maria glaubt, dass Peter nach Hause geht.
Maria believes that Peter to home goes.
'Maria believes that Peter is going home.' (Truckenbrodt, 2006, ex. (31))

b. Maria möchte, dass Peter nach Hause geht.
Maria wants that Peter to home goes.
'Maria wants Peter to go home.'

(294) a. Maria glaubt, Peter geht nach Hause.
Maria believes Peter goes to home.
'Maria believes that Peter is going home.' (Truckenbrodt, 2006, ex. (32b))

b. * Maria möchte, Peter geht nach Hause.
Maria wants Peter goes to home.
'Maria wants Peter to go home.'

The main question addressed in this chapter is why only some, but not all, attitude verbs in German allow V2 complements. As we will see, there is good evidence that this is a semantic question, not purely a matter of syntactic argument selection. Hence, a related goal for this chapter is to characterize the semantics of V2 embedding. Interestingly, if a verb like *glauben* ('believe') allows both *that*- or V2-complements, the choice between these two options usually has no discernible semantic effect. That is, sentences (293a) and (294a) have intuitively the same meaning. Part of the analysis is therefore to show not only how a certain piece of the meaning of *glauben* allows it to license V2 complements, but

also how the combination of *glauben* with a V2 clause yields the same overall meaning as the verb's combination with a regular *that*-clause.

To do this, I first establish the descriptive generalization of which verbs in German allow for V2 complements (section 6.2). Then, I detour in section 6.3 to discuss a construction dubbed slifting (Ross, 1973), arguing against some previous analyses that V2 embedding and slifting are distinct, though semantically related. In section 6.4 I propose an analysis of slifting where the attitude verb functions as an evidential parenthetical, elaborating on (Reis, 1997) and a suggestion in (Potts, 2007b), but contra (Wagner, 2004). For V2-embedding, I show that the attitude verb syntactically and semantically embeds its complement. Still, the evidential semantics is the same as in slifting. What differs between the two cases, as I discuss in section 6.5, is the distribution of the semantic pieces onto the semantic dimensions of assertion and conventional implicature. In a nutshell, the predication of the attitude over its argument is carried out in the assertion for V2 complements, and in the CI for slifting. Section 6.7 concludes this chapter.

6.2 V2 Complements

As noted above, only certain verbs allow V2 complements in German. In this section, I review and expand the available data to determine what class of verbs licenses V2 complements in German. The section will show that this kind of complement selection is not purely a matter of syntactic category. Consequently, I also establish the semantic properties that the class of verbs that allows V2 complements has in common.

Wagner (2004, fn. 1) notes that only bridge verbs[1] allow for V2 complements, except for "verbs that involve a manner like 'shout' or downward entailing environments ('not

[1]Bridge verbs are those verbs that allow extraction from their complement clause, e.g. *sagen* ('say'), *glauben* ('believe'), etc.

say' or 'doubt')". This characterization is close, although not quite accurate: manner verbs seem fine with V2 complements at least in some cases, and downward entailingness is not the only restriction on the context: modalized sentences are also often bad. In this section I first present the classes of verbs that allow V2 complements, then I discuss the situations where V2 complements are not allowed, and finally I arrive at a working hypothesis of a generalization for when embedded V2 clauses are licensed.

6.2.1 Which verbs allow V2 complements?

The verbs that allow V2 complements can be roughly characterized in classes according to their meaning.

(Upwards-directed) Verbs of Saying

(295) Peter sagt, Maria ist schwanger.
Peter says, Maria is pregnant.
'Peter says that Maria is pregnant.'

(296) Peter behauptet, Maria ist schwanger.
Peter claims, Maria is pregnant.
'Peter claims that Maria is pregnant.'

Verbs of saying in general allow V2 complements. This includes 'say' and 'claim' as above, but also *andeuten* ('suggest'), *hören* ('hear'), *fragen* ('ask'), etc. V2-embedding could be confused with straightforward quotations for communication verbs, however. In order to exclude the quotations, Wagner (2004) uses the Konjunktiv I (subjunctive) in all examples, which according to him disambiguates towards reported speech. Since the subjunctive is rare in spontaneous spoken German (at least in the North), I use indicative examples whenever possible.

Wagner (2004, fn. 1) claims that verbs of saying with a manner component (like *shout*) cannot embed V2 complements. He does not give examples, and none are given in any of

the previous literature. Furthermore, I do not agree with his categorical judgment: although sentence (297) is slightly degraded, other examples are fine, as in (298). The use of the Konjunktiv I (subjunctive) shows that this is not a direct quotation, but a regular embedding. I therefore include communication verbs with manner components in the class of verbs that license embedded V2.

(297) ? Peter schrie, Maria ist schwanger.
Peter shouted, Maria is pregnant.
'Peter shouted that Maria is pregnant.'

(298) Peter flüsterte, Maria sei schwanger.
Peter whispered, Maria is.SUBJ pregnant.
'Peter whispered that Maria is pregnant.'

Verbs Expressing Belief A second class of verbs that allows V2 complements is verbs expressing any degree of belief:

(299) Peter glaubt, Maria ist schwanger.
Peter believes, Maria is pregnant.
'Peter believes that Maria is pregnant.'

Other verbs in this group are for example *meinen* ('believe'), *denken* ('think'), *annehmen* ('assume'), or *vermuten* ('suspect').

Verbs of Imagination Verbs of imagination can embed V2 clauses as well.

(300) Hans stellt sich vor, er ist der König von Bayern.
Hans imagines, he is the king of Bavaria.
'Hans imagines he is the king of Bavaria.' (Truckenbrodt, 2006, ex. (52a))

(301) Hans träumt, er ist der König von Sachsen.
Hans dreams, he is the king of Saxony.
'Hans dreams he is the king of Saxony.'

Certain Verbs Expressing (Dis)preference Truckenbrodt (2006) identifies certain verbs of preference as another class that can embed V2 complements. The direction of the preference does not play a role for this: 'hope' and 'fear' can both license V2 clauses.

(302) Maria hofft, Peter kommt heute noch.
Maria hopes, Peter comes today still.
'Maria hopes that Peter will come today.'

(303) Maria fürchtet, Peter kommt heute noch.
Maria fears, Peter comes today still.
'Maria fears that Peter will come today.'

The phrase *es ist besser* ('it is better') also expresses a preference and allows for V2 complements (see example (309) later). Not all preference verbs pattern alike, though. See (312) for discussion of preference verbs that do not allow V2 complements.

Verbs of Obligation (With 'Must') Finally, verbs of obligation constitute a special class. While plain embedded V2 clauses are usually ungrammatical (304), V2 complements are possible if they contain a deontic modal (305). Other verbs in this class include *bitten* ('ask') and *vorschlagen* ('suggest'). The main part of this chapter does not deal with this special case. See section 6.2.3, page 158 for discussion.

(304) * Peter befiehlt Maria, sie geht nach Hause.
Peter orders Maria, she goes to home.
'Peter orders Maria that she goes home.'

(305) Peter befiehlt Maria, sie soll nach Hause gehen.
Peter orders Maria, she should to home go.
'Peter orders Maria that she should go home.'

6.2.2 Which Verbs do Not Allow V2 Complements?

Certain verb classes generally do not allow V2 complements in German. In addition, the presence of negation and other modifying elements has often been noted to prevent V2

complements even under verbs that normally allow them.

Factive Verbs, Including 'Know' Factive verbs do not license V2 complements in German. Even 'know' does not embed V2 clauses (307).

(306) * Maria bereut, sie ist nach Berlin gezogen.
Maria regrets, she is to Berlin moved.
'Maria regrets that she moved to Berlin.'

(307) * Maria weiß, Peter kommt heute noch.
Maria knows, Peter comes today still.
'Maria knows that Peter will come today.'

This class of incompatible verbs includes many others such as *verursachen* ('cause'), *überrascht sein* ('be surprised'), etc. Interestingly, there is one factive predicate that does allow for V2 complements, *es ist besser* ('it is better'). 'It is better' is a factive predicate when used with *daß*-complements. However, when used with a V2 complement, the factivity is lost:

(308) Es ist besser, daß Maria in diesem Fall in Berlin ist.
It is better, that Maria in this case in Berlin is.
'It is better that Maria is in Berlin in this case.'

(309) Es ist besser, Maria ist in diesem Fall in Berlin.
It is better, Maria is in this case in Berlin.
'It is better for Maria to be in Berlin in this case.'

Sentence (308) implies that (there is a plan which ensures that) Maria will be in Berlin. On the other hand, no such implication is present in sentence (309). Instead, this sentence is understood as a suggestion by the speaker that one may plan for Maria to be in Berlin. No firm commitments have been made in this case, though. In English, this may be reflected by using a 'for'-infinitive or a subjunctive ('that she be in Berlin') clause.

Downward Entailing Verbs of Saying and Belief As is well-known, downward entailing verbs do not embed V2 clauses.

(310) * Anna verleugnet, Peter kommt noch heute.
Anna denies, Peter comes still today.
'Anna denies that Peter comes today.'

(311) * Anna bezweifelt, Peter kommt noch heute.
Anna doubts, Peter comes still today.
'Anna doubts that Peter comes today.'

Certain Verbs of Preference A class of preference verbs does not embed V2 complements (Truckenbrodt, 2006). These are in particular the verbs 'wish' and 'want'.

(312) * Maria { wünscht sich / will }, Peter kommt heute noch.
Maria { wishes / wants }, Peter comes today still.
'Maria wishes/wants that Peter comes today.'

It must be noted that 'wish' and 'want' can embed V2 complements if both the matrix as well as the complement clause are in Konjunktiv II (subjunctive). This subjunctive has many different uses in German with specific semantic effects. Analyzing the function of this form goes far beyond the scope of this work. In sentence (313), the subjunctive seems to have the function of expressing irrealis mood. In my work as reported in this chapter, I do not consider examples with subjunctive (Konjunktiv II).

(313) Maria wollte, Peter käme heute noch.
Maria wants-SUBJ, Peter come-SUBJ today still.
'Maria would want Peter to come today.' (Konjunktiv II)

Verbs Expressing Possibility Finally, some verbs expressing pure possibility cannot embed V2 clauses:

(314) ?? Es ist (un)möglich, Maria ist schwanger.
It is (im)possible, Maria is pregnant.
'It is (im)possible that Maria is pregnant.'

V2 Complements Are Not Allowed Under Negation or Modals One strong observation regarding V2 complements is that they cannot appear under negated verbs or verbs which

are directly modified by certain modals.

(315) a. * Anna sagt nicht, Peter kommt noch heute.
Anna says not, Peter comes still today.

b. * Anna glaubt nicht, Peter kommt noch heute.
Anna believes not, Peter comes still today.

c. * Anna stellt sich nicht vor, Peter kommt noch heute.
Anna imagines self not (part.), Peter comes still today.

d. * Anna hofft nicht, Peter kommt noch heute.
Anna hopes not, Peter comes still today.
'Anna doesn't say/believe/imagine/hope that Peter will come today.'

(316) ? Anna befiehlt Peter nicht, er soll heute noch kommen.
Anna orders Peter not, he should today still come.
'Anna doesn't order Peter to come today.'

(317) * Anna will glauben, Peter kommt noch heute.
Anna wants believe, Peter comes still today.
'Anna wants to believe that Peter will come today.'

Although for example *glauben* ('believe') normally allows V2 complements, it cannot license such complements when it is negated (315b) or when it appears under the modal *will* ('wants') (317). This is the main fact that suggests a semantic reason for why certain verbs can license V2 complements. Clearly, given this data, a purely syntactic account must always be unsatisfactory. Once a verb is marked to select a certain type of complements, how would it suddenly switch its syntactic properties if it appears under negation? Since negation and modals prevent V2 complements, a semantic analysis which can make reference to these contextual parameters of the discourse seems promising.

It is worth noting here that attitude verbs with V2 complements are not generally unembeddable. In fact, they can appear under negation in two cases. Embedding under negation is possible if the negation is expressed very high, external to the matrix clause (318), or if the negation associates with the attitude verb, which is focused (a case of very low, or constituent, negation; (319)).

(318) Es ist nicht so, daß Paul glaubt, Maria ist schwanger.
It is not so, that Paul believes, Maria is pregnant.
'It is not the case that Paul believes Maria is pregnant.'

(319) Ich HOFFE nicht, Maria kommt morgen, ich weiß es!
I HOPE not, Maria comes tomorrow, I know it!
'I don't HOPE that Maria will come tomorrow, I KNOW it!'

High negation as in (318) could be a case of so-called "meta-linguistic" negation. Meta-linguistic negation can target not just the assertion (like normal negative morphemes do), but also other dimensions of meaning. Further, in (319), it is just the kind of attitude that is negated, as indicated by the focus. The fact that there is an attitude which applies to the complement is not negated. Both kinds of negation thus get different analyses from regular sentence negation.

Similarly, while embedding under the modal 'want' is ungrammatical, other modifications are possible. In (320), I show that attitude verbs that are modified by adverbs can still embed V2 clauses.

(320) Anna glaubt vielleicht, Peter kommt noch heute.
Anna believes maybe, Peter comes still today.
'Maybe Anna believes that Peter will come today.'

An example from (Haider, 1986, ex. (2-12c)) shows that even some modals are possible in V2 embedding:

(321) Ich kann mir denken, er hat ihr was erzählt.
I can me think, he has her something told.
'I can imagine that he has told her something.'

These examples demonstrate that it is not the mere presence of negation or a modal that trigger the ungrammaticality. Instead, I would like to suggest that the actual meaning of the entire verbal chunk seems to determine whether a V2 clause can be embedded in a certain sentence. For example, "wanting to believe" as in (317) is more like wanting than believing. The facts reported in this section are summarized in Table 6.1.

+ V2 embedding	− V2 embedding
verbs of saying	factive verbs
verbs of belief	downward epistemic verbs (‘doubt’, ‘deny’)
verbs of imagination	
‘hope’/‘fear’	pure preference verbs ‘wish’, ‘want’
‘it is better’	‘it is possible’
verbs of obligation	

Table 6.1: Compatibility of attitude verbs with V2 embedding.

6.2.3 Generalization: Epistemicity

A study by Truckenbrodt (2006) attempts to explain, within a larger theory of the meaning of syntactic clause types, why certain verbs allow V2-complements, while others disallow this option.

He identifies an *epistemic* component of meaning associated with V2 clauses. A stereotypical example of a verb that has an epistemic component is ‘believe’, but this is also meant to include verbs of saying. Truckenbrodt (2006) does not discuss the exact nature of the epistemic component in great detail. In the following, I briefly review his discussion and refine the data that he uses to argue for this epistemic component. Then, I present the generalization drawn from the data above that the verbs allowing for V2 complements have in common.

Verbs of Preference

Truckenbrodt (2006) centrally discusses different verbs of preference, because they do not behave uniformly with regard to the licensing of V2 complements. He notes the following contrast (his (56) and (57)):

(322) Es ist besser/Es ist ihr lieber/Maria hofft, sie ist in diesem Fall in Berlin.
‘It is better/She prefers/Maria hopes she is in Berlin in that case.’

(323) Maria *will/*wünscht sich, sie ist in diesem Fall in Berlin.

'Maria *wants/*wishes, she is in Berlin in that case.'

This shows that 'it is better' and 'hope' allow V2-complements, whereas 'want' and 'wish' prohibit them.

Comparing 'want' and 'hope', Truckenbrodt notes that a contrast is that 'want' is compatible with our prior knowledge of the embedded proposition, while 'hope' is not (his (58)):

(324) Es regnet und ich #hoffe/✓ will, dass es regnet.

'It is raining and I #hope/✓ want that it is raining.'

This contrast is captured in Table 6.2. Given the syntactic contrast between 'want', which does not allow V2 complements, and 'hope', which does, Truckenbrodt concludes that the relevant semantic distinction between V2 complement verbs and non-V2 complement verbs is whether the verb is compatible with knowledge of p (the proposition expressed in the complement).

compatible with prior knowledge of p	incompatible with knowledge of p
want	hope
* V2	✓ V2

Table 6.2: Truckenbrodt's characterization of V2 and non-V2 complement verbs

Truckenbrodt thus notes that the V2 complement verbs are those that are incompatible with the embedded proposition p being already known. He presents this as a necessary and sufficient condition for the ability to take V2 complements. Although Truckenbrodt is right about the facts of 'want' vs. 'hope', the other preference predicates do not line up as well with his generalization. In fact, 'wish', which like 'want' does not allow V2-complements, behaves like 'hope' in the epistemic compatibility test as above in (324).

(325) Es regnet und #ich wünsche mir, dass es regnet.

'It is raining and #I wish that it is raining.'

This shows that the identified property (incompatibility with prior knowledge of p) is not a sufficient condition for allowing V2 complements. Although *wünschen* ('wish') is incompatible with knowledge of p, it still cannot embed V2 complements, as noted above.

(326) * Ich wünsche mir, es regnet.
I wish self, it rains.
'I wish that it rains'

At most, incompatibility with knowledge of the embedded p could be a necessary condition for tolerating V2 complements. However, there is at least one verb which can embed V2 complements and is fine with prior knowledge of p: *es ist besser* ('it is better').[2]

(327) Es regnet und ✓es ist besser, dass es regnet.

'It is raining and ✓it is better that it is raining.'

Thus the line that is drawn by Truckenbrodt's test, whether the matrix verb is compatible with our knowledge of the embedded proposition, does not reliably predict the difference between V2-embedding and non-V2-embedding verbs.

However, compatibility with the knowledge of the embedded proposition is not the only semantic difference between the preference predicates. In addition, these predicates differ with respect to whether they allow a *counterfactual* use, i.e., whether they are compatible with our knowledge of the negated embedded proposition.

Both 'want' and 'wish' are compatible with counterfactual situations.[3] On the other

[2]However, this test is not conclusive, since as discussed above (308–309), the meaning of *es ist besser* differs slightly between the *that*-complement and V2-complement usages.

[3]Since both predicates are normally used to talk about the future, we can only test counterfactuality in as far as it applies to the future. Of course, in some sense, we can never exactly know about future events. But in practice, we can sometimes be pretty sure, for example what concerns our own plans.

hand, ‘it is better’ and ‘hope’ cannot be used if the embedded proposition is not considered possible by the speaker.

(328) [Scenario: Uwe has to teach two days per week every semester. He is asking his wife for her preferences about when he should teach next semester. She says:]

a. Ich will, daß du überhaupt nicht arbeiten mußt.

b. Ich wünsche mir, daß du überhaupt nicht arbeiten mußt.

c. # Ich hoffe, daß du überhaupt nicht arbeiten mußt.

d. # Es ist besser, daß du überhaupt nicht arbeiten mußt.

‘I want / wish / * hope / * It is better that you don’t have to work at all.’

The scenario (328) shows that for ‘hope’ and ‘it is better’, the epistemic possibility of their embedded proposition is an important part of their meaning — this is the epistemic component of their meaning that distinguishes them from verbs like ‘want’ and ‘wish’.

Further evidence for this epistemic part of the meaning of ‘hope’ comes from an example due to Truckenbrodt:

(329) A: Kommt Peter heute?

‘Is Peter coming today?’

B: Ich hoffe, dass er heute kommt. / # Ich will, dass er heute kommt.

‘I hope he’s coming today. / # I want him to come today.’

Questions about facts of the world (whether Peter is coming or not) can be answered using the verb ‘hope’. This makes sense if ‘hope’ indeed has a component that guarantees that the speaker holds its complement possible. Then, although B’s answer is not complete, it is at least a partial answer to A’s question: “I think it’s possible that he will come today.” That is, “It is not the case that I think that he will not come today.” On the other hand, ‘want’ cannot be so used because what B wants is at best irrelevant to the question. Therefore, the answer “I want him to come today” sounds odd in this situation.

Given this additional data, I conclude that the preference predicates really split up into a four-way partition, as shown in table 6.3.

	compatible with knowledge of p	incompatible with knowledge of p	
✓ counterfactual	want	wish	} * V2-complements
* counterfactual	it is better	hope	} ✓ V2-complements

Table 6.3: Preference predicates and epistemic compatibility.

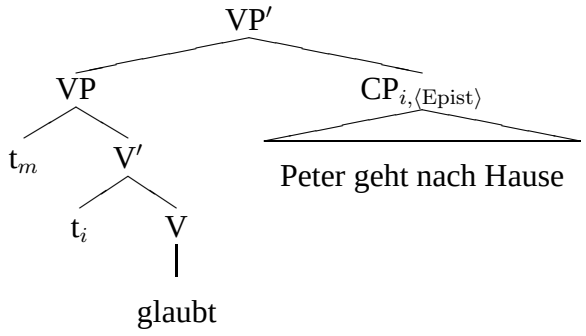
Taking the additional data into account, I hypothesize that verbs that allow V2 complements are characterized by the fact that they do not allow a counterfactual use. That is, these verbs contribute as part of their meaning the possibility of their complement, which makes them incompatible with counterfactual scenarios. On the other hand, verbs that could be used counterfactually do not allow V2 complements.

Truckenbrodt's Analysis

Truckenbrodt's (2006) analysis uses epistemicity as a feature on a given attitude verb. This feature is based on the specific semantic content of the verb in question, and then used for licensing V2 complements. For example, (330) is assigned the structure in (331).

(330) Maria glaubt, Peter geht nach Hause.
Maria believes, Peter goes to home.
'Maria believes that Peter is going home.'

(331)



According to Truckenbrodt's account, the embedded CP carries a context index $\langle \mathrm{Epist} \rangle$, which is bound by the worlds provided by the attitude verb. Further, this context index needs to be "absorbed" by the contribution of the main clause. Absorption takes place when the proposition in the complement (interpreted in the epistemic worlds which it gets from tying the index $\langle \mathrm{Epist} \rangle$ to the attitude verb) is entailed by the proposition contributed by the main clause.

According to this proposal embedded V2 clauses can be infelicitous in two cases. First, if the attitude verb does not contribute epistemic worlds which can bind the context index $\langle \mathrm{Epist} \rangle$. This is the case, according to Truckenbrodt, for example for the preference verb 'want'. And second, if absorption of $\langle \mathrm{Epist} \rangle$ fails because the complement is not entailed by the main clause. This is argued to happen for verbs such as *bezweifeln* ('doubt').

(332) * Hans bezweifelt, Peter geht nach Hause.
Hans doubts, Peter goes to home.
'Hans doubts Peter is going home.' (Truckenbrodt, 2006, (69))

Truckenbrodt says that the context index $\langle \mathrm{Epist} \rangle$ relativizes the embedded clause to the belief-worlds of Hans. Since "Hans doubts that Peter is going home" does not entail that "Hans believes that Peter is going home", 'doubt' cannot be used with a V2 complement here.

From the standpoint of this discussion, such an analysis runs into three major problems. First, as discussed above, factive verbs, including 'know', do not allow V2 complements. But 'know' surely provides epistemic belief worlds for its agent. In fact, its semantic contribution is a stronger version of 'believe', on the epistemic scale. So how exactly are the factive verbs unable to license V2 complements? In addition (and slightly more interestingly), 'it is better' loses factivity when it embeds V2 complements (as noted above), a fact that was missed in (Truckenbrodt, 2006) and remains unexplained.

Second, with the exception of 'it is better', the sentences obtained from embedding a V2 clause or a 'that'-clause under an attitude verb have virtually the same meaning. Truckenbrodt's epistemic feature is triggered by the semantics of V2. In order to achieve the correct meaning for the embedded case, he has to stipulate "absorption" of this feature under attitude verbs. This suggests that the component is used in a purely syntactic way, for licensing purposes only. However, since the epistemicity is motivated by the semantics of the individual verb, this motivation better have clear interpretive effects (otherwise it would reduce to a syntactic marking similar to analyses that propose subclasses of verbs based on their selection properties). It is not clear how these semantic effects are interpreted and how the net effect of a V2 complement is (in most cases) the same as the meaning of a 'that'-complement.

Upward Epistemicity (Without Factivity)

So what is the generalization holding among the verbs that allow V2 complements? As argued above, an epistemic component is essential. A verb like 'want', which expresses pure preference without any implication as to whether the speaker considers the proposition expressed in the complement likely or not, does not license V2 complements.

With exception of the verbs of obligation (which will be discussed below), the attitude verbs that express an epistemic component can be sorted with regard to an epistemic scale. This scale ranges from zero belief of a proposition p (or belief of $\neg$ p) to complete (100%) belief of a proposition p. Such scales are well known from the semantic analysis of evidentials in languages that employ these devices, and have been used for the analysis of modals (Potts, 2007b). The epistemic component of a given verb expresses not only where on the scale one is located, but it also gives a direction (similar to monotonicity): 'believe p' expresses a high likelihood of p, but also that the epistemicity is "upward". This is in contrast to 'doubt p', which also ascribes a certain (lower) likelyhood to p, but further expresses the

fact that if anything this likelyhood is going to go down according to the speaker.[4] These observations are depicted graphically in Figure 6.1.

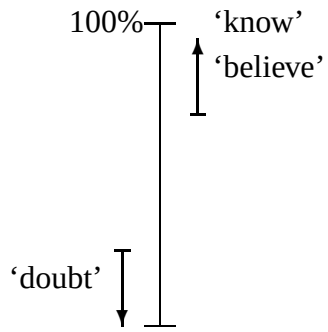


Figure 6.1: Epistemicity of 'know', 'believe' and 'doubt'.

Note that in determining the upward or downward properties of a verb relevant here, only the epistemic component of meaning is important. For this reason, 'fear' can license V2 complements just as 'hope' can. Although the two verbs are opposed in direction on the preference side (if I 'fear p', I do not prefer p, whereas if I 'hope p', I do prefer p), they are both upwards directed in the epistemic component. In both cases, it is implied that the agent considers p epistemically possible.

(333) Maria hofft, Peter kommt noch heute nach Hause.
Maria hopes, Peter comes still today to home.
'Maria hopes that Peter will come home today.'

(334) Maria fürchtet, Peter kommt noch heute nach Hause.
Maria fears, Peter comes still today to home.
'Maria fears that Peter will come home today.'

[4]How exactly to capture the semantics of attitude verbs is a huge topic far beyond the scope of this thesis. See (Hintikka, 1969) for an analysis of the meaning of attitude verbs as quantifiers over possible worlds. Further, e.g. von Fintel (1999a) uses interactions with NPI licensing to pin down the formal semantics of some attitude verbs such as *want*, *wish*, and *glad/sorry*. For the purpose of this work, only the (non)existence of an epistemic component (non-counterfactuality) in the meaning of the attitude verbs will be relevant.

A final refinement to the generalization drawn here is needed. Since factive verbs are excluded, we observe that the epistemic component provided by the verb's semantics must not lead to the top (100%) of the epistemic scale. The generalization is therefore:

(335) **Generalization of V2-embedding Verbs:**

Verbs that provide an upward-directed epistemic component, without factivity, can license V2 complements.

Verbs of Obligation

In the discussion above, I have identified upward epistemicity (without factivity) as the crucial meaning component for verbs that allow V2 complements. However, there is one class of verbs that does not fit this description exactly: the verbs of obligation. Recall that verbs like 'beg', 'order', 'suggest' do allow V2 complements, even though they impose an additional requirement: the status of the complement as an order must be explicitly marked with an overt 'must', or in some cases by the imperative form.

(336) * Maria befiehlt Peter, er geht sofort nach Hause.
Maria orders Peter, he goes immediately to home.
'Maria orders Peter that he goes home immediately.'

(337) Maria befiehlt Peter, er soll sofort nach Hause gehen.
Maria orders Peter, he should immediately to home go.
'Maria orders Peter he should go home immediately.

Starting from a (matrix) V2 clause, adding 'I believe' indicates that the commitment is lower on the epistemic scale.

(338) Peter geht sofort nach Hause.
Peter goes immediately to home.
'Peter goes home immediately.'

(339) Ich glaube, Peter geht sofort nach Hause.
I believe, Peter goes immediately to home.
'I believe that Peter goes home immediately.'

One can view the verbs of obligation analogously. Starting from a basic sentence expressing an obligation, adding a verb of obligation can influence the status on the deontic scale of urgency or authority:

(340) Peter soll sofort nach Hause gehen.
Peter should immediately to home go.
'Peter should go home immediately.'

(341) Ich befehle, Peter soll sofort nach Hause gehen.
I order, Peter should immediately to home go.
'I order that Peter should go home immediately.'

Thus, the scale in question seems to depend in part on the particular semantics of the verb. The proposal might have to be refined to include both possible scales. Since epistemicity is the expected mode for most assertions, the relevant property is likely to be utterability. That is, the contribution by the V2 construction is that the clause is considered utterable by some relevant agent (as opposed to the clause being considered possible by the agent).

In the following sections, I will concentrate on the epistemic cases and leave aside the deontic examples. I discuss how the identified property, upward epistemicity without factivity, enables the embedding of V2 complements. To do this, I will compare V2-embeddings to the phenomenon of slifting (Ross, 1973), which will help identify the proper semantic analysis.

6.3 Slifting

In the previous section I have identified a class of verbs that allows V2 complements in German. This section deals with a closely related phenomenon, slifting (Ross, 1973). In fact, much of the syntactic discussion has centered around the question whether the two constructions are actually one and the same, or whether they differ, and whether each con-

struction is a case of real embedding or should be given a parenthetical analysis. In this section, I will show that the class of verbs that allow slifting follows the same generalization identified above for the verbs that allow V2 complements. In terms of semantic embedding, however, slifting differs from the V2 complement construction. The major questions leading the remainder of the discussion in the following sections are therefore (i) why the property of upward epistemicity would enable verbs to appear in slifting and V2 embedding constructions, and (ii) what the exact semantic difference between the two constructions is.

Slifting (Ross, 1973) is the construction where an attitude verb appears interpolated into the clause that constitutes its semantic complement, as exemplified in (342) for English, and (343) for German.

(342) John, I hope, will come tomorrow.

(343) Peter, hoffe ich, kommt noch heute.
Peter, hope I, comes still today.
'Peter, I hope, will come today.'

Its proper syntactic analysis has been the subject of some discussion for several decades. There are two major contenders for the structure of (343): On the one hand, the slifted phrase shows syntactically unintegrated behavior, which has suggested a parenthetical analysis (Reis, 2002; de Vries, 2007) for the phrase *hoffe ich* ('I hope').

On the other hand, since the matrix clause contributes the semantic argument of the slifted phrase, extraction analyses like (Ross, 1973) have been proposed to account for the similarities to complementation. For example, Wagner (2004) proposes that slifting is a subcase of V2 embedding, where an item has been extracted from the embedded V2 clause. In this view, it is said that just as extraction from some embedded 'that'-clauses is possible (344), extraction from embedded V2 clauses leads to slifting (345–346).

(344) Was$_i$ glaubt Peter, dass Maria liest t$_i$?
What believes Peter, that Maria reads t?

'What does Peter believe that Maria reads?'

(345) Was$_i$ glaubt Peter t$_i$ liest Maria?
What believes Peter t reads Maria?
'What does Peter believe that Maria reads?'

(346) Peter$_i$ hoffe ich t$_i$ kommt heute.
Peter hope I t comes today.
'Peter, I hope, will come today.'

Looking at this example in more detail: (344) shows extraction of a wh-word from an embedded *daß*-clause into the matrix clause. In German, the finite verb in a main clause raises to the C position, and one element must move to Spec(CP). This is the position that *was* ('what') occupies in (344).

Sentences (345) and (346) look like they could be analyzed in parallel fashion. In both cases, one could assume that given a sentence with V2 complement, the wh-word (345) or the subject (346) has been extracted into the main clause from the complement. In the following, I will show that this is not the case, and extraction from V2 complements never happens in German. These cases are actually examples of the slifting construction, which I will turn to in more detail in the following section. I present the class of verbs that allow slifting, and discuss similarities and differences between the syntactic and semantic behavior of slifting vs. V2 embedding.

6.3.1 Slifting Verbs

In German, (essentially) the same class of verbs can be used in slifting as in V2 embedding. Slifting is possible with verbs of saying, belief, imagination, and the preference verbs like 'hope' and 'fear'. Further, verbs of obligation can be used in slifting just in case a modal like 'must' is present. I illustrate each of these options with an example below.

(347) Maria, behauptet Peter, ist schwanger.
Maria, claims Peter, is pregnant.

‘Maria, Peter claims, is pregnant.’

(348) Maria, glaubt Peter, ist schwanger.
Maria, believes Peter, is pregnant.
‘Maria, Peter believes, is pregnant.’

(349) Hans ist, stellt er sich vor, der König von Sachsen.
Hans is, imagines he self part., the king of Saxony.
‘Hans is, he imagines, the king of Saxony.’

(350) a. Peter, hofft Maria, kommt heute noch.
Peter, hopes Maria, comes today still.
‘Peter, Maria hopes, will come today.’

b. Peter, fürchtet Maria, kommt heute noch.
Peter, fears Maria, comes today still.
‘Peter, Maria fears, will come today.’

(351) a. * Peter, befiehlt Maria, geht sofort nach Hause.
Peter, orders Maria, goes immediately to home.
‘Peter, Maria orders, goes home immediately.’

b. Peter, befiehlt Maria, soll sofort nach Hause gehen.
Peter, orders Maria, should immediately to home go.
‘Peter, Maria orders, should go home immediately’

Just like in the case of V2 embedding, slifting is ruled out for factive and downward entailing verbs, the verbs ‘wish’ and ‘want’, as well as negated or modalized verbs:

(352) a. * Maria, bereut sie, ist nach Berlin gezogen.
Maria, regrets she, is to Berlin moved.
‘Maria regrets that she moved to Berlin.’

b. * Peter, weiß Maria, kommt heute noch.
Peter, knows Maria, comes today still.
‘Peter, knows Maria, will come today.’

(353) * Peter, bezweifelt Anna, kommt noch heute.
Peter, doubts Anna, comes still today.
‘Peter, doubts Anna, will come today.’

(354) a. * Peter, { wünscht sich / will } Maria, kommt heute noch.
Peter, { wishes / wants } Maria, comes today still.
‘Maria wishes/wants that Peter comes today.’

+ V2 embedding/slifting	− V2 embedding/slifting
verbs of saying	factive verbs
verbs of belief	downward epistemic verbs (‘doubt’, ‘deny’)
verbs of imagination	
‘hope’/‘fear’	pure preference verbs ‘wish’, ‘want’
‘it is better’[6]	‘it is possible’
verbs of obligation	

Table 6.4: Compatibility of attitude verbs with V2 embedding and slifting.

b. * Peter, wollte Maria, käme heute noch.
Peter, wants-SUBJ Maria, come-SUBJ today still.
‘Maria wants that Peter comes today.’[5]

(355) a. * Peter, glaubt Anna nicht, kommt noch heute.
Peter, believes Anna not, comes still today.
‘Anna doesn’t believe that Peter will come today.’

b. * Peter, will Anna glauben, kommt noch heute.
Peter, wants Anna believe, comes still today.
‘Anna wants to believe that Peter will come today.’

Reis (1996, p. 64) notes that in addition, “preference verbs” like ‘it is better’ are not possible in slifting (356). This is in fact not true for all preference verbs (since ‘hope’ is fine in slifting). Still, it is a notable difference that ‘it is better’ allows V2 complements but not slifting. For now, this fact has to remain an open question.

(356) * Peter, ist es besser, kommt noch heute.
Peter, is it better, comes still today.
‘It is better that Peter comes today.’

We can therefore agree with Reis (1996) that the classes of verbs that allow slifting and V2 embedding are the same; with the notable exception of ‘it is better’ (Table 6.4).

[5]For slifting, using the subjunctive (*Konjunktiv II*) with ‘wish’ and ‘want’ does not seem to help. This mystery must remain for future work at this point.

6.3.2 Properties of Slifting vs. V2 embedding

Slifting as well as V2 embedding are licensed for verbs with an upwards-epistemic component (excluding factivity). Despite the fact that the same class of verbs participates in both constructions, slifting and V2- embedding have some striking semantic differences.

First, it can be shown that the slifted phrase is a parenthetical, interpolated into the clause which expresses its semantic complement. In contrast, the attitude verb heads the main clause in V2 embedding: V2 complements are in fact syntactically and semantically embedded under the attitude verb. This can be shown by testing how slifting and the V2 embedding construction can be formed into a question. The German particle *denn* must be licensed locally by a question operator, that is, it is only possible in questions. We can therefore test which of the two clauses in slifting and V2 embedding is the matrix clause by checking which clause allows the particle *denn*.[7] As a baseline we can also test regular embedded that-clauses, for which it is obvious which clause is the matrix one (that can be questioned).

(357) Glaubst du denn, daß er (* denn) gefahren ist?
Believe you PART, that he (* PART) driven is?
'Do you think that he has left?'

(358) Glaubst du denn, er ist (* denn) gefahren?
Believe you PART, he is (* PART) driven?
'Do you think that he has left?'

(359) Ist er denn, glaubst du (* denn), gefahren?
Is he PART, believe you (* PART), driven?
'Do you think that he has left?'

(357) demonstrates that the question particle *denn* can only appear in the matrix clause of questions. The use of *denn* in (358) shows that 'you believe' is a proper main clause

[6]Only V2 embedding

[7]Reis (1996) uses *denn* to argue for a parenthetical analysis of slifting, with slightly different examples.

here. The V2 clause is syntactically and semantically embedded, just like the that-clause is in (357). In contrast, 'you believe' is not the main clause in the question in (359). The particle *denn* is impossible in the slifted phrase, but fine in the clause that constitutes the semantic argument of the attitude verb.

Second, slifted phrases are not semantically embeddable under other operators like 'because', whereas V2 complement clauses are embeddable under these operators, just like sentences with regular 'that'-complements.

(360) Maria kommt nicht, weil ich denke, daß es regnen wird.
Maria comes not, because I think, that it rain will.
'Maria won't come. The reason is that I think that it will rain.'

(361) Maria kommt nicht, weil ich denke, es wird regnen.
Maria comes not, because I think, it will rain.
'Maria won't come. The reason is that I think that it will rain.'

(362) Maria kommt nicht, weil es, denke ich, regnen wird.
Maria comes not, because it, think I, will rain.
'Maria won't come. I think the reason is that it will rain.'

In (360), the 'that'-clause is embedded under 'because'. As indicated in the translation, the sentence expresses that the entire complex 'I think it's going to rain' is the reason why Maria won't be there. (361) has exactly the same meaning, showing that again, the complement clause is semantically embedded under the operator 'because', even when this complement clause shows V2 word order. In contrast, the slifting example (362) has a different interpretation. The slifted phrase 'I think' is not semantically embedded under 'because' here, so it is not part of the reason why Maria won't attend.

Third, the fact that 'it is better' embeds V2 clauses but does not participate in slifting points to the fact that the two constructions are not one and the same. Under the "Slifting = Extraction from V2-Complements"-analysis, any verb that allows V2 complements should also participate in slifting, since slifting is just a case of V2 embedding with extraction of an initial element. Under this account, any verb that allows extraction from a 'that'-clause

complement, and also allows V2 complements, would be predicted to also allow slifting (since slifting is in this proposal analyzed as V2 complements + extraction).

(363) Was$_i$ glaubt Peter, dass Maria liest t$_i$?
What believes Peter, that Maria reads t?
'What does Peter believe that Maria reads?'

(364) Was$_i$ glaubt Peter t$_i$ liest Maria?
What believes Peter t reads Maria?
'What does Peter believe that Maria reads?'

(365) Was ist es besser, daß Maria liest t$_i$?
What is it better, that Maria reads t?
'It is better that Maria reads what?'

(366) * Was$_i$ ist es besser liest Maria t$_i$?
What is it better reads Maria t?
'What is it better that Maria reads?'

Again, (363) shows an extraction from a 'that'-clause. (364) would be the parallel analysis given to a case of slifting. Example (365) shows that extraction from a 'that'-complement is possible for 'it is better'. We already know that 'it is better' can have V2 complements. This would leave the fact that slifting is impossible with 'it is better', as demonstrated by the ungrammaticality of (366), unexplained.

Therefore, the only analysis remaining for (366) is a parenthetical one. The impossibility of (366) shows that true extraction from a V2 complement is impossible in German, since even the wh-quantifier *was* ('what') cannot be extracted from the V2-clause. But since an extraction analysis is impossible even for the wh-case as in (366), regular slifting cases can even less be derived in this way.

I conclude that in their compositional semantic behavior, V2 complement clauses act the same as 'that'-clauses, whereas slifting is a different case. V2 complement clauses are a case of proper syntactic and semantic embedding. In contrast, slifting cannot be a case of embedding: The behavior of a sentence remains unchanged whether or not a slifted phrase is present. A parenthetical analysis therefore is appropriate, as proposed by Reis (1996).

6.4 Slifting as Evidentials

The syntactic behavior of slifting is expected if slifted phrases in German are analyzed as parentheticals, as proposed by Reis (1996). Given this syntactic structure, the compositional semantics of slifting remains to be determined. This semantics should also explain why only some verbs are capable of appearing slifted, as well as their unembeddability. This is the topic of this section.

6.4.1 Analysis

Potts (2007b) suggests that slifted phrases such as 'I think' function as evidentials. According to his proposal, evidentials affect the epistemic threshold which is associated with a conversation. This threshold is a context variable that determines whether the speaker is sufficiently sure of a certain sentence to utter it.

Typical slifted phrases are 'I hear', 'I think', 'Peter says'—slifting is a way of expressing evidentiality in a productive way in languages like English or German, that do not have morphological evidentials. For example, 'I think' would lower the threshold somewhat so that mere beliefs are assertable. 'I hear' lowers the threshold considerably, so that even hearsay evidence is sufficient for the speaker to make his utterance.

This assumes a dynamic theory of discourse where utterances are only assertable if the speaker's certainty exceeds a conversational threshold T. This epistemic threshold T is a context variable which is affected by the formality of the discourse, the status of the participants, and other factors. Its function is in the meta-communicative level of discourse moves: From the speaker's perspective, the threshold can be seen as a filter on permissible utterances, an implementation of the Gricean Maxim of Quality ("Say only for what you have good evidence") (Grice, 1975). Conversationally, the presence of this threshold thus enables the hearer to draw an inference about the speaker's epistemic state. The threshold

T provides the evidence based on which the hearer is asked to perform their part of the discourse move (usually to put the proposition into the common ground). The function of the evidential that affects this epistemic threshold T, in this case the slifted phrase, is to alert the hearer to the fact that the usual inference cannot be drawn. Instead, a different kind of side comment about the speaker's epistemic state is provided. Instead of inferring "the speaker is 90% sure of this" (say, as usual), the presence of 'I think' leads the hearer to infer merely "the speaker is 75% sure of this".

The characterization of slifting verbs as evidentials nicely captures their functional similarity to morphological evidentials in other languages. Furthermore, it explains the semantic unembeddability of the slifted phrase, since this is a parenthetical that does not contribute directly to the assertion of the sentence. But the meaning of slifting verbs is not exhausted by their evidentiality. Slifting is a productive way of expressing evidentiality in which many verbs with subtle meaning distinctions can be used. The epistemic component (lowering of the epistemic threshold) is only one part of the meaning of these verbs. For example, consider the slifting verb 'hope': On the one hand, 'I hope' expresses a certain degree of epistemic possibility, similar to (although maybe lower than) 'I believe'. On the other hand, 'I hope' has very clear lexical content expressing a preference for the positive outcome. This component constitutes the difference between 'hope' and 'fear' as in (367–368).

(367) Peter, I hope, will come today.

$\Rightarrow$ I think maybe Peter will come today; and I prefer him to come today.

(368) Peter, I fear, will come today.

$\Rightarrow$ I think maybe Peter will come today; and I prefer him not to come today.

Based on these considerations, I am now in a position to propose a compositional semantics for slifting. The meaning I propose for a sentence p with slifting verb V is two-dimensional: The main assertion of the utterance is p, after the epistemic threshold of the

conversation has been lowered (the function of evidentials). The actual content of the slifting verb V is contributed as a side comment in the conventional implicature dimension (this distinguishes 'I hear' from 'I hope').

(369) Assertion: T↓ (p)

CI: V(p)

(370) Peter, hoffe ich, kommt noch heute.
Peter, hope I, comes still today.
'Peter, I hope, will come today.'

(371) Assertion: T↓ (Peter will come today)

CI: hope(I, Peter will come today)

The notation "T↓" in (369) signifies that the epistemic threshold T of the context be lowered according to the lexical meaning of the embedding verb: 'think' lowers T less than 'hear'. The matrix clause "p" is only assertable given this lowered epistemic threshold.[8]

6.4.2 Slifting and Verb Classes

Why, though, are only certain verbs able to participate in slifting? This, I argue, is a direct consequence of the verb's semantic properties. To show this, I will discuss the three broad types of verbs that are ruled out from slifting in turn: verbs without an epistemic component ('wish'), downward-epistemic verbs ('doubt'), and factive verbs ('know'). Finally, I turn to negated and modalized verbs.

For the first case, consider the following example with the pure preference verb 'wish':

(372) * Peter, wünsche ich, kommt noch heute.
Peter, wish I, comes still today.
'Peter, I wish, will come today.'

[8]Exploring the properties of T↓ in more detail opens up new lines of research into how human communication is organized. This is especially interesting since the evidentials identified here are not only a few morphemes, but a large open class of words.

Since verbs like ‘wish’ do not have an epistemic component in their meaning, they cannot be used in an evidential function, to modify the epistemic threshold provided by the context. The epistemic component of the attitude verb meaning is necessary so that the epistemic threshold T can be changed.

There is additional evidence that it is indeed the evidential part of the meaning of slifting (T↓) that is the problem here. This evidence, I argue, comes from another kind of parenthetical construction, *as*-parentheticals (373).

(373) Peter is coming today, as Mary said.

As-clauses have been analyzed by Potts (2002b) as parentheticals that contribute their meaning on the conventional implicature dimension. The meaning of (373) is:

(374) Assertion: Peter is coming today
CI: Mary said (Peter is coming today)

The CI part of the meaning of slifting and *as*-parentheticals is the same, only the assertion differs. While in *as*-parentheticals, the matrix clause is asserted straightforwardly, slifting contributes the evidential part of the meaning which temporarily lowers the epistemic threshold before asserting the matrix clause.

Verbs like ‘wish’ or ‘want’ are allowed in *as*-parentheticals, unlike in slifting. Since the only difference between the semantics of slifting and *as*-parentheticals is the evidential contribution of the sliftings, this must be what causes the slifting sentences with ‘wish’ to fail, just like explained above.

(375) Peter, (just) as I had wished, made me dinner for my birthday.

(376) Peter kommt noch heute, wie ich es mir wünsche.
Peter comes still today, as I it me wish.
‘Peter is coming today, as I wish.’

Second, downward epistemic verbs such as ‘deny’ or ‘doubt’ are ruled out in slifting.

(377) * Peter, bezweifle ich, kommt noch heute.
Peter, doubt I, comes still today.
'Peter, I doubt, will come today.'

(378) Assertion: T↓ Peter is coming today

CI: I doubt (Peter is coming today)

If example (377) was possible, it would contribute the following two parts (378): first, the speaker claims that Peter will come today (relativized to a lowered epistemic threshold), and second, the speaker conveys his or her doubt that Peter will come today. These two contributions are contradictory. In fact, this case is nearly identical to Moore's paradox (Baldwin, 1993), the fact that one is self-contradictory if one says "It's raining but I don't believe that it is." Both Moore's example and (377) are ruled out by the grammar.

But not all cases with downward epistemic verbs are this clear-cut. If the subject of the slifting verb is not the speaker, the two contributions of the utterance don't necessarily contradict.[9] In fact, under the right circumstances, somebody else's disbelief of a fact may indeed be good positive evidence for this fact. For example, we can imagine a computer which is programmed to output "false" for true statements and "true" for false statements, exactly the reverse of the actual facts. Even if I know this, I still cannot utter the following sentence:

(379) * Peter, bezweifelt der Computer, kommt noch heute.
Peter, doubts the computer, comes still today.
'Peter, doubts the computer, will come today.'

It turns out that this is a restriction that *as*-parentheticals in general share with slifting.[10]

[9] I thank Kai von Fintel for this observation.

[10] But see (Potts, 2002a, p. 75–76) for some examples of negated verbs in *as*-parentheticals.

(i) We don't have enough of it. Space. Not in the cities. Not on the land, and, as we don't need to tell you, not in the libraries. (Potts, 2002a, ex. (57))

Potts suggests that pragmatic licensing (by contrast, for example) may be at play here.

It is striking that nonrestrictive relative clauses do not have this restriction.

(380) * John is smart, everybody denied.

(381) * John is smart, as everybody has denied.

(382) John is smart which (so far) everybody has denied.

The paradigm above seems to indicate that slifting and *as*-clauses pattern alike, as opposed to *which*-clauses. In Pott's (2002a) analysis of *which* and *as*, both types of parentheticals contribute conventional implicatures. The only difference is that *as*-parentheticals modify propositions, whereas *which*-clauses modify *nominalized* propositions.

However, this difference in the semantics and structure does not readily explain the paradigm with regard to negation. Potts explains the fact that extractions from islands are only possible for the individual-type *which* in nonrestrictive relative clauses (since it is a nominalized proposition) and not for the proposition-type moved operator at play in *as*-parentheticals. But this explanation does not readily carry over to negation, according to Potts.

Finally, the third class of verbs that do not allow slifting in German are factive verbs.

(383) * Peter, weiß jeder, kommt noch heute.
Peter, knows everybody, comes still today.
'Peter, everybody knows, will come today.'

(384) Assertion: T↓ Peter will come today.

Presupposition: Peter will come today.

CI: Everybody knows (Peter will come today)

Factive verbs presuppose their complement. Thus the sentence (383) would make altogether three contributions, as shown in (384): the presupposition that Peter will come today, the assertion that Peter will come today (according to the epistemic threshold), and the conventional implicature that the speaker knows that Peter will come today.

In order to pin down exactly what causes the sentence to fail, we will compare it again

with *as*-parentheticals. *As*-parentheticals contribute the same meaning parts as sliftings, but they do not have the evidential function. The *as*-parenthetical corresponding to (383) is given below, with its analysis (Potts, 2002b).

(385) Peter, as everybody knows, is the best poker player.

(386) Peter ist, wie du weisst, ein sehr guter Skatspieler.
Peter is, as you know, a very good Skat player.
'Peter is, as you know, a very good Skat player.'

(387) Assertion: Peter will come today.

Presupposition: Peter will come today.

CI: Everybody knows (Peter will come today)

Even though Assertion and Presupposition are redundant, the sentence is fine. Thus, this cannot cause the problem for (383). The only difference in the contributions of slifting and the *as*-parenthetical is the evidential function of slifting. Now, the function of slifting is to manipulate the epistemic threshold under which an utterance can be made. But a factive verb does not actually manipulate the epistemic threshold, since the conditions under which one can utter "Peter will come today" are not changed by adding 'know'. Therefore, factive verbs cannot be used as evidentials in the slifting construction. In other words, if p (the matrix proposition) is already in the common ground (as assumed by the presupposition), then what is the point of asserting T↓ (p), or p modified by an evidential? *As*-parentheticals are freely possible with factive verbs, suggesting that it is indeed the evidential function which is impaired by the factivity.

6.4.3 Slifting and Semantic Embedding

The analysis also naturally accounts for the fact that sliftings cannot be semantically embedded. Only the assertion contributed by a clause embeds semantically under other operators. The conventional implicature is a side comment which always associates with the

top level. Since the attitude verb's lexical meaning is contributed in the CI dimension in slifting, it cannot be in the scope of other operators, as we have seen above.

Recall example (362), where a slifting construction was embedded syntactically under *weil* ('because'). Only the assertion contributed by the embedded clause is within the scope of CAUSE. The CI from the slifting construction is unchanged.

(388) a. Maria kommt nicht, weil es, denke ich, regnen wird.
Maria comes not, because it, think I, will rain.
'Maria won't come. I think the reason is that it will rain.'

b. Assertion: CAUSE (T↓ it will rain, Maria won't come)

CI: I think (it will rain)

The question example (359) with question particle *denn*, repeated below in (390), is more difficult. It is clear that the slifting verb *glauben* ('believe') is not part of the question: only the at issue content (assertion) is questioned, as also demonstrated by the syntactic position of the particle. The contribution in the CI is more complicated. It appears that in questions, some types of side comments receive a meaning related not to the question itself, but to the answer expected from the listener. For example, *honestly* commits the listener to an honest answer if it is part of a question like (389) (Potts, 2005, ex. (4.152b)).

(389) Honestly, has Ed fled?

≈ Provide me with an honest answer to the question *Has Ed fled?*

(390) a. Ist er denn, glaubst du (* denn), gefahren?
Is he PART, believe you (* PART), driven?
'Do you think that he has left?'

b. Assertion: Q (T↓ did he leave)

CI: ≈ Provide what you believe is the answer to the question *Did he leave?*

6.4.4 Summary: Slifting

To summarize this section, I have shown that slifted phrases in German are syntactic and semantic parentheticals (as argued in (Reis, 1996)), which function as evidentials. I have proposed a two-dimensional meaning for slifting, with the lowering of an epistemic context variable (the epistemic threshold affected by evidentials) as the main contribution, and the attitude content of the slifting verb contributed as a side comment in the conventional implicature dimension. This two-dimensional semantics predicts why only upwards-epistemic (but not factive) verbs can be used in the slifting construction: (i) Only verbs with an epistemic component can affect the epistemic threshold (this rules out 'wish'); (ii) the asserted content (matrix clause) and non-asserted content (slifted phrase) must not clash (this guarantees upwards epistemicity and rules out 'doubt'); (iii) the point of the evidential is to manipulate the epistemic threshold—a factive verb does not lower the threshold and thus the construction does not feel like slifting. Further, the analysis also naturally accounts for the fact that sliftings cannot be semantically embedded. As a CI contribution, the lexical meaning of the slifting verbs are scopally outside of other operators.

6.5 V2 Complement Clauses

In this section, I return to V2 complements of attitude verbs. Based on the similarities and differences of the slifting construction and V2 complements, and given the analysis of slifting as two-dimensional evidentials as proposed in the previous section, I put forward a new analysis of V2 complement clauses. I argue that they as well contribute a two-dimensional semantics. But the meaning parts, although the same as in the case of slifting, are distributed differently across the semantic dimensions for V2 complements, as can be shown by the compositional semantic behavior of both constructions.

6.5.1 Analysis

I have shown above in section 6.3.2 that V2 embeddings are true syntactic and semantic embeddings. It follows that in the assertion dimension, V2 embeddings have the same meaning as regular 'that'-complements. This is also expected because overall, V2 embeddings and sentences with regular 'that'-complements are very close in meaning. However, unlike in 'that'-clauses, the complement is expressed as a V2 clause. I argue that this V2 syntax contributes a second meaning, namely that the proposition p from the complement clause is assertable given an epistemic threshold T. The indexical T is affected by the attitude contributed by the matrix verb, parallel to what happens in the evidentials (slifting). Thus, I propose the following compositional semantics for a sentence with matrix verb V and V2 complement p:

(391) Assertion: V(p)

CI: T↓ (p)

(392) Ich hoffe, Peter kommt noch heute.
I hope, Peter comes still today.
'I hope that Peter will come today.'

(393) Assertion: hope(I, Peter will come today)

CI: T↓ (Peter will come today)

According to (393), the difference between using a *that*-complement clause and a V2-complement is that the latter contributes an additional side comment (CI) that the speaker endorses the embedded proposition to a certain extent. The V2 word order in the complement yields this contribution, that the embedded proposition is assertable given a lowered epistemic threshold. From this it follows that the speaker should be somewhat committed to the content of the embedded V2 clause, whereas the speaker is not committed to the content of an embedded *that*-clause. This notion has been in the literature for quite a while, applied to embedded "root"-type clauses in different languages. For example, Hooper and

Thompson (1973) argue that embedded root phenomena (in English) are possible only in asserted clauses. More recently, it has been claimed for other Germanic languages that embedded V2 clauses are in fact asserted. Thus, de Haan (2001) analyzes Frisian sentences with V2 complement clauses as mere juxtapositions of two main clauses, and Julien (2007) argues that Norwegian and Swedish embedded V2 clauses are asserted, in order to explain their distribution. For German, Schwabe (2006a,b) claims that declarative root (i.e., V2) clauses come with an ASSERT operator.

It can be seen easily that German V2 complement clauses are clearly not straightforwardly asserted as a general rule. For example, by uttering (392) above the speaker does not state that Peter is in fact coming today. Nevertheless, some level of endorsement of the embedded proposition is indeed attributed to the speaker (this is also suggested by Truckenbrodt (2006)). This endorsement is the assertability contribution in the CI dimension.

In my proposed analysis, the meaning for V2 embeddings is completely parallel to the meaning for slifting above, but the semantic pieces are distributed differently over the semantic dimensions of assertion and conventional implicature, as shown in table 6.5.

	slifting	V2 embedding
Assertion:	T↓ (p)	V(p)
CI:	V(p)	T↓ (p)

Table 6.5: Semantics of slifting vs. V2 embedding.

6.5.2 V2 Complement Clauses and Verb Classes

The closeness in meaning between slifting and V2 embeddings explains why the same class of verbs in German participates in both kinds of constructions. The three main problematic cases are ruled out for essentially the same reasons as were brought forward above for slifting. First, an epistemic component to the verb's meaning is clearly needed to bind the epistemic indexical T. This is also argued (in different form) by Truckenbrodt (2006).

(394) * Maria will, Peter kommt heute noch.
Maria wants, Peter comes today still.
'Maria wants that Peter comes today.'

A verb like 'want' which expresses pure preference without any epistemic contribution cannot bind this indexical and the CI contribution of assertability given a certain epistemic index therefore fails.

Second, if the attitude verb contributes a downwards directed epistemicity such as in the case of 'doubt', the two components of meaning in the assertion and conventional implicature will again clash.

(395) * Ich bezweifle, Peter kommt noch heute.
I doubt, Peter comes still today.
'I doubt that Peter will come today.'

(396) Assertion: doubt(I, Peter will come today)

CI: T↓ Peter will come today

The assertion states that Peter's coming today is in doubt, and the CI states that Peter will come today (which is at least as likely as some index T). This clash in opposing contributions leads the sentence to fail.

Third, factive verbs are not able to take V2 complements.

(397) * Ich weiß, Peter kommt noch heute.
I know, Peter comes still today.
'I know that Peter will come today.'

(398) Assertion: know(I, Peter will come today)

Presupposition: Peter will come today

CI: T↓ Peter will come today

By comparing slifting with *as*-parentheticals, I have determined in section 6.4.2 that it is the evidential function T↓ which fails for factive verbs. Since this evidential function is also part of the meaning of V2 complements, they are expected to be impossible for

factive verbs as well. An additional factor may be at play for V2 complements, though. Since factive verbs already presuppose their complement p, it is very odd to add another side comment (CI) stating the assertability of p. CIs are used to convey new information. The strong antibackgrounding restriction on side comments can also be observed with an overt example. Trying to tease apart the two contributions into a main assertion and a side comment overtly is also decidedly strange, as seen in (399). This shows that in addition to the general inability of factive verbs to bind the epistemic index, the particular configuration of the meaning parts of V2 complement clauses would make a factive verb especially odd in this construction.

(399) Sue knows that Maria is pregnant, # which by the way is true.

6.5.3 V2 Complement Clauses and Semantic Embedding

The analysis of V2 complement clauses also accounts for the fact that these clauses do semantically embed. Again, it is the contribution on the assertion level which can be embedded under other operators. In the assertion, sentences with V2 complements and sentences with 'that'-complements contribute exactly the same meaning. Thus, the embeddability should not differ.

Let's reconsider the two embedding examples discussed above. In (400), the attitude verb 'think' with its V2 complement is embedded under 'because'. Further, a side comment is conveyed that it will rain, given a lowered epistemic threshold.

(400) a. Maria kommt nicht, weil ich denke, es wird regnen.
Maria comes not, because I think, it will rain.
'Maria won't come. The reason is that I think that it will rain.'

b. Assertion: CAUSE(I think (it will rain), Maria won't come)

CI: T↓ (it will rain)

The V2 complement construction can also be easily embedded within a question (401a).

The assertion-level part of the semantics is straightforwardly computed as the attitude verb with its complement, embedded under the question operator, as shown below.

(401) a. Glaubst du denn, er ist (* denn) gefahren?
Believe you PART, he is (* PART) driven?
'Do you think that he has left?'

b. Assertion: Q (do you believe (he left))

CI: T↓ (he left)

The proposed analysis also predicts a side comment of the assertability of "he left", uttered at a lowered epistemic threshold. This does not seem to be intuitively borne out for the question (401a). Uttering this question does not require the speaker to endorse the embedded proposition more than as a mere possibility. In this, the question (401a) is entirely parallel to the question with a 'that'-complement, repeated in (402).

(402) Glaubst du denn, daß er (* denn) gefahren ist?
Believe you PART, that he (* PART) driven is?
'Do you think that he has left?'

This unexpected fact must be left for further investigation. As I have noted above, side comments with communicative effects sometimes behave differently in questions and declarative sentences. For example, items like *honestly* become addressee-oriented when they are uttered within a question. A similar effect may be happening here, whereby the assertability of the complement "he left" (at a lowered epistemic threshold) is not directly attributed to the speaker in questions.

6.5.4 Summary: V2 Complement Clauses

We have thus found the explanation for the puzzle that this chapter set out to solve: Why only a subclass of attitude verbs in German allows V2 complement clauses. The reason is the fact that the V2 syntax contributes an additional semantic piece in the conventional

implicature dimension. This semantic part states assertability of the complement given the epistemic threshold provided by the context, which has been modified according to the matrix verb. Thus, only matrix verbs that have an upwards-directed epistemic component (but are not factive) are possible in V2 embedding. In effect, the meaning of sentences with V2 embedding is very similar to the meaning of slifting sentences. In both cases, the same semantic parts are expressed, but they are distributed differently over the semantic dimensions of assertion and conventional implicature. This leads to the different compositional behavior of the two constructions in German. V2 complement clauses are semantically embeddable under other operators just like 'that'-complements, but unlike sliftings.

6.6 V2 Embedding in Other Germanic Languages

V2 Embedding is also possible in Germanic languages other than German which show V2 syntax. It has been discussed extensively also for Scandinavian languages (Norwegian, Swedish) and West Frisian. This section is a side note to the main argument of the chapter addressing the question of whether the V2 embedding phenomenon can be analyzed as a cross-linguistically stable construction.

To do this, I ask (i) Is the class of verbs that allow V2 complement clauses cross-linguistically stable?, and (ii) Do V2 embeddings behave syntactically and semantically the same across the different languages? Only if both questions can be answered positively is there a chance for a common cross-linguistic analysis of the construction.

This does not turn out to be the case. Instead, I argue that although V2 complement clauses are properly embedded in German, they don't seem to be in Frisian and Mainland Scandinavian. A common analysis is therefore not likely. Furthermore, although the verb classes involved do overlap to a large extent, they may not be entirely identical, further undermining the common core of the cross-linguistic construction of V2 embedding.

6.6.1 V2 Embedding Verb Classes Across Germanic

In German, as discussed above (section 6.2), the following classes of verbs allow V2 complement clauses: verbs of saying and belief, verbs of imagination, and certain verbs of (dis)preference which have an epistemic component ('hope', 'fear'). Excluded are factive verbs, negative ('doubt') or negated verbs, and pure preference verbs ('wish', 'want'). The class of German V2CC verbs can be generalized as verbs with an upwards-epistemic semantic component, without factivity. The core class of V2 embedding verbs (verbs of saying and belief) is the same in Frisian and the Scandinavian languages Faroese, Swedish, Norwegian, and Icelandic (de Haan, 2001; Bentzen et al., 2007).

(403) Ik hoopje (*dat) it giet goed my dy. (Frisian)
I hope (*that) it goes well with you.
'I hope that you're doing well.' (de Haan, 2001, (2a))

(404) Skillnad-en är att om politik eller sex skriv-er vi inte. (Sw)
Difference-DEF is that about politics or sex write-PRES we not.
'The difference is that about politics or sex, we do not write.' (Julien, 2007, (3c))

(405) Han sa at han kunne ikke synge i bryllupet. (Norwegian)
He said that he could not sing in wedding-the.
'He said that he could not sing in the wedding.' (Bentzen et al., 2007, (15a))

However, the classes do not match up exactly: In Norwegian for example, factive verbs can sometimes have complement clauses with V2 word order (marked by the verb preceding the negation *ikke* ('not')).

(406) Alltid glemte de at den gutt-en var ikke som andre. (N)
Always forgot they that that boy-def was not like others.
'They always forgot that that boy was not like the others.' (Julien, 2007, (23b))

(407) * Sie haben immer vergessen, dieser Junge war nicht wie die anderen. (German)
They have always forgot, that boy was not like the others.
'They always forgot that that boy was not like the others.'

Further, in Norwegian, double negations have been claimed to be able to embed V2 clauses, which they cannot do in German:

(408) Jeg tviler ikke på at slike konserter hjelper faktisk mot
I doubt not on that such concerts help actually against
vold-en. (Norwegian)
violence-DEF.
'But I do not doubt it that concerts like that actually have an effect on the violence.' (Julien, 2007, (19))

(409) * Ich bezweifle nicht, solche Konzerte haben einen Einfluß auf die
I doubt not, such concerts have an effect on the
Gewalt. (German)
violence.
'I don't doubt that such concerts have an effect on the violence.'

6.6.2 Cross-linguistic Properties of V2 Embedding

If V2CCs are instances of the same phenomenon crosslinguistically, not only should the verbs that allow it match up, but semantic properties must also be the same. However, the crucial syntactic and semantic properties of German V2 embeddings do not carry over to the other languages. I have shown above that in German, the matrix verb taking a V2 complement clause can be embedded under a question operator (410), as well as under other semantic operators.

(410) Glaubst du denn, sie ist schwanger? (German)
Believe you Q-PART, she is pregnant?
'Well, do you think she is pregnant?'

This shows that the V2 clause is in fact syntactically and semantically embedded under the matrix verb (see also Reis, 1997). In West Frisian and Mainland Scandinavian, in contrast, the matrix verb of a V2 complement clause cannot be questioned (411–412). Thus, out of the studied Germanic languages, only German attitude verbs properly embed V2 complements.

(411) * Leaude er dat it skip wie juster fergien? (West Frisian)
Believed he that the ship was yesterday wrecked?
'Did he believe that the ship was wrecked yesterday?' (de Haan, 2001, (7c))

(412) * Tror du att man vet inte vad en sån där kille kan göra?
Think you that one know not what a such there guy can do?
'Do you think that one doesn't know what a guy like that can do?' (Swedish)
(Julien, 2007, (11b))

For Frisian, already de Haan (2001) argues extensively that there is no evidence for true subordination in V2 embedding. He suggests a paratactic analysis made up of two independent root clauses. However, this leaves the restrictions still at play in Frisian V2 embedding unclear. For example, why questions are not allowed. A slightly different solution suggests itself from the work in this chapter.

6.6.3 V2 Embedding in Scandinavian and West Frisian

Indeed, if V2 embeddings in Frisian and Mainland Scandinavian are not actually an example of syntactic and semantic embedding, then what are they? Another construction in which attitude verbs combine more freely with their (semantic) complements has been introduced in this chapter as well: slifting. Recall that in slifting, the matrix verb cannot be questioned (413), nor can it be semantically embedded under other operators such as 'because' (414).

(413) * Ist sie, glaubst du denn, schwanger? (German)
Is she, believe you Q-PART, pregnant?
'Well, do you think she is pregnant?'

(414) Maria kommt nicht, weil es, denke ich, regnen wird. (German)
Maria comes not, because it, think I, rain will.
'Maria won't come, because it will rain, I think.'

Thus, slifting is not a case of proper embedding, but rather should receive a parenthetical analysis as proposed above in section 6.4. If this analysis can be carried over to V2

"embeddings" in Frisian and Scandinavian, it also reflects the fact that these V2 complements are claimed to be "asserted" (Julien, 2007; but see Bentzen et al., 2007). In slifting, it is only the semantic argument of the slifting verb which is asserted. In contrast, German V2 complement clauses have been shown to be proper complements, whose V2 word order contributes an additional side comment of assertability given an epistemic threshold in section 6.5.

To draw a conclusion from this section, even though the classes of verbs that allow V2 complements in German, West Frisian and Mainland Scandinavian largely overlap, the syntactic and semantic properties of V2 embeddings in German differ from the other languages: German V2 complement clauses are properly embedded under the attitude verb, whereas V2 clauses in Frisian and Scandinavian are not. Thus, the V2 complements of attitude verbs cannot receive a common cross-linguistically stable analysis. Instead, I propose that while German V2 arguments are complement clauses with an additional assertability contribution (triggered by the V2 word order), V2 complements in Frisian and Scandinavian may be more accurately analyzed as evidentials, similar to slifting.

6.7 Summary

The main question guiding this chapter was to find the exact semantics of V2 embeddings in German, and to determine why only some attitude verbs can be used in this construction. In my discussion, I compared V2 embeddings to the slifting construction, because they are very similar in meaning. Further, the classes of attitude verbs that allow slifting and V2 embedding are essentially the same (except for 'it is better') in German, as I show in section 6.3. This leads me to ask why it is that this particular class of verbs allows for both uses?

I argue that verbs with the given properties, namely upwards epistemicity without fac-

	slifting	V2 embedding
Assertion:	T↓ (p)	V(p)
CI:	V(p)	T↓ (p)

Table 6.6: Semantic contribution of slifting and V2 embedding constructions.

tivity, have some additional freedom when combining with their complement. In particular, these verbs can be used (1) parenthetically as slifting verbs, with an evidential-like semantics, or (2) as embedders of V2 complements that have their own assertability contribution. This has the effect that slifting and V2 embedding contribute the same semantic content, but they distribute it differently across dimensions (Table 6.6).

This difference in the distribution of meaning parts on semantic dimensions leads slifting and V2 embedding to behave quite differently syntactically and semantically, as I have shown contra (Wagner, 2004) in this chapter.

In effect, this means that different types of attitude verbs show a different degree of freedom when combining with their arguments. I have briefly discussed the greater paradigm of parenthetical expressions with attitude verbs including *as*-parentheticals and nonrestrictive relative clauses with *which*. The four constructions show a different amount of "glue" between the attitude verb and the proposition in its complement. The way that the attitude verb combines with its semantic argument determines the semantics of the construction, which in turn influences both the (external) compositional properties of the utterance (such as its embeddability) as well as the classes of verbs that are able to appear in it. The facts covered in this chapter are summarized in Table 6.7.

[11]The notation $\cap$p(p) denotes the nominalization of p. According to Potts (2002a, (7)):

(i) If $p \in D_{<s,t>}$, then $^{\cap p}(p) = [\iota^p : \forall w \in p : w \leq x^p]$ and $^{\cap p}(p) \in D_e$.

	daß (‘that’)	V2 embedding	slifting	*as*	*which*
Assertion:	V(p)	V(p)	T↓(p)	p	$\cap_p$(p) [11]
CI:	–	T↓(p)	V(p)	V(p)	V($\cap_p$(p))
sagen (‘say’)	✓	✓	✓	✓	✓
wissen (‘know’)	✓	–	–	✓	✓
bezweifeln (‘doubt’)	✓	–	–	–	✓

Table 6.7: Paradigm of attitude verbs’ combinatory options.

Chapter 7

Conclusion

In this thesis, I have addressed the multidimensionality of formal semantics in multiple case studies. The guiding questions behind my research are: What are the semantic pieces associated with a certain word or construction? How are these semantic pieces distributed over the known dimensions of meaning? And what effects does the individual distribution of meaning parts over semantic dimensions have for the overall meaning, function, and discourse effects of complex utterances?

7.1 Contributions of This Thesis

This dissertation presented suitable multidimensional meanings for a range of semantic operators which pose problems for the current semantic architecture because they show interesting compositional behavior.

The first part of my thesis concentrated on modifiers in the dimensions of assertion and conventional implicature. Building on previous work mainly by Potts (2005), I linked the semantic and syntactic properties of utterance modifying adverbials like *frankly*. I proposed an alternative anaphoric approach to capture the semantics of these items, which

has advantages for syntactically embedded cases (chapter 2). In chapters 3–5, I developed parallel analyses for a large range of cases that have similar syntactic and semantic properties, including *because*, *if*, and *although*-clauses. As part of this paradigm, I proposed a new semantic analysis of *denn* vs. *weil* ('because'), two causal connectives in German, accounting for their semantic differences and similarities (chapter 3). My new account of relevance conditionals for the first time correctly captures their semantic unembeddability, and successfully ties their non-conditional impact to their conditional form, as shown in chapter 4. These parallel phenomena, as I argued, show that sentence adjuncts (this includes adverbs, as well as certain *because*-, *if*-, and *although*-clauses) can be utterance modifiers if they operate on the conventional implicature dimension. On the one hand, the fact that the adjuncts retain their regular lexical meaning accounts for small differences between the constructions. On the other hand, the distribution over the semantic dimensions of assertion and conventional implicature explains the differences in compositional behavior between two types of uses of the adjuncts: the regular (assertion-level) and utterance modifying (CI-level) readings.

In the second part of this thesis, I concentrate on two types of semantic complements. I analyzed V2 complement clauses and sliftings in German. These two constructions have a similar meaning and are part of a large paradigm of constructions through which an attitude verb can combine with its semantic argument. Again, I showed that the semantic similarity of the two constructions follows from the fact that the semantic pieces at play are the same. However, these pieces are distributed differently over the semantic dimensions of assertion and conventional implicature, which leads to intricate differences in the syntactic and semantic behavior. In the first part of chapter 6, I revised the generalization of attitude verb classes that allow for complements with verb second word order and the slifting construction in German. This led to my proposal of a unified analysis of verb-second embedding and slifting in German that accounts for their semantic closeness through common

pieces of meaning and their behavioral differences through contrasting multidimensional semantics. Verb-second embedding and slifting were shown to be part of a paradigm of argument-taking for attitude verbs, with small differences between the multidimensional semantics of each of the constructions.

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