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Free factive subjunctives in German – Ich hätte da eine Analyse

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Introduction

We have many different ways of offering advice or suggesting a course of action: issuing a direct order, asking a question, stating a fact in the world or even pointedly looking at something can all serve as clues that something should be done.

This dissertation explores a use of the subjunctive in German which also serves to give advice or make a tentative offer. This use has not received attention in the formal semantics literature, and it goes against much of what we believe we know about the meaning of the subjunctive. This use is illustrated in (1).

(8.1) *Es wäre Pizza im Kühlschrank.*
it is.SUBJ pizza in-the fridge
'There is pizza in the fridge.'

The meaning of (1) is glossed here with an indicative: there *is* pizza in the fridge. This is not a typo. A speaker can only felicitously utter (1) if he or she is committed to the truth of the proposition *there is pizza in the fridge* in the actual world, much the same as if he or she had used an indicative instead. In this respect, free factive subjunctives differ substantially from more familiar uses of the subjunctive: usually subjunctives are used to express the speaker's uncertainty about the truth of the embedded proposition. German seems to be fairly unique in allowing the subjunctive to appear in contexts where the speaker is committed to the truth of the embedded proposition.

The effect that using a free factive subjunctive has can best be described as giving tentative, hidden advice: a speaker who uses (1) does not *advise* or *recommend* eating the pizza, but by using the free factive subjunctive, she is suggesting that eating the pizza may be a good way to move forward.

In this dissertation I set out to first provide a collection of data: how productive

is this construction? Can it occur in embedded contexts? Can it occur anywhere that we expect an indicative to occur? Then I investigate some broader questions: how does the free factive subjunctive interact with other parts of meaning? And most importantly: what does it mean itself?

I will show that using free factive subjunctives has to do with giving advice. They convey that the speaker has a good idea of what to do next, but does not want to appear pushy. Intuitively, free factive subjunctives are used whenever the speaker conveys, 'there is an opportunity here, but it is up to you to use it!'

This makes free factive subjunctives very different at once from both indicatives and other uses of the subjunctive: both the reportative and the irrealis use of the subjunctive, rather than conveying that the speaker is committed to the truth of the expressed proposition, typically convey that the speaker is not convinced of its truth. The indicative, on the other hand, is lacking the additional layer of meaning conveying that there is an 'opportunity'. Where indicatives describe, free factive subjunctives give (tentative) advice and egg the addressee on to take advantage of an opportunity.

The dissertation is organized as follows. In chapter 1, I give an overview of the data. I discuss different uses of the subjunctive in German and how they have been described in the descriptive literature. I also give the first – to my knowledge – comprehensive description of the free factive subjunctive and which contexts it can and cannot occur in.
Chapter 2 discusses the relevant literature on mood within formal semantics. We will quickly see that none of the existing accounts can be extended to explain the phenomenon of the free factive subjunctive because they either hardwire a 'weak commitment' component into the semantics or postulate a competition with the indicative. Neither is the case for the free factive subjunctive. The chapter also gives a brief overview over the frameworks of intensional semantics and decision theory.

In chapter 3 I argue that the contribution of the free factive subjunctive is in fact threefold: I show that it has a non-at-issue component, and that it has two presuppositions.

Chapter 4 formalizes the proposal. I show how the free factive subjunctive fits

into a multi-dimensional semantics and how it interacts with operators such as negation and tense.

Chapter 5 branches out and, after briefly discussing an alternative analysis of free factive subjunctives as relevance conditionals with a hidden antecedent and dismissing this analysis, I take a closer look at relevance conditionals. I propose that there are two types of relevance conditionals: those that can co-occur with past reference and those that cannot. I show that this poses a problem for traditional theories of relevance conditionals, but then show a way out.

Chapter 6 concludes the dissertation.

Chapter 1

The puzzle

The present chapter introduces the phenomenon of the free factive subjunctive in German. However, because this construction has not received attention in the literature before, section 1.1 first looks more broadly at the German subjunctive paradigm (the forms *Konjunktiv I* and *Konjunktiv II*) and the different uses of both forms that have been identified in the descriptive literature. Section 1.2 zooms in on descriptions of the free factive use of the subjunctive to the extent that they exist.

Using these insights as a starting point, section 1.3 introduces a working definition of the notion of free factive subjunctives which helps determine whether a particular use of the subjunctive is a free factive one or not. Finally, sections 1.4 and 1.5 provide a systematic discussion of the free factive subjunctive data, an intuitive first stab at a generalization regarding its meaning, and a (pre-theoretic) overview over the kinds of contexts that the free factive subjunctive can be used in. Readers who are only interested in the free factive subjunctive, but not the other uses, should skip ahead to section 1.2.

1.1 The Subjunctive in German

German has two paradigms of subjunctive marking, the *Konjunktiv I* and *Konjunktiv II*. The classification of Palmer (2006) distinguishes between *subjunctives* and *irrealis* moods, with subjunctives being found more frequently in Indo-European

languages, while irrealis moods are found more frequently in Amerindian and Papuan languages. Palmer suggests both subjunctives and irrealis moods have basically the same function, namely signalling 'non-assertion'. However, they differ in their distribution and syntactic properties. Subjunctives typically have their own paradigm, whereas irrealis mood is simply marked with a single element. Subjunctives are also more often selected by embedding verbs, whereas irrealis mood often occurs in certain sentence types (such as questions or utterances about the future). Because the German *Konjunktiv* has its own paradigm and is not tied to any particular sentence type, it is more similar to the category of subjunctive. But it differs from e.g. Romance subjunctives in certain important ways to be discussed below. For now, it is important to note that while the subjunctive in Romance is always *selected* by an embedding construction (resulting in an ungrammatical construction if no subjunctive is used with those constructions), the *Konjunktiv* in German is never obligatory – it is always chosen for semantic effect (cf. Giannakidou t.a. for a typology of *selected* subjunctives vs. subjunctives of *choice*; also cf. Schlenker 2005 who suggests that only the Romance subjunctive is a 'true' subjunctive).

Like most other subjunctives, the *Konjunktiv* is typically used to signal weakened epistemic commitment to the truth of the proposition with which it co-occurs.

(1.1) *Victoria quiere que Marcela venga al picnic.*
Victoria wants that Marcela come.SUBJ to-the picnic
'Victoria wants Marcela to come to the picnic.' SPANISH[1]

(1.2) *Marc veut que le printemps soit long.*
Marc wants that the spring is.SUBJ long
'Marc wants that spring is long.' FRENCH[2]

(1.3) *Isos na erthi o Janis.*
Perhaps SUBJ come the Janis
'Maybe Janis will come.' GREEK[3]

(1.4) I wish I *were* rich. ENGLISH

[1]Example (5) from Villalta 2006.

[2]Example (1b) from Giannakidou t.a..

[3]Example (11) from Giannakidou 2011.

(1.5) *Ich hätte* *den Test bestanden.*
I have.SUBJ the test passed
'I would have passed the test.' GERMAN

As these examples show, subjunctives can occur in a wide number of environments – for example, with verbs of preference (*vouloir 'want'*), possibility adverbs (*isos 'maybe'*), emotive factives, and in unembedded contexts (German).

In each of these examples, the speaker is using the subjunctive to signal that she has a weakened epistemic commitment to the truth of the proposition that the subjunctive co-occurs with (following von Fintel 1997 I call this proposition the *prejacent*). The speaker of (4) is not committed to the truth of the prejacent proposition *I am rich* in the actual world. Neither is the speaker of (2) committed to the truth of *spring is long* in the actual world.

This use of the subjunctive, which I will call the 'irrealis' use, has received a lot of attention in the semantics literature. This rich body of literature will be discussed in chapter 2. It will be put to the test to see how well it can account for the free factive use of the German *Konjunktiv II*. Since this use is quite different from the irrealis use (and crucially does not signal weakened epistemic commitment to the truth of the expressed proposition), we will see that it is extremely difficult if not impossible to find a unified analysis of both of these uses, and that none of the existing analyses of the irrealis use can be extended to account for the free factive use as well.

1.1.1 The *Konjunktiv I*

The aim of this section is to introduce the *Konjunktiv I*. Note that it is only mentioned here for completeness' sake. While it gives rise to many interesting puzzles, it cannot be used in the free factive construction I am interested in and is therefore beyond the scope of the present work. For a recent discussion of its meaning and use, see Sode (2014).

Morphological makeup

According to Zifonun et al. (1997) the *Konjunktiv I* is morphologically derived from the simple present tense. The table in (1.1) illustrates the *Konjunktiv I* forms of *sein 'be'*, *leben 'live'*, and *kommen 'come'*. Note that the indicative and subjunctive paradigms for *leben 'live'* show a great deal of overlap – in fact, the only audible difference can be found in the third person singular. (The difference in the second person singular and plural is typically not pronounced.)

	present tense ind.	**Konjunktiv I**
1sg	bin	sei
2sg	bist	seist
3sg	ist	sei
1pl	sind	seien
2pl	seid	seid
3pl	seien	seien
1sg	lebe	lebe
2sg	lebst	lebest
3sg	lebt	lebe
1pl	leben	leben
2pl	lebt	lebet
3pl	leben	leben
1sg	komme	komme
2sg	kommst	kommest
3sg	kommt	komme
1pl	kommen	kommen
2pl	kommt	kommet
3pl	kommen	kommen

Table 1.1: The *Konjunktiv I*

Uses of the Konjunktiv I

Konjunktiv I is only very rarely used in today's speech (Buscha and Zoch 1984 already suggest that it is a prestige form used only in written language). There are three contexts of use which allow it.[4]

Reported speech The *Konjunktiv I* can be used to signal that the speaker is not presenting her own assessment of a situation, but presenting what someone else said. In these contexts, the subjunctive is often embedded under a matrix clause which contains a verb of saying. When there is no embedding clause, the subjunctive alone signals that the (belief in the) proposition expressed is attributed to someone other than the speaker.

(1.6) *Alex behauptet, er sei krank.*
Alex claims he is.SUBI sick
'Alex claims he is sick.'

(1.7) *Die Truppen seien abgezogen worden.*
the troops are.SUBI removed been
'The troops have reportedly been removed.'

To signal reported speech, it is not obligatory to use *Konjunktiv I*, though: it is also acceptable to use *Konjunktiv II* or a plain indicative instead (a corpus study conducted by Jäger 1971 found about two thirds of tokens of reported speech used *Konjunktiv I*. One might expect an even higher percentage if it was a true 'default' mood). More details on the use of *Konjunktiv II* in reported speech follow below.

Note that despite the *Konjunktiv I*'s morphological similarity to the present indicative, it does not signal recent-ness, but it is compatible with it.

(1.8) *Gerade habe ich mit Alex gesprochen. Er sagt, er sei zur Zeit krank.*
just have I with Alex spoken he says he is.SUBI at-this time sick

[4] Kjederqvist 1896 proposes that *Konjunktiv I* may additionally have had a 'potentialis' use which was no longer attested at the time of his writing. It is unclear if this results from corpus data available to Kjederqvist, or if he extrapolated from 'potentialis' forms in Latin.

'I just spoke with Alex. He says he is sick right now.'

But the speaker can also use the *Konjunktiv I* to report something that happened ten years ago (and which may no longer be true in the present).

(1.9) *Vor zehn Jahren sagte Alex, er sei glücklich mit seinem*
previous ten years said Alex he is.SUBI happy with his
Italienisch-Kurs.
Italian-class
'Ten years ago, Alex said he was happy with his Italian class.'

In this context, Alex did not take the Italian class recently, and does not have to still be taking one at the time of the utterance for the speaker to be able to use the *Konjunktiv I*. Instead, Eckardt (2014) has argued for *Konjunktiv I* (in free indirect discourse) that it encodes temporal co-reference with a context of utterance which is different from the 'current' context in which the speaker utters the *Konjunktiv I*.[5]

Note further that *Konjunktiv I*, *Konjunktiv II* and indicative are often used interchangeably when used in reported speech. Many speakers take them to have no difference in meaning (but see below for differing opinions and more details).

(1.10) *Alex sagt, er ist/ sei/ wäre krank.*
Alex says he is.IND is.SUBI is.SUBII sick
'Alex says he is sick.'

In (10) the speaker's choice of mood in the reported utterance does not change the meaning of the sentence. In all three cases the speaker simply conveys that Alex made the utterance 'I am sick.'

[5]Note that this proposal correctly predicts that German does not have true double access readings for *Konjunktiv I* and therefore does not exclude examples like the following. (I do not discuss Eckardt's proposal for reportative uses of the indicative and *Konjunktiv II* and its predictions for double access readings in those cases here.)

(1.i) ✓ *Vor drei Jahren hat Alex erzählt, Maria sei schwanger.*
before three years has Alex told Maria is.KONJI pregnant
'Three years ago, Alex said that Maria is pregnant.'

Hypothetical comparatives Similarly to reported speech, indicative, *Konjunktiv I* and *Konjunktiv II* can all be used interchangeably in hypothetical comparative constructions. Consider this example (Buscha and Zoch (1984)'s example (12)):

(1.11) *Das Kind schreit, als ob es große Schmerzen habe/ hätte/*
the child screams as if it big pain has.SUBI/ has.SUBII/
hat.
has.IND
'The child is screaming as if he is in a lot of pain.'

There is a sense in which a hypothetical comparative such as (11) is similar to an instance of reported speech: in both cases, the speaker has only indirect evidence of the truth of the prejacent proposition. Indeed it has been argued in the literature that the reportative use of the *Konjunktiv I* is similar to evidentials in other languages (cf. AnderBois 2014; see below). It would be interesting to see if languages that show evidential marking in reportative contexts also show evidential markings in hypothetical comparatives. This is beyond the scope of the present work but would be interesting to investigate. It is important to note that German does not have obligatory *Konditional I* marking on either reported speech or hypothetical comparatives.

Special imperatives; 'Heischesätze' There is only one context in which *Konjunktiv I* cannot be used interchangeably with indicative and *Konjunktiv II*: third person imperatives (so-called 'Heischesätze'). These are quite rare and not very productive.

(1.12) *Lang lebe der König!*
long live.SUBI the king
'Long live the king!'

This kind of construction is discussed in Schlenker (2005) for French and Portner (1997) for English imperative *may*. It is not relevant for the present discussion.

Analyses of the *Konjunktiv I*

There are a number of recent analyses of the *Konjunktiv I* on the market. Since the *Konjunktiv I* is not relevant for the present work, I refer the reader to them

directly rather than discuss them in detail.

Schlenker (2003) proposes that *Konjunktiv I* is a 'logophoric mood': its world index is presupposed to be excluded from the context set. Similar analyses are proposed by von Stechow (2003), Fabricius-Hansen and Sæbø (2004), and Sode (2014). Both von Stechow and Fabricius-Hansen and Saeboe propose that the subjunctive presupposes that there must be an attitude verb to bind the subjunctive (note that Fabricius-Hansen and Sæbø 2004 develop their proposal within the framework of DRT). All of these analyses argue against adopting the view that the *Konjunktiv I* has a core function of signalling non-factivity.

Potts (2005) proposes to apply his multi-dimensional semantics of conversational implicature to the *Konjunktiv I*, which according to Potts signals that the speaker 'disavows himself of any commitment, even via implicatures, to the proposition' expressed by the prejacent (p. 186). The two-dimensional meaning he assigns to an utterance like *Fritz glaubt, dass Maria krank sei 'Fritz believes that Maria is sick'* is a pair of sets of worlds: the set of worlds in which Fritz believes that Maria is sick, and the set of worlds in which the speaker is open to the falsity of the proposition that Maria is sick.

Finally, it has been noted in the evidentials literature (e.g. in AnderBois 2014) that the *Konjunktiv I* behaves similarly to reportive evidentials in other languages.

I will leave it to the reader to decide which of these analyses is best suited to account for the *Konjunktiv I*.

1.1.2 The *Konjunktiv II*

Table (1.2) gives an overview over the morphological make-up of the *Konjunktiv II*. Note that while the past tense indicative and subjunctive forms of *sein 'be'* and *kommen 'come'* differ from each other, there is complete overlap in the forms of *leben 'live'*.[6] The *Konjunktiv II* can also be formed analytically with *würde* + infinitive, as illustrated in table (1.3). The würde-*Konjunktiv* is used especially in

[6] Iatridou (2000) has noted that crosslinguistically counterfactual meaning is often expressed by using a past morpheme and a future morpheme. German does not fall into this category; both *Konjunktiv* paradigms differ from the past indicative and future paradigms.

cases where the other form is conflated with the past tense indicative, but can also be used in cases where a distinctive synthetic form is available.

	past tense ind.	**subjunctive II**
1sg	war	wäre
2sg	warst	wärest
3sg	war	wäre
1pl	waren	wären
2pl	wart	wäret
3pl	waren	wären
1sg	lebte	lebte
2sg	lebtest	lebtest
3sg	lebte	lebte
1pl	lebten	lebten
2pl	lebtet	lebtet
3pl	lebten	lebten
1sg	kam	käme
2sg	kamst	kämest
3sg	kam	käme
1pl	kamen	kämen
2pl	kamt	kämet
3pl	kamen	kämen

Table 1.2: The *Konjunktiv II*

For simplicity, the examples in the body of the text will often use a form of *sein 'be'*, but note that all claims made for the synthetic *Konjunktiv II* are also valid for the *würde*-Form.

Uses of the Konjunktiv II

The *Konjunktiv II* can be used in a variety of contexts: in reported speech, in hypothetical or counterfactual contexts, and in 'free factive' contexts (the topic of the present text). This of course raises the question whether it also has a multitude of (different) meanings. Do we need to assume homophony between two or more types of *Konjunktiv*, or can we assume there is one unified meaning which covers all the different uses?

	würde subjunctive
1sg	würde sein
2sg	würdest sein
3sg	würde sein
1pl	würden sein
2pl	würdet sein
3pl	würden sein
1sg	würde leben
2sg	würdest leben
3sg	würde leben
1pl	würden leben
2pl	würdet leben
3pl	würden leben
1sg	würde kommen
2sg	würdest kommen
3sg	würde kommen
1pl	würden kommen
2pl	würdet kommen
3pl	würden kommen

Table 1.3: The *würde* Konjunktiv

Different authors have different answers to this question: Heidolph et al. (1981:522) argue for a unified meaning. They propose that all uses of the *Konjunktiv* in German share a core meaning, namely that it signals that the utterance is 'not completely valid', whereas the indicative signals that the utterance is 'completely valid'. Jäger (1971:170) proposes a common core meaning of 'distancing'.

Saltveit (1969:172) and Buscha and Zoch (1984:19), on the other hand, argue *against* a unified meaning, claiming that there is no unified meaning of the *Konjunktiv*. Buscha and Zoch argue that in language there is no isomorphism between form and meaning so we should not even look for a unified meaning, whereas Saltveit simply argues that the uses of the *Konjunktiv* are too diverse to assume a common meaning. Finally, Jung (1980) has suggested a two-way split: *Konjunktiv I* is used to signal reported speech, and *Konjunktiv II* is used to signal non-factivity.[7]

[7]Claiming that Konjunktiv I (and only Konjunktiv I) can signal reported speech is already

In the remainder of this section, I will discuss those uses of the *Konjunktiv II* that are not free factive uses.

Reported speech As mentioned before, indicative, *Konjunktiv I* and *Konjunktiv II* can all occur in reported speech, but intuitions differ as to whether there is a difference in meaning between the three. A psycholinguistic study in Sommerfeldt (1971), reported in Buscha and Zoch (1984), finds that speakers do not use rules to guide their choice between *Konjunktiv I* and *II* in reported speech: they use them at random, without distinction. This is also my intuition.

However, Flämig (1959) claims that there are indeed subtle differences, as follows: whenever the *Konjunktiv I* form is identical to the indicative form, the *Konjunktiv II* can be used with no difference in meaning. The *Konjunktiv II* then has an *Ersatz* function to replace the *Konjunktiv I*, which in turn signals that the speaker is reporting the prejacent.

Whenever there is a difference in form between indicative and *Konjunktiv I*, the choice between *Konjunktiv I* and *II* is a semantic one: *Konjunktiv I* is a neutral signal that the speaker is reporting the prejacent, but *Konjunktiv II* additionally signals that the speaker herself distances herself from the proposition; she believes it to be unlikely or even false. Flämig reports a contrast between the following two sentences.

(1.13) *Alex hat gesagt, er sei krank.*
Alex has said he is.SUBI sick
'Alex said he is sick.' *speaker attitude: neutral*

(1.14) *Alex hat gesagt, er wäre krank.*
Alex has said he is.SUBII sick
'Alex said he is sick.' *speaker attitude: disbelief*

challenged by Jäger (1971) who did a corpus study of the Mannheim Corpus (containing mostly novels and newspaper articles). Jäger shows that 57.7% of all occurrences of the Konjunktiv occur in reported speech, but that reported speech can be expressed by Konjunktiv I, II, or indicative.

The second-largest group Jäger identifies are conditionals, and other uses of the subjunctive are much less frequent, at least in the genres represented in the Mannheim corpus. It would be helpful to conduct a corpus study with one of the more recent corpora that are larger and more balanced with respect to text types, in order to get a clearer picture of how the subjunctive is used (especially in spoken language).

The speaker of (13) is (reportedly) not conveying her own attitude towards Alex's reported illness. (14), on the other hand, supposedly conveys that the speaker herself doubts whether Alex is in fact sick. As mentioned above, speaker judgments vary, and we cannot assume that every speaker is distancing herself from the prejacent proposition whenever *Konjunktiv II* is used instead of *Konjunktiv I*.

Optatives *Konjunktiv II* can also be used to express wishes.

(1.15) *Wenn Alex doch schon da wäre!*
if Alex PART already here is.SUBII
'If only Alex was here already!'

For a recent analysis of optatives, see Grosz (2012).

Conditionals *Konjunktiv II* is the form that German uses in non-indicative conditionals: both in counterfactuals and in future less vivid conditionals.

Counterfactual conditionals typically describe a state of affairs which is not only improbable, but strongly believed to be impossible to hold in the actual world. Usually the antecedent proposition is believed to be false in the actual world. Then, because the truth of the antecedent is typically a pre-condition for the truth of the consequent, the consequent will also be believed to be false in the actual world.

(1.16) *Wenn ich gestern Zeit gehabt hätte, wäre ich zum*
if I yesterday time had have.SUBII is./sc SubII I to-the
Training gegangen.
practice gone
'If I had had time yesterday, I would have gone to practice.'

In a typical situation, (16) can be understood to mean that because the speaker did *not* have time yesterday, she did *not* come to practice in the actual world.
But, as pointed out by Anderson (1951), it is also possible to use counterfactuals when the speaker does in fact believe that the consequent holds in the actual world.

(1.17) *Wenn der Tote Arsen genommen hätte, würde er genau die*
if the dead arsenic taken have.SUBJ would he exactly the
Symptome zeigen, die er tatsächlich zeigt.
symptoms show that he in-fact shows
'If the dead man had taken arsenic, he would show exactly those symptoms which he does in fact show.'

Note that counterfactuals can also refer to the present time (*present counterfactuals*), if at the present time certain facts hold which make it impossible for the consequent to become true.

(1.18) *Wenn ich jetzt Zeit hätte, würde ich zum Training gehen.*
if I now time have.SUBII would I to-the training go
'If I had time now, I would go to practice.'

As with (16) the typical interpretation of (18) is that because the speaker does not have time now, she is *not* going to practice in the actual world.

There is a large body of literature devoted to describing and analyzing the differences between indicative and subjunctive conditionals which I will not discuss here.[8] Very roughly, a speaker who utters an indicative conditional signals that while she may not be committed to the truth of the antecedent (or the consequent) in the actual world, she does hold it possible that it is true. When the speaker uses a counterfactual conditional, her interlocutors will by default assume that she does *not* believe the antecedent (or consequent) to hold in the actual world.

Future less vivid conditionals I follow the terminology of classical Greek grammars and Iatridou (2000) in using the term *future less vivid* conditionals for conditionals whose antecedents show subjunctive marking while referring to the future. With an indicative conditional, the speaker simply asserts that she believes all worlds in which the antecedent holds are also worlds in which the consequent holds. But with a future less vivid conditional, the speaker gives an additional signal: she signals that she believes it is unlikely that the antecedent holds in the actual world.

[8] Cf. e.g. Stalnaker 1968, Kratzer 1977, von Stechow and Grønn 2011, von Fintel 2011, 2012b among many others.

(1.19) *Wenn du regelmäßig zum Training gehst, wirst du besser.*
if you regularly to-the practice go.IND become.IND you better
'If you go to practice regularly, you will get better.'

(1.20) *Wenn du regelmäßig zum Training gehen würdest, würdest du besser werden.*
if you regularly to-the practice go would would you better become
'If you went to practice regularly, you would get better.'

In both cases, the speaker is asserting that all worlds in which the addressee goes to practice regularly are worlds in which he will improve. However, Iatridou reports that the future less vivid conditional (20) conveys a biased speaker attitude: the speaker believes it unlikely that the addressee will go to practice regularly.

Unembedded subjunctives All the uses of the *Konjunktiv II* discussed so far have had one thing in common: they were all embedded under an operator, such as a verb of saying, an exclamative operator, or a conditional. But subjunctives in German can also occur in matrix clauses. These are the cases that are relevant for the present work. I now show that we can distinguish two types of unembedded sentences with *Konjunktiv II*: one is interpreted counterfactually; the other factively.

Counterfactual unembedded subjunctives This use is frequently described in the German literature, and it is also available in English.

(1.21) a. I would have passed that exam.

b. *Ich hätte die Prüfung bestanden.*
I have.SUBII the exam passed
'I would have passed that exam.'

This use of the subjunctive has been analyzed as having a hidden counterfactual antecedent in Kasper (1992) and more recently in Schueler (2008).

(1.22) *If I had taken it,* I would have passed that exam.

The core of this analysis is already mentioned in the descriptive literature: Flämig (1959) and Buscha and Zoch (1984) agree that the (hidden) antecedent, which should denote a pre-condition to making the consequent true, is elided but contextually accessible. This type of unembedded counterfactual subjunctive and Kasper's analysis of it will be discussed in more detail in chapter 5.

The free factive subjunctive The *Konjunktiv II* also has free factive uses. Since these are the topic of interest here, their treatment in the literature will be reviewed in the following section in more detail.

1.2 Free factive subjunctives in the literature

The existence of a *factual* use of the *Konjunktiv II* in German is less well-known than its other uses.[9] The present dissertation is dedicated to discussing this construction and providing a semantics and pragmatics for it. This free factive use is formed using exactly the same string as the more familiar counterfactual use, but context typically allows speakers to disambiguate the two uses easily. Consider the following two contexts: in (23), the speaker's utterance is clearly interpreted factively, whereas in (24) the same string in a different context is interpreted counterfactually.

(1.23) **Context:** The speaker has attended a lecture and has already asked a question. She doesn't want to hog the discussion, but notices that there are no other questions from the audience.

Dann hätte *ich* (*noch*) *eine Frage.*
Then have.SUBII I PART a question
'Then I have a(nother) question.'

Note that (23) is glossed with an indicative – crucially, the speaker is committed to having a question *in the actual world*, and there is no feeling that her commitment is somehow weakened. In fact, in a typical context of use, she will follow up (23) with her actual question.

[9] The term *free 'factive'* subjunctive is somewhat misleading: the speaker actually has to be committed to the truth of the prejacent proposition.

This exact same string can also be used as a counterfactual or 'irrealis' subjunctive.

(1.24) **Context:** The speaker is lamenting that she fell asleep during a lecture and therefore has not come up with any interesting questions. She is describing how the world would be better if she had managed to stay awake.

Dann hätte ich (noch) eine Frage.
then have.SUBJ I PART a question
'Then I would have a(nother) question.'

Here the speaker does show weakened commitment to the prejacent proposition in the actual world: the context makes it clear that she does *not* have a question in the actual world.

Let us consider another typical example of a free factive subjunctive: in a restaurant environment, waiters will often present the specials using a free factive subjunctive construction.

(1.25) **Context:** The speaker is a waiter, announcing the specials.

Heute hätten wir eine schöne Dorade.
today have.SUBJ a nice gilthead
'Today we have a nice gilthead.'

Again, it is clear from the context that the speaker is committed to the truth of the prejacent and does not want to signal weakened commitment – in fact, he has to be committed to the fact that the restaurant *has* gilthead to use (25) felicitously.

However, as before, it is also possible to use the string in (25) in a different context with the irrealis interpretation.

(1.26) **Context:** The speaker is complaining about the fishermen's union going on strike. He knows that it is gilthead season, and if there was no strike, the chances of getting gilthead from the market would have been great.

Heute hätten wir eine schöne Dorade.
today have.SUBJ a nice gilthead
'Today we would have a nice gilthead.'

The context disambiguates again: here the speaker unmistakeably is *not* committed to having gilthead in stock in the actual world.

Finally, let us again consider the paradigm example (1) mentioned in the introduction, repeated here as (27).

(1.27) *Es wäre noch Pizza im Kühlschrank.*
it is.SUBJ PART pizza in-the fridge
'There is pizza in the fridge.'

In a typical, out-of-the-blue context the interlocutor will interpret an utterance of (27) factually: the speaker conveys that she is committed that there *is* pizza in the fridge in the actual world.[10]

As these examples show, the subjunctive in German can be used both with a factual and a counterfactual interpretation. What determines which interpretation is chosen? How do interlocutors disambiguate? And what exactly is the meaning of the free factive subjunctive? Moreover, if the subjunctive can be used with a factual interpretation, then how is it different from an indicative?

After this first sketch of the phenomenon itself, let us now review the existing literature. Note first that no formal semantic analysis of the free factive subjunctive exists. The way it is presented in the descriptive grammars of German is usually as an 'exceptional' use: it always comes with the warning that this use is not the main function of the subjunctive, and the claim that it is not as productive as the other 'main' uses of the subjunctive. Moreover, because the category of 'free factive subjunctive' is not used in the literature, the 'exceptional' uses presented typically conflate free factive uses with other uses, such as using an irrealis subjunctive to express a polite wish.

Proof for its marginal status is claimed to be its (supposed) lower productivity (suggested by Buscha and Zoch 1984, Duden 2006:527) and that it mainly appears in spoken language (Götze and Hess-Lüttich 1999:131) or is limited to questions (Weinrich 1993:257). In section 1.4 I will show that these generalizations do not

[10] A less salient irrealis interpretation can be coerced for the string in (27), for example in a context where the speaker's sibling came for a visit and cleaned out the fridge, and the speaker is thinking about how much better the world would be if this hadn't happened.

hold, and that there is in fact little evidence that the free factive subjunctive has 'limited productivity'.

The descriptors used for the contribution of the free factive subjunctive are very similar for all authors: it is thought to be used in order to achieve a 'politeness' effect. Using a free factive subjunctive instead of an indicative makes the utterance appear 'tentative' or 'cautious'. The authors of Duden (2006) suggest that free factive subjunctives are 'low key assertion[s] which [are] trying not to insult the interlocutor'. They give the following range of examples.

(1.28) *Damit hätten wir es geschafft!*
with-that have.SUBJ we it finished
'We made it!'

(1.29) *Also, hier hätten wir den Blumenladen.*
PART here have.SUBJ we the florist
'Here is the florist.'

(28) and (29) are supposed to be more low key than their indicative counterparts: rather than using a 'demanding' indicative, the speaker uses a subjunctive to signal that the speaker is not trying to be pushy.

The authors also present the following use of the subjunctive in their 'polite, tentative' category.

(1.30) *Ich hätte gerne einen Silvaner, bitte.*
I have.SUBJ PART a *Silvaner please*
'I would like a Silvaner wine, please.'

They suggest that a speaker who utters (30) rather than its indicative counterpart is 'more low key': since ordering wine is placing an inconvenience on the waiter already, by using a subjunctive the guest is taking the sting out of ordering the waiter around. I argue in section 1.3 below that this is actually not a free factive use of the subjunctive, but rather the ordinary irrealis use.

Götze and Hess-Lüttich (1999) claim the free factive subjunctive is used to signal (emotional) distance and trying not to appear dominant. They provide the example below.

(1.31) *Das hätte ich nicht erwartet!*
that have.SUBJ I not expected
'I did not expect that!'

They argue that in a context where the speaker had a different expectation and uses the free factive subjunctive in (31), she is expressing less emotional attachment to her original expectation than if she had used (31)'s indicative counterpart.

(Weinrich 1993:257) proposes that questions using a free factive subjunctive are supposed to inconvenience the interlocutor as little as possible and to give the interlocutor 'the option to say no'.

(1.32) *Hätten Sie wohl einen Augenblick Zeit für mich?*
have.SUBJ you PART a moment time for me
'Do you possibly have a minute?'

(1.33) *Würden Sie mir wohl einen Gefallen tun?*
would you me PART a favour do
'Would you do me a favour?'

According to Weinreich, a speaker who uses (32) instead of its indicative counterpart is using the subjunctive to signal that he is more willing to accept a negative answer than if he had used the indicative instead.

Three accounts deserve special attention: (Engel 2004:221) claims that the free factive use of the subjunctive signals that the utterance is 'incidental' or 'negligible', and that it 'makes no sense' because of examples like the following.

(1.34) *Das hätten wir geschafft!*
this have.SUBJ we done
'We made it!'

Engel suggests that both interlocutors in this context know that they did make it, and that making it was neither negligible nor incidental. The fact that a free factive subjunctive is used nonetheless gives rise to a modest, polite interpretation.

Buscha and Zoch (1984) propose that any free factive subjunctive can be replaced with its indicative counterpart without changing the meaning – I will show

below that this is partially true, but misleading. While the truth conditions of free factive subjunctives and their indicative counterparts are (almost) the same, free factive subjunctives can only be used in a subset of contexts which allow indicative utterances. They also give rise to an 'opportunity' reading which I will describe in more detail below.

Flämig (1959) offers a generalization and sketches an analysis. The free factive subjunctive (which he calls the *non-committal* use) is a special case of the unembedded counterfactual subjunctive: there is a hidden antecedent which is something along the lines of *if this is agreeable to you*. In particular, Flämig argues that the speaker does not 'take responsibility' for the prejacent proposition because she knows that the preconditions for the utterance (namely that it is agreeable to the interlocutor) may not be satisfied. It is not clear how Flämig's proposal works: it seems odd to preface a proposition such as *I have cooked pizza* with *if this is agreeable to you*.

In the following sections, I will investigate in how far the intuitions presented in these earlier accounts capture the actual distribution and meaning of free factive subjunctives. In particular, I will show that free factive subjunctives are *not* unproductive, and that their meaning is *not* interchangeable with that of their indicative counterparts. I will show that they occur in written texts as well as in a variety of sentence types, and I will provide contexts in which only an indicative, but not a free factive subjunctive is acceptable.

I will, however, follow the earlier accounts in their intuition that free factive subjunctives signal tentativeness and can sometimes serve to achieve a politeness effect. The challenge will be to develop a formal analysis which derives these facts.

1.3 A working definition of free factive subjunctives

In the previous section we have seen some examples of free factive subjunctives. The aim of this section is to provide a criterion that helps us identify cases of free factive subjunctives and to distinguish them from other uses of the *Konjunktiv II*.

The following working definition is supposed to help us determine whether a given instance of a subjunctive is a free factive use or not.

(1.35) **Definition.** The use of a subjunctive SUBJ(p) is a *free factive* use if it does not change the truth conditions of p (ignoring conditions on the felicitous use).

a. Ignoring presuppositions, on the truth conditional level, $[\![\text{FFS}(p)]\!]^{w,g}=[\![p]\!]^{w,g}$.

b. **Notation.** When a subjunctive SUBJ(p) is interpreted as a free factive subjunctive, this will be glossed as FFS(p).

c. **Indicative replacement test.** An occurrence of SUBJ(p) is a free factive occurrence iff the speaker is equally committed to IND(p).

According to the definition in (35), a use of the subjunctive counts as a free factive use if (in the case of a declarative) at the utterance time the speaker is committed to the truth of the prejacent proposition at the world of evaluation w_0. This is reminiscent of Buscha and Zoch (1984) who suggest that the free factive subjunctive can be replaced by the indicative. Crucially, they suggest that there is no difference at all between an utterance containing a free factive subjunctive and its indicative equivalent. The following sections will show that this is not the case, but that on the at-issue, truth-conditional level the contributions are the same.

As I will show in chapter 3, an utterance containing a free factive subjunctive requires the right context (this will be spelled out as two presuppositions), and it contributes not-at-issue, non-truth-conditional material. Therefore it is wrong to say that the two forms have exactly the same meaning. However, by replacing the subjunctive with the indicative, the speaker's commitment to the truth of the prejacent remains the same. This is not the case for the more familiar 'irrealis' or counterfactual use of the subjunctive.

Consider the following contexts that illustrate using this working definition.

(1.36) **Context:** The speaker just opened the fridge, so she is confident that she knows its contents. Among the contents of the fridge is some leftover pizza.

Es wäre Pizza im Kühlschrank.
it is.FFS pizza in-the fridge
'There is pizza in the fridge.'

In this context, the speaker is very sure that she knows the contents of the fridge. Thus, she is committed to the truth of the prejacent proposition *there is pizza in the fridge* in w_0, and she can felicitously utter (36). The *indicative replacement test* also works: the speaker could also utter *Es ist Pizza im Kühlschrank 'there is.*IND *pizza in the fridge.'*

(1.37) **Context:** The speaker opened the fridge in the morning, and while there was leftover pizza in it then, she is not sure whether her roommates have eaten it.[11]

?? *Es wäre Pizza im Kühlschrank.*
it is.SUBJ pizza in-the fridge
'There would be pizza in the fridge.'
not available: 'There is pizza in the fridge.'

In the context of (37) the speaker is not sure what the contents of the fridge are. She only knows that it is possible that there is pizza in the fridge, but she is not committed that there is. That is why the free factive subjunctive interpretation in (37) is out. Note that it would also be odd for the speaker to use an indicative in this context. That is, the *indicative replacement test* fails: to the extent that the *Konjunktiv* is acceptable, it can only receive an irrealis interpretation.

The same contrast is illustrated in the following minimal pair.

(1.38) **Context:** The speaker is a tour guide and knows exactly where each path at the intersection leads.

Hier ginge es zum Gipfel.
here goes.FFS it to-the summit
'This is the way to the summit.'[12]

(1.39) **Context:** The speaker is hiking with a map, but has never been to the area before so she is not quite sure where the paths at the intersection lead.

[11] Throughout the text I will use ?? to indicate that an utterance is odd.

[12] This example is due to Irene Heim (p.c.).

?? *Hier ginge es zum Gipfel.*
here goes.SUBJ it to-the summit
'This would be the way to the summit.'
not available: 'This is the way to the summit.'

Again, the speaker in (38) is committed to the truth of the prejacent proposition, while the speaker in (39) has some doubts. The *indicative replacement test* works for (38) but fails for (39). We see that the free factive subjunctive does not allow any epistemic uncertainty about the truth of the prejacent proposition.

(1.40) **Context:** The speaker is attending a lecture and has a question.

Ich hätte eine Frage.
I have.FFS a question
'I have a question.'

(1.41) **Context:** The speaker would like to ask a question but actually doesn't have one.

?? *Ich hätte eine Frage.*
I have.FFS a question
intended: 'I have a question.

Again we see that the free factive subjunctive is only acceptable when the speaker is actually convinced of the truth of the prejacent: only in (40), the context where the speaker is quite sure that she does have a question, is the FFS acceptable.

These clear-cut cases give us a good idea of how the definition works. Now we will apply it to two slightly more tricky cases: questions and 'polite' utterances.

Weinrich (1993) argues that free factive subjunctives exclusively occur in questions. While this is false (cf. all examples of free factive subjunctives in declarative sentences discussed above), it nonetheless is true that free factive subjunctive can occur in questions.

(1.42) *Wäre da noch Pizza?*
is.FFS there still pizza
'Is there any pizza left?'

The working definition as formulated in (35) crucially makes use of speaker commitment: a use of the subjunctive only counts as a free factive use if the speaker is committed to the truth of the prejacent. What about questions? We do not want to assume that a speaker who asks *?p* is committed to the truth of either *p* or ¬*p*.[13]

But note that the *indicative replacement test* still works: $[\![?p]\!]^{w,g}=[\![?(\text{Ffs}(p))]\!]^{w,g}$.[14] A speaker who is asking *whether* Ffs *p* is –truth-conditionally – doing the same as asking *whether p*.

Crucially this is not the case with counterfactual questions.

(1.43) *(Wenn Alex sie nicht gegessen hätte,) wäre noch Pizza im Kühlschrank?*
if Alex it not eaten has.Subj is.Subj still pizza in-the fridge
'(If Alex hadn't eaten it,) would there still be pizza in the fridge?'

By answering *yes*, the speaker is not committed to the existence of pizza in the fridge *in the actual world* (unlike in the free factive example (42)). Instead, she is committed to the following more complex belief: In those worlds which are closest to the actual world and in which Alex did not eat the pizza, it is in the fridge. Similarly by answering *no*, the speaker is committed to the belief that in those worlds which are closest to the actual world and in which Alex did not eat the pizza, there is no pizza in the fridge.[15]

Finally, we come to an interesting use of the subjunctive which at first glance seems like a prototypical use of the free factive subjunctive. The speaker is using the subjunctive in order to sound polite. But is it really a free factive use?[16]

(1.44) **Context:** Alex is in line at a food cart. Finally he comes up to the front and orders.

[13] I will follow Krifka 2011 and others who assume that a question consists of a question operator *?* and a sentence radical *p*.

[14] Polar questions containing free factive subjunctives will be discussed briefly in chapter 4. Constituent questions can be treated analogously so I will ignore them here.

[15] The same goes for constituent questions. Since the subjunctive in questions is not the focus of the present work, I do not discuss the semantics of questions in further detail.

[16] This example is due to Manfred Krifka, p.c.

Ich hätte gerne eine Currywurst.
I have.SUBJ gladly a currywurst
'I would like a currywurst, please.'

We apply the definition in (35): the speaker needs to be committed to the truth of the prejacent in the actual world. And she is committed to her wish: she does want a currywurst in w_0. But note that the *indicative replacement test* fails. The speaker cannot replace the subjunctive with an indicative and speak truthfully. *Ich habe eine Currywurst 'I have a currywurst'* is not true of the speaker – she is in line precisely because she does not yet have a currywurst and would like to buy one. Thus the subjunctive used in (44) is not a free factive one.[17]

In summary, we have seen that the working definition of what free factive subjunctives are, in particular the *indicative replacement test*, are suitable tools for identifying when a use of the subjunctive is a free factive use. But note that our working definition does not exclude the possibility that an interlocutor cannot tell whether a speaker is using a subjunctive in its free factive use or in its counterfactual use. The notion of the free factive subjunctive crucially depends on knowing the epistemic state of the speaker: as soon as it is not clear from context whether the speaker is committed to the prejacent proposition or not, the interlocutor cannot tell whether the speaker is using the subjunctive factively or not. This corresponds to our intuitions about how the free factive subjunctive is used.

[17] I am ignoring the contribution of *gerne 'gladly'* here. It seems to trigger a generic reading in the indicative cases that is beyond the scope of the present work. Consider the following contrast.

(1.i) a. *Ich habe Besuch.*
I have visitors
'I am having visitors.'

b. *Ich habe gerne Besuch.*
I have gladly visitors
'I enjoy having visitors.'

1.4 Usage and distribution of the free factive subjunctive

After identifying what free factive subjunctives are, we are interested in finding out more about their distribution. Remember that much of the literature discussed in 1.2 claims that free factive subjunctives are not productive; that is, that they have a very limited usage and distribution.

In this section, I will do three things: I will provide a variety of contexts in which free factive subjunctives are acceptable and from which we can distill a 'canonical' paraphrase. At the same time, I will show that free factive subjunctives are very productive: They can occur in a variety of contexts, and in a variety of forms. Secondly, I show that free factive subjunctives are in fact more limited in their distribution than their indicative counterparts. This is expected if we assume that they contribute something slightly different than their indicative counterparts.

Finally, I formulate some conditions in which free factive subjunctives are acceptable. This will be the basis for the analysis developed in chapters 3 and 4.

Free factive subjunctives are very productive. They can appear both with the synthetic form of the *Konjunktiv II* as in (45) – (47) and with the analytic *würde*-Form as in (48) and (49).

(1.45) **Context:** The speaker is a tour guide who is pointing out what the different buildings are.

Hier drüben wäre das Rathaus.
here yonder is.FFS the city-hall
'This is city hall.'
⇝'There might be an opportunity connected to the fact that this is city hall.'

(1.46) **Context:** The speaker is attending a lecture and has a question that she wants to ask.

Ich hätte eine Frage.
I have.FFS a question
'I have a question.'

⇝'There might be an opportunity connected to the fact that I have a question.'

(1.47) **Context:** The speaker is an experienced hiker helping a confused novice.

Dort ginge es zum Gipfel.
there goes.FFS it to-the summit
'This is the way to the summit.'
⇝'There might be an opportunity connected to the fact that this is the way to the summit.'

(1.48) **Context:** The speaker is on the phone with the addressee and is trying to convince him to come over.

Hier würde die Sonne scheinen.
here would the sun shine
'The sun is shining here.'
⇝'There might be an opportunity connected to the fact that the sun is shining here.'

(1.49) **Context:** The addressee wants to hire a lawyer and the speaker has someone in mind.

Ich würde jemanden kennen.
I would someone know
'I know someone.'
⇝'There might be an opportunity connected to the fact that I know someone.'

As noted in the descriptive literature, the free factive subjunctive is particularly natural in conversations where both partners want to be polite, such as in restaurants.

(1.50) Waiter: *Heute hätten wir ein schönes Steak.*
today have.FFS we a nice steak
Waiter: 'Today we have a nice steak.'
⇝'There might be an opportunity connected to the fact that we have a nice steak.'

(1.51) Customer: *Ich hätte eine Frage.*
I have.FFS a question

Customer: 'I have a question.'
↝'There might be an opportunity connected to the fact that I have a question.'

(1.52) Waiter: *Das wären 30 Euro, bitte.*
that is.FFS 30 Euro please
Waiter: 'Your total is 30 Euro.'
↝'There might be an opportunity connected to the fact that your total is 30 Euro.'

However, it can also be used to discuss a third party who is not an interlocutor (in such contexts it is not clear that the interlocutors would need to be particularly polite).

(1.53) **Context:** Mary is searching for bearded men for a casting call. Alex and Bert are discussing Mary's options.

Alex: Claudio hätte einen Bart.
Claudio has.FFS a beard
Alex: 'Claudio has a beard.'
↝'There might be an opportunity connected to the fact that Claudio has a beard.'

Finally, we note that the construction can also be embedded under a variety of operators, such as questions, past tense, and conditionals.

(1.54) *Wäre da noch Pizza?*
is.FFS there still pizza
'Is there any pizza left?' **QUESTION**
↝'Is there an opportunity connected to a fact that there is pizza in the fridge?'

(1.55) *Da wäre Pizza im Kühlschrank gewesen.*
there is.FFS pizza in-the fridge been
'There was pizza in the fridge.' **PAST REFERENCE**
↝'There was an opportunity connected to the fact that there was pizza in the fridge.'

(1.56) *Wenn du Hunger hast, da wäre Pizza im Kühlschrank.*
if you hunger have there is.FFS pizza in-the fridge
'If you are hungry, there is pizza in the fridge.' **CONSEQUENT OF A RELEVANCE CONDITIONAL**
⇝'If you are hungry, there is an opportunity connected to the fact that there is pizza in the fridge.'

It is more difficult to embed the FFS in the antecedent of a conditional as it is interpreted *factually*. However as soon as the context allows us to construct a *factual conditional* (a conditional whose antecedent is interpreted as true in the actual world, cf. Iatridou 1991), it is perfectly acceptable for a free factive subjunctive to appear in its antecedent.

(1.57) **Context:** The waiter has just announced that today's special is swordfish.

Na, wenn Sie heute Schwertfisch hätten, dann nehme ich den!
well if you today swordfish have.FFS then take I it
'If you have swordfish today, then I will have that.' **ANTECEDENT OF A FACTUAL CONDITIONAL**
⇝'If there is an opportunity connected to the fact that you have swordfish, I will have the swordfish.'

Compare this variety of forms and contexts to the *that would be X* construction in English which is extremely limited in use (cf. Birner et al. 1997). Allowing that *would + V* is an English subjunctive, we might want to argue that this construction is similar to the free factive subjunctive in German.

(1.58) A: Who is that guy outside our window?
B: *That would be John,* my not-so-secret admirer.[18]

As with the free factive subjunctive, speaker B is committed to the fact that the person outside is John in w_0. However, the two constructions are actually very different in their distribution. The *that would be X* construction can only occur with the verb *be*, only in the present tense, and not in a conditional.

[18]Example adapted from Birner et al. (1997).

(1.59) ??I would have pizza. **BAD: (OTHER) VERBS**

(1.60) ??That would have been John. **BAD: PAST REFERENCE**

(1.61) ??If you really want to know, that would be John. **BAD: CONSEQUENT OF A CONDITIONAL**

(1.62) ??If that would be your stalker John, we should call the police. **BAD: ANTECEDENT OF A FACTUAL CONDITIONAL**

Thus the free factive subjunctive in German behaves very differently – and much more productively – than the *that would be X* construction in English.

The examples above effectively prove that free factive subjunctives can occur in a wide variety of sentence types and are not limited to questions. We now set out to prove that they can also occur in written texts and are not a recent phenomenon. Consider the following literary examples, from literature written between 1854 and 1908.

(1.63) Hinter unserm Haus liegt ein alter, verwahrloster Garten. Wenn ich ihn morgens früh vom Bureaufenster aus sehe (ich muss mit Kraus zusammen jeden zweiten Morgen aufräumen), tut er mir leid, dass er so unbesorgt daliegen muss, und **ich hätte jedes Mal Lust**, hinunterzugehen und ihn zu pflegen. Robert Walser: Jakob von Gunten (1908).
*'Behind our house lies an old, neglected garden. When I see it from my office window in the mornings (I have to clean up every other morning together with Kraus), I feel sorry for it because it is sitting there un-cared-for, and every time, I **feel.**FFS like going downstairs and caring for it.'*

(1.64) Um Gott, Excellenz! Dies Wort ist nicht Ihrer Gnaden Ernst. **Ich hätte noch viel zu sagen.** Ludwig Bechstein: Der Dunkelgraf (1854).
*'my Goodness, your Excellency! You are not serious. I **have.**FFS much more to say.'*

(1.65) Sie war merkwürdig verlegen, ja bestürzt: 'Ach, oh – diese Liebenswürdigkeit! diese Güte!... **Ich hätte wirklich nicht erwartet** ... dass Sie so früh ...'
Marie von Ebner-Eschenbach: Rittmeister Brand (1896).

*She was so oddly embarrassed, even dismayed: 'oh – the kindness! the generosity!... I really **didn't**.*FFS *expect ... that you so early ...*

The following examples are from Thomas Mann's *Die Budenbrooks* (1901).

(1.66) 'Erinnern Sie sich', fing Morten wieder an, 'dass ich Ihnen einmal sagte, **ich hätte** eine Frage an Sie zu richten?'
*'Do you remember', Morten started again, 'that I once told you I **had.***FFS *a question to ask you?'*

(1.67) Tony to Tom: '
Hättest du etwas dagegen einzuwenden?'
'Gar nichts.'[...]
'Du kennst mich: **ich hätte** schlecht zum Garcon getaugt.'
*'Do you **have.***FFS *any objections?'*
'None.' [...]
*You know me: I **was.***FFS *ill suited to be a garcon.'*

(1.68) '**Ich hätte nicht gedacht**, dass es mir so gänzlich misslingen würde, dir ein wenig zur Seite zu stehen, Tom!'
*'I **didn't.***FFS *think I would fail so completely to support you, Tom!'*

All of these literary examples come from scenes describing dialogue. This is expected because of the 'opportunity' reading that free factive subjunctives receive – they need to occur in a context where there is a salient individual who might have an opportunity given a set of facts. Nonetheless the examples show that the construction already existed in the 19th century (and was socially acceptable enough to appear in literary texts).

The present section has shown the variety of contexts where the free factive subjunctive is acceptable. The rest of this chapter will be devoted to identifying exactly which environments are suitable to hosting a free factive subjunctive, and which environments are not.

1.5 Which environments can free factive subjunctives occur in?

So far the only restriction we have placed on the free factive subjunctive is that the speaker be committed to the truth of the prejacent in the actual world. But there seem to be additional restrictions on the distribution of the free factive subjunctive. As I will argue in chapter 3, free factive subjunctives carry two presuppositions: there must be a salient decision problem in the context, and the proposition co-occurring with the free factive subjunctive must uniquely identify an action alternative.

Decision problems will be formally introduced in section 2.3. Assume for now that an agent who has a decision problem is considering a set of action alternatives and is trying to choose the one which will provide the optimal solution while taking different desires and facts into account.

I will discuss the restrictions in more formal terms in chapters 3 and 4. Here I just give some contexts of minimal pairs that illustrate the issue.

(1.69) **Context:** The addressee has just come home from work.

Es wäre Pizza im Kühlschrank.
it is.FFS pizza in-the fridge
'There is pizza in the fridge.'

(1.70) **Context:** The addressee has just come home from a dinner (and is likely not hungry).

?? *Es wäre Pizza im Kühlschrank.*
it is.FFS pizza in-the fridge
'There is pizza in the fridge.'

The addressee in (69) has just come home from work. It is reasonable for the speaker to assume that she is hungry and wonders where to get some food. Therefore the free factive subjunctive is acceptable (so long as the speaker is committed that there is pizza in the fridge). On the other hand the addressee in (70) has just come home from a dinner – it is not likely that she is wondering where to get

food. Thus there is no salient decision problem, and the free factive subjunctive is unacceptable.

Now consider the following minimal pairs to get an idea of what it means to uniquely identify an action alternative (this notion will be spelled out in much more detail in chapter 3).

(1.71) **Context:** The speaker knows that the addressee is looking for a pretty dress.

Dieses Kleid wäre schön.
this dress is.FFS pretty
'This dress is pretty.'

(1.72) **Context:** The speaker knows that the addressee is looking for a pretty dress.

?? *Dieses Kleid wäre nicht schön.*
this dress is.FFS not pretty
'This dress is not pretty.'

In both contexts, the addressee is looking for a beautiful dress. By pointing out a beautiful dress as in (71), the speaker is uniquely identifying an action alternative which will get the addressee to her goal: she can buy the dress pointed out by the speaker. But the speaker in (72) fails to provide a unique action alternative: instead she only excludes one option (buying the ugly dress). But all other options (buying dress 2, dress 3, dress 4, etc.) are still live. Note that this restriction to uniquely identify one action alternative often causes negated sentences to be bad with free factive subjunctives even when the speaker is committed to the truth of the prejacent. I show below that FFS and negation can in fact co-occur when the context allows it – it is not a property of free factive subjunctives to be incompatible with negation.

1.5.1 Free factive subjunctives and negation

Utterances containing a free factive subjunctive resist co-occurring with negation (while their indicative counterparts have no such restriction).

(1.73) a. ?? *Da wäre keine Pizza mehr im Kühlschrank.*
there is.SUBJ no pizza anymore in-the fridge
'There is no more pizza in the fridge.'

b. ✓ *Da ist keine Pizza mehr im Kühlschrank.*
there is.IND no pizza anymore in-the fridge
'There is no more pizza in the fridge.'

(1.74) a. ?? *Peter hätte keine Pizza gekauft.*
Peter has.SUBJ no pizza bought
'Peter has not bought pizza.'

b. ✓ *Peter hat keine Pizza gekauft.*
Peter has.IND no pizza bought
'Peter has not bought pizza.'

Note that this resistance to negation is not at all related to contexts which license negative polarity items (NPIs). Free factive subjunctives are typically bad under negation (cf. (74a)), but as we have seen, they are acceptable in NPI licensing contexts like questions (cf. (42)) and the antecedent of a conditional (cf. (57)), and also under negation given special circumstances (cf. section 4.2.2 below). They are also fine in the presence of *nur 'only'* (cf. (75)), and they are equally bad in the scope of the NPI licensor *'zweifeln' doubt* as under the non-NPI-licensor *sicher sein 'be certain'*.

(1.75) *Es wäre nur Pizza im Kühlschrank.*
it is.SUBJ only pizza in-the fridge
'There is only pizza in the fridge.' 'ONLY'

(1.76) ?? *Ich bezweifle, dass Alex Pizza gekauft hätte.*
I doubt that Alex pizza bought has.SUBJ
'I doubt that Alex bought pizza. 'DOUBT'

(1.77) ?? *Ich bin sicher, dass Alex Pizza gekauft hätte.*
I am sure that Alex pizza bought has.SUBJ
'I am certain that Alex bought pizza. 'BE CERTAIN'

Given the variability of these data we have to conclude that NPI-licensors do not also 'license' free factive subjunctives.

In addition to examples such as (72) above which contain an overt negation, the incompatibility of free factive subjunctives and negation extends to cases where some kind of negative attitude or evaluation is expressed, as in the slightly modified (78).

(1.78) **Context:** The addressee is looking for a pretty dress. The speaker is holding up an ugly one.

??*Dieses Kleid wäre hässlich.*
this dress is.SUBJ ugly
'This dress is ugly.'

Unlike (72), there is no syntactic negation in (78), but rather the speaker expresses her negative view of the dress through the choice of lexical elements. As all of these examples show, it is not the presence of overt negation or downward-entailingness which causes the free factive subjunctive to be odd.

Note further that as soon as a negated prejacent uniquely identifies an action alternative, the free factive subjunctive is of course acceptable.

(1.79) **Context:** The addressee is looking for a clean place to work and is complaining about the untidy apartment.

Im Arbeitszimmer wäre keine Unordnung.
in-the study is.FFS no chaos
'There is no chaos in the study.'

Here the prejacent – containing a negation – uniquely identifies an action alternative for the addressee. Therefore the free factive subjunctive is acceptable.

1.6 Chapter summary

After briefly surveying the different uses of the German *Konjunktiv I* and *Konjunktiv II* I have zoomed in on the construction I am interested in: the free factive subjunctive. I have shown that it is distinct from other uses of the subjunctive in German, and I have introduced a test for whether a given subjunctive is a free

factive one or not: a use of the subjunctive is a free factive one if the speaker is committed to the truth of the corresponding indicative proposition.

I have also attempted to give a first description of the meaning of the free factive subjunctive, going slightly beyond what is found so far in the descriptive literature. I will now set out to present an analysis which captures the meaning and distribution of the free factive subjunctive.

Chapter 2

The subjunctive in the literature: state of the art

In this chapter I introduce some of the background that is needed to develop the theory of the free factive subjunctive as it is presented in chapters 3 and 4. In section 2.1 I briefly introduce the *possible worlds* analysis of modality in the tradition of Kratzer (1981, 1991, 2012). I take this analysis to be fairly standard and will not spend time discussing alternative proposals.

Section 2.2 then surveys the existing *formal semantic analyses of the subjunctive*. We will see that they rely heavily on Kratzer's theory of modality introduced in section 2.1. All of the existing accounts are intended to capture the irrealis use of the subjunctive. I show that none of them can adequately capture the distribution and meaning of the free factive subjunctive in German, and I conclude that a new approach is needed.

Finally, in section 2.3 I give a brief introduction to *decision theory*. After introducing some basic concepts, I argue that the meaning of the free factive subjunctive can be thought about in terms of decision problems in a fruitful way. In section 2.4 I sketch what a decision-theoretic account could look like.

2.1 Modality and possible worlds

Modals like *must, should* and *can* are used to discuss possibilities and necessities: what the laws are, what an agent's desires are, or what we think the world is like. The literature identifies modal *force* (*possibility* or *necessity*) and modal *flavour* (*epistemic, deontic, bouletic, circumstantial,* or *teleological*). Modal force determines whether the prejacent is required for *all* accessible worlds (necessity) or only some of them (possibility). The modal flavour determines what kind of accessibility relation exists between the world of evaluation and the worlds where the prejacent is evaluated at (an *epistemic* accessibility relation is concerned with what the speaker knows; a *deontic* accessibility is concerned with what the rules are; a *bouletic* accessibility relation is concerned with the speaker's desires; a *circumstantial* accessibility relation is concerned with facts in the world; and a *teleological* accessibility relation is concerned with goals).

(2.1) (In view of what we know,) Alex *must* be at home. EPISTEMIC NECESSITY

(2.2) (In view of what the laws are,) Alex *may* purchase a home. DEONTIC POSSIBILITY

(2.3) (In view of her desires,) Alex *should* eat a cookie. BOULETIC (WEAK) NECESSITY

(2.4) (In view of what her plans are,) Alex *can* take the A-train. TELEOLOGICAL POSSIBILITY

For an in-depth overview on research into modality in the languages of the world as well as into the history of modal logic, see Hacquard (2011). The analysis of modals that I use here is developed in the works of Kratzer (1977, 1981, 1991, 2012) and much subsequent research. Kratzer follows Lewis (1973) and others in assuming that modals are quantifiers over possible worlds: *necessity* modals universally quantify over all the worlds in the domain of quantification, and *possibility* modals existentially quantify over the worlds in the domain of quantification.

Which worlds are quantified over is sometimes mentioned explicitly (in (1) *must* quantifies over the worlds which are compatible with *what we know*), but more often this information is provided by context.

Kratzer introduces the notion of *conversational backgrounds* which make certain worlds accessible for quantification by the modal, and exclude other worlds. Conversational backgrounds are functions from worlds to sets of propositions.

Kratzer proposes to make a broad distinction between two types of conversational backgrounds: *modal bases* and *ordering sources*. Modal bases contain facts (for example: what we know), and they are always consistent. While the modal base is defined as a function from a world to a set of propositions, we often identify this function with the intersection of those propositions, i.e. the set of worlds where those propositions are true. Therefore we write $\cap f(w)$ to mean the modal base.

The second conversational background is the *ordering source*. Its set of propositions contains 'ideals': propositions describing what holds ideally. An ordering source g is associated with an ordering $\leq_{g(w)}$ which ranks worlds according to how close they come to the 'ideal' provided by g.

(2.5) For all u, u' ∈ W and any ordering source $g(w)$:
$u \leq_{g(w)} u'$ iff $[p\text{: } p \in g(w) \text{ and } u' \in p] \subseteq [p\text{: } p \in g(w) \text{ and } u \in p]$

In prose, the ordering ranks a world u as high or higher than a world u' if for any proposition p in the ideal $g(w)$ that is true in u', p is also true in u.

Many authors additionally make the so-called 'limit assumption', which is that there are always accessible worlds that come closest to the ideal. These worlds are called the *best* accessible worlds: $Best_{g(w)}(\cap f(w))$, or *optimal* accessible worlds $Opt_{g(w)}(\cap f(w))$. I will make the limit assumption in what follows, but note that there is some debate in the philosophical literature about it (cf. von Fintel 2012a and references therein).

I assume the following lexical entries for *must* and *can* following the notation in von Fintel and Heim (2011).

(2.6) $[\![must]\!]^w = \lambda p.\lambda f.\ \lambda g.\ \forall w' \in Opt_{g(w)}(\cap f(w))\text{: } p(w')=1.$
$[\![can]\!]^w = \lambda p.\lambda f.\lambda g.\ \exists w' \in Opt_{g(w)}(\cap f(w))\text{: } p(w')=1.$

For a universal modal like *must*, its meaning (relative to a world w) is the following: in all the best worlds relative to a modal base f and an ordering source g, the prejacent p holds.

An existential modal like *can* has the following meaning: relative to a world w, there is a best world relative to a modal base f and an ordering source g such that the prejacent p holds at that world.

I will follow von Fintel and Iatridou (2008) in assuming that modals can in principle have multiple ordering sources and that these are simply stacked on top of each other, selecting the 'best of the best' possible worlds. I take a universal modal with a modal base f and finitely many ordering sources $g_1, \ldots, g_i$ to have the following form:

(2.7) $[\![modal]\!]^{w} = \lambda p.\lambda f.\lambda g_1 \ldots \lambda g_i.\ \forall w' \in Opt_{g_i(w)}(\ldots(Opt_{g_1(w)}(\cap f(w)): p(w')=1.$

My analysis of the free factive subjunctive will make use of a modal with three ordering sources.

2.2 Recent analyses of the subjunctive

The literature on mood is quite varied, with modern analyses dating back to Bolinger (1968). In this section I will discuss the different lines of research into the semantics of mood. It will become apparent that while this research is valid for the languages it investigates (and the irrealis use of the subjunctive that exists in these languages), none of the analyses that have been put forward can be extended straightforwardly to account for the German free factive subjunctive.

There are two main strands of reasoning in the analyses of mood: some authors attempt to derive a unified semantics of the subjunctive mood. They often conclude that the subjunctive signals *non-assertion* or at least *weakened epistemic commitment* towards the prejacent. Bolinger (1968), Farkas (1992), Giannakidou (2009, t.a., 2013b), Quer (1997, 1998, 2009) and Villalta (2008) among others fall into this camp.

The other main approach is to argue that it is in fact impossible to derive a unified semantics of the subjunctive, and that instead the subjunctive simply is the *elsewhere case*, as has been argued by e.g. Portner (1997), Schlenker (2003), and Siegel (2009). More recently, Schlenker's proposal of the subjunctive as a

logophoric mood has been adapted up by Sode (2014) for the German *Konjunktiv I*.

In a typology of the subjunctive developed by Palmer (2006) he argues that the languages of the world have one of two types of subjunctive: either the subjunctive is selected for grammatically by an embedding verb. In this case the subjunctive is obligatory under those selecting verbs and ungrammatical elsewhere. The second type of languages requires the subjunctive to co-occur with certain operators (such as questions or conditionals). Again it is required under those operators and ungrammatical elsewhere. Farkas (1992), Quer (2009) and Giannakidou (t.a.) among others show for subjunctives in Romance languages that this is not quite true – there are verbs which can embed both indicatives and subjunctives, and the choice creates a difference in meaning. Consider the following Spanish example (Quer 2009's (10)).

(2.8) a. Aunque se equivocan, no retirarán la propuesta.
'Although they are wrong (IND), they won't withdraw the proposal.'

b. Aunque se equivoquen, no retirarán la propuesta.
'Even if they are wrong (SUBJ), they won't withdraw the proposal.'

By using an indicative, the speaker conveys that she is convinced that 'they' are wrong. Using a subjunctive, on the other hand, signals that the speaker is not committed: they could be wrong or not.

Crucially though the subjunctive is still embedded. Only very few authors discuss languages which allow unembedded subjunctives: Matthewson (2010) describes St'át'imcets which allows its subjunctive to occur in matrix clauses which then have a different meaning than their indicative counterparts. Kasper (1992) discusses unembedded 'subjunctives' in English.

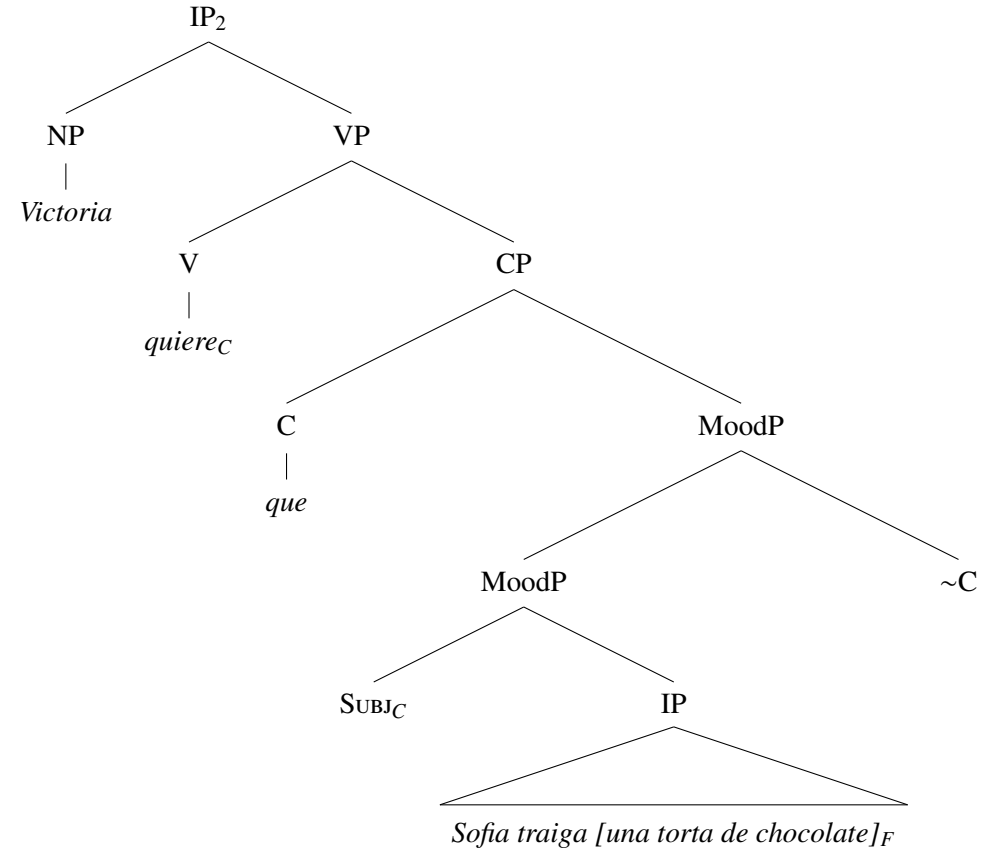
2.2.1 The subjunctive as a marker of weakened commitment

Many authors assume that the different contexts in which the subjunctive can occur (especially in languages like Romance and Greek) share properties that make it possible to identify a unified semantics of the subjunctive itself. Typically this

core function of the subjunctive is assumed to be to signal either *non-assertion*, or its weaker variant, *weakened epistemic commitment* to the truth of the prejacent. Villalta (2006, 2008) assumes that it is not the subjunctive itself which has a distinct semantics, but the predicates which embed it. These predicates, she argues, require a set of focus alternatives at the level of the embedded proposition, and the predicates themselves encode a certain relation between the asserted proposition and its alternatives. For example, *wish* encodes a preference for the expressed proposition over its alternatives, while *doubt* encodes that the speaker believes other alternatives to be more likely, etc.

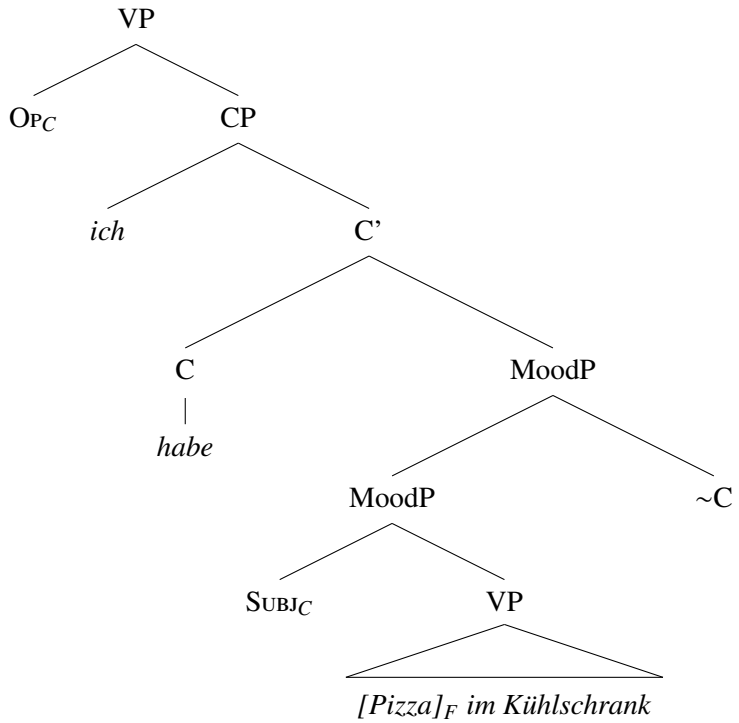
Villalta gives the subjunctive the semantics of Rooth's ∼-operator (a focus operator; cf. Rooth 1985) and locates it in MoodP, right below the embedded CP. This derives focus alternatives of the right kind: alternative propositions. She suggests that the indicative does not allow the ∼-operator in this position, while still allowing for focus alternatives in other positions.

(2.9)



Note that Villalta's approach is explicitly tailored to account for the Spanish subjunctive, which only appears in embedded contexts. It is not clear how to straightforwardly extend it to account for languages which do not require the subjunctive to be embedded. We can imagine two ways: either we assume that there is no superordinate operator evaluating the alternatives. In that case it is unclear why the subjunctive appears at all and how its semantics are different from the semantics of the indicative (since there is no operator to deal with the alternatives). The second adaptation would be to assume that there is a covert operator which embeds subjunctives which are only seemingly unembedded. We would then have a structure as in (10) below.

(2.10)



We would have to propose the existence of a covert operator OP$_C$, and we would have to assign it a semantics and explain why it is not freely available (cf. the restrictions on the use of free factive subjunctives discussed in the previous chapter). But again this would destroy the core idea of Villalta's proposal: the subjunctive is no longer triggered by the common semantics of the verbs embedding it, but rather by a covert operator whose presence is not externally motivated.

The analysis I ultimately propose to adopt for the free factive subjunctive will also deal with alternatives. They will not be focus alternatives as in Villalta's proposal, but action alternatives in the tradition of decision theory.

Another account which assumes that the subjunctive makes a semantic contribution to the propositions it occurs with is developed in a series of papers by Giannakidou (Giannakidou 2009, 2013a,b). She proposes that subjunctives are only acceptable in nonveridical contexts, i.e. when the speaker (or the subject of the clause) wishes to express weakened epistemic commitment to the prejacent proposition.

(2.11) A propositional operator F is veridical iff from the truth of $F(p)$ we can infer that p is true relative to some individual x (i.e., in some individual x's epistemic model) ... If inference to the truth of p under F is not possible, F is nonveridical. (Giannakidou 2009: 1889)

For the examples I am interested in, this approach is doomed to fail: the speaker is precisely *not* communicating a weakened epistemic commitment to the prejacent proposition, and the subjunctive does *not* have to occur in a non-veridical context (in fact, I have shown in section 1.5.1 that it often resists being embedded under negation or in the antecedent of a conditional). While the account I end up proposing for the free factive subjunctive crucially does not express weakened epistemic commitment to the truth of the prejacent proposition, it does also express 'weakened commitment' in a sense: the speaker makes an existential claim about the agent's action alternatives instead of a necessity claim.

Iatridou (2000) and Ippolito (2013) investigate the relationship between subjunctive and past tense in languages like Greek and English. English relies on past tense forms to express remoteness not only temporally, but also across worlds (i.e. modally). I ignore these accounts here because German has distinct paradigms for past tense and *Konjunktiv* (as illustrated in tables (1.2) and (1.3) in the previous chapter); therefore this kind of approach does not make sense for German. There is no ambiguity in German between the two forms; past tense forms cannot be used to express modal remoteness, and the *Konjunktiv* cannot be used to express

temporal remoteness (but cf. section 5.6).

Taken very broadly, the analysis I propose for the free factive subjunctive in German is closest in spirit to the analyses proposed by Portner (1997) for Italian and English and Matthewson (2010) for St'át'imcets (Lillooet Salish): moods place presuppositions on the modal environment in which they appear (Matthewson 2010: 24).

In particular, Portner proposes that English mood-indicating *may* presupposes a deontic or bouletic accessibility relation (as in *May you be happy!*). He proposes the semantics given in (12).

(2.12) For any reference situation r, modal force F, and modal context R,
$[\![may_{dep}(\phi)]\!]^{r, F, R}$ is only defined if ϕ is possible with respect to $Dox_{\alpha}(r)$, where α is the denotation of the matrix subject.
When defined, $[\![may_{dep}(\phi)]\!]^{r, F, R} = [\![\phi]\!]^{r, F, R}$

Matthewson adapts this analysis and argues that the subjunctive in St'át'imcets also places a restriction on the accessibility relation: it weakens the modal force of the governing modal. According to the proposal for St'át'imcets modals presented in Rullmann et al. (2008), modals carry presuppositions on what their conversational backgrounds are (they have a fixed modal flavour). A choice function picks out a subset (potentially a proper subset) of the best worlds, and universal quantification is applied over all the worlds picked out by the choice function. The more worlds are picked out by the choice function, the 'stronger' the modal: if the choice function does not pick a proper subset but the entire set of best worlds, we have universal quantification.

Matthewson proposes that the subjunctive in St'át'imcets enforces a 'weaker-than-necessity' reading by presupposing that there is at least one world in the set of best worlds in which the prejacent is false (p. 34). Like Portner, she also argues that the subjunctive must always occur in a modal environment. It is dependent on the governing modal providing a modal base and an ordering source. Then the subjunctive has the semantics as in (13).

(2.13) $[\![\textsc{Sbjn}(\phi)]\!]^{c, w}$ is only defined if $\exists w' \in Opt_{g(w)}(\cap h(w))[\phi(w') = 0]$.
When defined, $[\![\textsc{Sbjn}(\phi)]\!]^{c, w} = \lambda w'.\ [\![\phi]\!]^{c,w'}$

The subjunctive is only defined if there is at least one world in which the prejacent proposition is false. This blocks the choice function from picking the entire set, resulting in a 'weaker-than-necessity' reading.

In my analysis developed over the next chapters, I also assume that the free factive subjunctive places presuppositions on its environment, and I model this environment using tools familiar from the semantics of modals.

2.2.2 The subjunctive as the elsewhere case

Because the contexts in which subjunctives occur are quite diverse (typically desire predicates, but also emotive factives; certain modals; predicates expressing doubt; directives; causatives; and certain relative clauses), some authors have argued that there is no way to formulate a condition on the semantics of these contexts which 'licenses' the subjunctive. Instead they argue that the subjunctive marks the 'elsewhere' case which contrasts with the indicative.

Thus it is not the subjunctive which is the marked form, but the indicative. Instead of formulating a condition when the subjunctive is required, these authors focus on identifying when the indicative is acceptable. Both indicative and subjunctive are partial identity functions, but the indicative has an additional presupposition: that the prejacent is compatible with being true in the actual world.

I will discuss the particular account developed in Schlenker (2003), but note that Portner (1997), Siegel (2009) and Sode (2014) have developed similar ideas (differing in the details).

Schlenker proposes that the (French) subjunctive is the *default mood*, i.e., it is used whenever the indicative, infinitive or imperative cannot be used. He suggests that it makes no contribution to the semantics at all, whereas the indicative, infinite and imperative each make certain presuppositions of the context. Because the subjunctive and the other moods differ in this point, they are in competition with each other. The principle of *Maximize presupposition!* (cf. Heim 1991) determines that whenever the presupposition of the indicative/infinitive/imperative is met, it must be used. Only when it is violated may the subjunctive be used.

While Schlenker does not give a semantics of the indicative in French, he does make a proposal for indicative conditionals (his example (10)).

(2.14) For any world term w,
$[\![w\{CS\}]\!]^{e^*,s} = \#$ iff $[\![w]\!]^{e^*,s} = \#$ or $[\![w]\!]^{e^*,s}$ is not in the Context Set of e*.

In prose: the indicative mood introduces a presupposition {CS}. In a context e*, the world term w that this presupposition applies to must be in the Context Set of e*, otherwise the presupposition fails.

What is important for us is that the distribution of the free factive subjunctive cannot be explained in terms of competition: when the indicative and the subjunctive are in competition with each other, one always wins. But 'winning' in this case means that a given context allows only the indicative *or* the subjunctive to occur. Considering the free factive subjunctive, this is a false prediction. We have seen that the free factive subjunctive occurs in contexts which are also acceptable with an indicative. Moreover, when using a free factive subjunctive the speaker must be committed for the truth of the prejacent to hold *in the actual world*. But this precisely means that the prejacent must be compatible with the context set (if the speaker is committed to the truth of the prejacent, she must (at least) hold the prejacent to be epistemically possible), which Schlenker argues is the hallmark of the indicative.

In order to make this account work, we would therefore have to assume both that there is a presupposition that the prejacent is compatible with the Context Set, but also that it is possible to override *Maximize Presupposition!*, allowing the subjunctive to be used. This would completely destroy the core idea of the proposal.

2.3 Decision theory

Decision problems have been the subject of study in *decision theory* (and game theory more generally) since at least Bernoulli (1738) who realized that the 'expectation of profit' is not always the only consideration that goes into (rationally)

choosing a course of action, especially when gambling. The goal of decision theory is to model how individuals (*'decision makers'* or *'agents'*) use reasoning to make a decision (how they choose between different *'action alternatives'*).

This section gives a brief introduction to decision theory. I first discuss more generally how to model decision problems within decision theory: what decision problems are and how to calculate expected utilities. This general introduction is based on Hansson (2005) and Weatherson (2011). I then zoom in on previous work done in formal pragmatics on the effects of utterances on decision problems: how does an agent's utility function change when learning something through an utterance? When is an utterance *relevant* to a decision problem? I base this discussion on a series of papers on *mention-some answers* by van Rooij (2003a, 2004), Benz (2004), and Benz and van Rooij (2007).

Decision theory aims to model the different kinds of decision problems that individuals are facing every day. Any time we have to make a decision, we decide between different *action alternatives.* Sometimes this is conscious (as when we make a mental list of pros and cons), and sometimes we subconsciously calculate each action alternative's pros – it's *payoff* – and its cons – the *cost*.

On a theoretical level, decision theory predicts for any given decision problem which action the agent *should* take to optimize her payoff. It even takes into account how much the individual knows and whether others are involved in the decision making process.

Decisions are modeled as tuples of the form $<P, A, U>$ where P is a probability function, A is a set of action alternatives, and U is a utility function. P maps states of the world to [0, 1]; it describes the probabilities the agent assigns to different states of the world (for example how likely the agent believes it is that there is pizza in the agent's fridge). The set of action alternatives A contains those actions between which the agent must choose.[1] Finally, the utility function U maps the

[1]This set remains very underspecified in the literature. It is not spelled out whether a decision problem contains only those actions that the agent knows about, or also ones that he is not aware of. In particular, it is unclear whether a decision problem remains the same when action alternatives

action alternatives onto $\mathbb{R}$. It describes the utility that choosing an action (given a particular state of the world) has for the agent (the utility basically compounds the payoff and the costs of each action alternative). Consider the following toy example.

Example. The agent Bert is hungry. He is wondering what to do to get something to eat. For simplicity, we will only consider two actions: *open the fridge* and *go to the pantry*. Past experience has led Bert to believe that the fridge may or may not contain pizza, and the pantry may or may not contain beans.
We can first determine Bert's utility function in the following way. (Note that these values are completely dependent on Bert's preferences.)

action	payoff	cost
fridge	10	-4
pantry	6	-1

Table 2.1: Agent payoffs and costs

The table should be read as follows: Bert is considering two action alternatives (represented by *fridge* and *pantry*), and for each alternative he is considering both the payoff and the cost. Note that the payoff is the maximum payoff that is possible; his payoff for opening the fridge is only 10 if there is actually pizza inside. The cost for opening the fridge is -4. The payoff for going to the pantry is 6, and the cost is -1. Bert's preferences might include information such as *he doesn't like to waste food; he loves pizza; opening the fridge uses more electricity than not opening the fridge; Bert doesn't want to get up from his chair.* Because the utility function is tied to a particular decision problem and a particular agent, it can take all these preferences into account and combine the payoff and cost for each action alternative into a utility value.

For now we will assume that Bert has no beliefs about how likely it is that there is pizza or beans. We will build this into the model later. The following is a table

are added, for example when someone else mentions a new solution. Because the set of action alternatives is a defining part of the decision problem, altering the set should result in facing an altered decision problem, a technical solution which does not correspond to the intuition that the problem itself remains the same.

of Bert's utility function: when there is pizza in the fridge, the utility of opening the fridge is 6 (payoff of 10 plus a cost of -4). When there is no pizza in the fridge, the utility is -4 (no payoff, but a cost of -4). We assume that a higher payoff is better. Regarding Bert's utility concerning opening the pantry, we can say that if there are beans in the pantry, the utility is 5 (a payoff of 6 and a cost of -1). If there are no beans, the utility of opening the pantry is -1 (a payoff of 0 and a cost of -1).

action	pizza		no pizza	
	beans	no beans	beans	no beans
fridge	6	6	-4	-4
pantry	5	-1	5	-1

Table 2.2: Agent utilities

From this utility function we can determine which action alternative is optimal for Bert in different situations. For example, if there is pizza in the fridge, it is best for him to open the fridge because in the pizza-worlds (column 1 and 2) the action alternative *open fridge* has the highest utility. If there is no pizza, it is better for Bert to open the pantry (a utility of 5 or -1, depending on whether there are beans in the pantry or not).

Now let us model what happens when the probabilities of 'pizza in the fridge' and 'beans in the pantry' are not up to chance. Let us assume that Bert believes it is unlikely that there is pizza in the fridge: he believes there is only a .3 chance that there is pizza in the fridge. But the probability that Bert assigns to 'there are beans in the pantry' is much higher: it is .8. Now we can calculate Bert's *expected utilities* for choosing either action.

$$\text{EU}(a) = \sum_{w} P(w) \times U(a, w) \tag{2.15}$$

To calculate the expected utility of an action alternative, we sum up the utilities of each utility given a particular state of the world and that state of the world's probability to hold. In Bert's case, we get the following expected utilities.

Given Bert's 'bare' utilities that do not reflect probabilities (in table 2.3), he prefers eating pizza over beans (this is reflected in the higher payoff assigned to

action	expected utility
open fridge	.3×.8×6+.3×.2×6+.7×.8×-4+.7×.2×-4= **-1**
go to pantry	.3×.8×5+.3×.2×-1+.7×.8×5+.7×.2×-1= **3,8**

Table 2.3: Expected utilities

opening the fridge compared to opening the pantry). However, the expected utilities show that when Bert is facing this particular decision problem *considering the probabilities he assigns to different states of the world*, it is actually optimal for him to choose the action alternative *go to the pantry*. So if Bert is a rational agent, he will give up his dream of eating pizza and pursue the goal of eating beans instead.

Let us now turn to van Rooij (2003)'s theory of what it means for a speaker to say something that is relevant for a decision problem. Consider a context in which Bert is facing the above decision problem, but where a speaker comes and tells him that there is in fact pizza in the fridge. According to Bert's model, the probability of pizza being in the fridge is only .3 – but if a trustworthy speaker tells him that there is pizza, this probability will rise, and with it the expected utility of the action alternative *open fridge*. Consider a speaker, Anne, who utters (16).

(2.16) There is pizza in the fridge.

Intuitively we know that after hearing Anne's utterance, Bert will *not* go to the pantry but open the fridge instead. We are even prepared to argue that Bert's opening the fridge in this case is rational. How is this reflected in the model?

The probability that Bert assigns to 'there is pizza in the fridge' will change from .3 to a much higher value. Let's say it is now .9. We can then calculate the new expected utilities.

This shows two important facts: the expected utility of *open fridge* has increased following Anne's utterance of (16). Van Rooij defines this as *relevance*: whenever an utterance causes a change in expected utility for one or more action alternatives, it is *relevant* to the decision problem.

action	expected utility
open fridge	.9×.8×6+.9×.2×6+.1×.8×-4+.1×.2×-4= **5**
go to pantry	.9×.8×5+.9×.2×-1+.1×.8×5+.1×.2×-1= **3,8**

Table 2.4: Updated expected utilities

But – equally importantly – uttering that there is pizza in the fridge does *not* change the agent's expected utility of *go to pantry* – the utterance is not relevant for this action alternative.

After Anne's utterance the action alternative with the highest expected utility is *open the fridge* with an expected utility of 5. This reflects our intuition of what happens when we learn new, relevant information.[2]

Note that if Anne had said something else – something which is intuitively *not* relevant for the hearer's decision problem – the model reflects this as well.

(2.17) I rescued a kitten yesterday.

If Bert's expected utilities prior to Anne's utterance of (17) are those given in table 2.3, what happens after Anne utters (17)? Obviously the utterance does not change the probabilities for either *there is pizza in the fridge* or *there are beans in the pantry*. Her utterance of (17) is *not relevant* to the decision problem.

The literature does not discuss cases where the *utility function itself* is changed following an utterance. But in principle this is possible, and in fact it is easy to imagine that an utterance of *'pizza is unhealthy'* might cause an agent's utility for *open the fridge* to drop.
For simplicity's sake I will follow van Rooij and Benz and only discuss cases where an utterance influences the probability function. But the model should be able to account for changes in the utility function as well.

[2]Note that Benz (2004) argues that we need a more complex model: the speaker needs to reason about what the agent already knows in order to make the most relevant utterance. The subjunctive does not make the *most relevant* utterance; therefore I omit this level of complexity.

2.4 An analysis in terms of decision theory

With this decision-theoretic background, I will now reexamine an issue introduced in section 1.5: not all indicative sentences have free factive subjunctive equivalents. I will show that it is precisely those indicative sentences where there is a *salient decision problem* in the context which *do* have an FFS equivalent, but that even this is not enough. The FFS utterance also needs to *uniquely identify a particular action alternative* in a certain way.

I will further argue that these two restrictions on the context are presuppositions of the free factive subjunctive.

2.4.1 Presupposition I

The first presupposition introduced by a free factive subjunctive is that there is a salient decision problem in the context. When there is no decision problem, free factive subjunctives cannot be used. Consider the following contrast.

(2.18) **Context:** The hearer just got home. It is plausible that he is hungry (i.e., the speaker is licensed to assume that there is a salient decision problem, namely the hearer is wondering what to eat).

✓ *Es wäre Pizza im Kühlschrank.*
It is.SUBJ pizza in-the fridge
'There is pizza in the fridge.'

(2.19) **Context:** Speaker and hearer are talking on Skype. They are on different continents. The conversation turns to the contents of the interlocutors' fridges, and the speaker wants to inform the hearer about the contents of her fridge (nothing in the context indicates that the speaker is licensed to assume there is a salient decision problem).

?? *Es wäre Pizza im Kühlschrank.*
it is.SUBJ pizza in-the fridge
'There is pizza in the fridge.'

✓ *Es ist Pizza im Kühlschrank.*
it is.IND pizza in-the fridge
'There is pizza in the fridge.'

The subjunctive is acceptable in (18) but not in (19).[3] It is important to note that in *both* conversations the speaker's utterance is *relevant* in the sense of Grice (1975): in both conversations, the speaker is contributing to the overall communicative goal of the conversation by naming the contents of her fridge. If the hearer is hungry as in (18), it is relevant because the hearer might use the information to solve his decision problem (the communicative goal is to help the hearer solve his decision problem, and based on the speaker's contribution he might decide to get something to eat from the fridge). If the topic of conversation is 'the content of our fridges' (as in (19)), it is still *relevant to the conversation* to name the contents of the speaker's fridge. However, the hearer will not use this information to solve a decision problem (the communicative goal of the conversation is simply to exchange information).

The unacceptability of (19) shows that Gricean relevance is not the determining factor in what 'licenses' free factive subjunctive, while the acceptability of its indicative equivalent shows that there is nothing wrong with the exchange itself.

The previous examples have shown that the free factive subjunctive is only acceptable in contexts where there is a salient decision problem. So what are the requirements on the decision problem? It does not need to be mentioned explicitly, but note that when the hearer asserts that he is *not* hungry (i.e., when it is common ground that he does not have a decision problem), the free factive subjunctive is not acceptable. Again note that the indicative is acceptable in such a context, for example because the speaker wishes to inform the hearer about the contents of the fridge.[4]

(2.20) **Context:** The addressee just said that he is not hungry.

[3] There is a marginal 'list' reading available which I ignore here; it only arises if the speaker goes on to list more things.

[4] Note that the following subjunctive is acceptable in the same context. It will be discussed as an unembedded counterfactual in section 5.2.

(2.i) *Schade, da wäre Pizza im Kühlschrank gewesen.*
too-bad there is.SUBJ pizza in-the fridge been
'Too bad, there would have been pizza in the fridge.'

A: ?? *Da wäre aber noch Pizza im Kühlschrank.*
there is.SUBJ PART *Part* pizza in-the fridge
'There is pizza in the fridge.'

A': ✓ *Da ist aber noch Pizza im Kühlschrank.*
there is.IND PART *Part* pizza in-the fridge
'There is pizza in the fridge.'

Next, consider a third example in which the addressee also does not have a decision problem. In the previous examples, there was no decision problem because the addressee was not hungry and was not going to eat the pizza. This example is the opposite: the addressee *has to* eat the pizza. There is no decision problem because if he does not eat the pizza, he will die.

(2.21) **Context:** The addressee is diabetic and must eat something immediately. The only available food is pizza that is in the fridge. It is not an option for the addressee to not eat anything (because he would die).

A: ?? *Da wäre Pizza im Kühlschrank.*
there is.SUBJ pizza in-the fridge
'There is pizza in the fridge.'

A': ✓ *Da ist Pizza im Kühlschrank.*
there is.IND pizza in-the fridge
'There is pizza in the fridge.'

Here, too, the free factive subjunctive is not acceptable, while its indicative counterpart is fine.

We can adapt the context in (21) minimally to make the FFS acceptable: assume that the addressee is not diabetic; he is just hungry. Then even if pizza is the only available food, the addressee still has a choice between eating the pizza and not eating anything at all. Thus, he is facing a decision problem and the free factive subjunctive is acceptable.

(2.22) **Context:** The hearer has expressed that he is hungry. The only food that is available is pizza.

✓ *Die einzige Option wäre die Pizza im Kühlschrank.*
the only option is.SUBJ the pizza in-the fridge
'The only option is the pizza in the fridge.'

The examples in (19) and (21) have shown that free factive subjunctives are not acceptable if there is no salient decision problem in the context. If the context is changed in minimal ways so as to provide a salient decision problem, the free factive subjunctive becomes acceptable.

2.4.2 Presupposition II

Turning to the second presupposition, consider a context where it is common ground that the hearer is hungry. Clearly he is facing the decision problem 'what should I do to get something to eat?'. We expect the free factive subjunctive to be acceptable. However, we observe that when the speaker is far away, the contents of her fridge are not available as a 'solution' to the hearer's decision problem, and the free factive subjunctive is odd.

(2.23) **Context:** Speaker and hearer are talking on Skype. They are on different continents. The hearer has just said that he is hungry (the speaker is licensed to assume that the hearer is facing the decision problem 'what should I do to get something to eat?').

??*Bei mir wäre Pizza im Kühlschrank.*
at me is.SUBJ pizza in-the fridge
'Here there is pizza in the fridge.'

✓*Bei mir ist Pizza im Kühlschrank.*
at me is.IND pizza in-the fridge
'Here there is pizza in the fridge.'

The free factive subjunctive is not acceptable here because even though the addressee has a salient decision problem, the speaker's contribution does not identify a solution for it (the action alternative that the addressee would have to identify is something like 'travel to the speaker's location and eat the pizza in their fridge', which is both expensive and time-consuming – therefore it is not a reasonable suggestion to make). The utterance would of course be completely acceptable if the interlocutors are located close enough to each other to make it feasible for the addressee to travel to the speaker's house and eat the pizza.

When the interlocutors are in the same location *and* the agent has a salient decision problem, the speaker's utterance can still fail to identify an action alternative.

(2.24) **Context:** The addressee just said he is hungry.

?? *Im Kühlschrank wären Würmer.*
in-the fridge are.SUBJ worms
'There are worms in the fridge.'

My account will explain why the speaker's utterance in these contexts does not allow the free factive subjunctive (cf. section 3.3).[5]

In the following chapter, I will develop an account that translates this decision theoretic account of how we can think about decision problems into a compositional modal framework. Note that this is not a new idea; the intuition that modals are closely connected to probability and rational behaviour has also been discussed in Kaufmann (2005), Levinson (2003), Büring (2003), von Fintel (2012a), and Cariani et al. (2013) among others.

[5] I will not spend extra time discussing data like the following.

(2.i) *Es wäre zwar Sekt im Keller, aber der ist für Silvester*
it is.FFS although champagne in-the basement but it is for New-Year's-Eve
reserviert.
reserved
'There is champagne in the basement, but I want to save it for New Year's Eve.'

The free factive subjunctive is acceptable in cases like this because there is a salient decision problem and the prejacent proposition does uniquely identify an action alternative – the speaker just immediately follows this up by pointing out that she does not want anyone to choose this action alternative.

Chapter 3

The analysis

In this chapter I develop a first (not fully formalized) analysis of free factive subjunctives that aims to account for their distribution and meaning in simple contexts. This first, simplified analysis will be formalized in chapter 4.

Let me briefly recapitulate the insights from chapter 1 regarding the distribution and use of the free factive subjunctive. It occurs in contexts where the speaker is committed to the truth of the prejacent proposition, but it conveys more than just the content of the proposition. Compare the contrast between the free factive subjunctive in (2) and its indicative counterpart (1).

(3.1) *Da ist Pizza im Kühlschrank.*
there is.IND pizza in-the fridge
'There is pizza in the fridge.'

(3.2) *Da wäre Pizza im Kühlschrank.*
there is.FFS pizza in-the fridge
'There is pizza in the fridge.'
additional message: 'There might be an opportunity involving the fact that there is pizza.'

The free factive subjunctive, unlike its indicative counterpart, conveys not only that the speaker is committed to the truth-conditional content of the proposition, but also additional material. What exactly this additional material is and how it can be modeled is discussed in the present chapter.

First, remember that the 'additional message' is a crucial part of the meaning of the free factive subjunctive, and where such a message does not make sense the free factive subjunctive cannot be used. Compare the contrast in acceptability in (3a) and (3b).

(3.3) **Context:** Speaker and hearer are talking on the phone; they are on different continents. They are talking about the weather forecast.

a. ✓ *Hier scheint die Sonne.*
here shines.IND the sun
'The sun is shining here.'

b. ?? *Hier schiene die Sonne.*
here shines.FFS the sun
intended: 'The sun is shining here.'

While in this context it is acceptable to use an indicative to convey information about the weather, the free factive subjunctive is out. In the previous chapters, we have seen more examples like this, and the generalization we drew was that free factive subjunctives seem to *give information which helps solve a decision problem*. When there is no salient problem as in the context of (3), the free factive subjunctive is odd.

We have also seen that not all kinds of potentially helpful information can be provided by using a free factive subjunctive – only 'productive' information is acceptable. Consider the following set of contexts: in (4), the addressee is looking for a beautiful dress. In this case, pointing out an ugly dress is not 'productive', and the free factive subjunctive is out. But in (5), the addressee is going to a fancy dress party and actually needs an ugly dress. In this case, pointing one out counts as productive, and the free factive subjunctive is fine.

(3.4) **Context:** The addressee is looking for a beautiful dress.

?? *Das wäre ein hässliches Kleid.*
this is.FFS an ugly dress
intended: 'This is an ugly dress.'

(3.5) **Context:** The addressee is going to a fancy dress party and is looking for an ugly dress.

✓ *Das wäre ein hässliches Kleid.*
this is.FFS an ugly dress
'This is an ugly dress.'

A third important observation will be spelled out in section 3.1 below: the contribution of the free factive subjunctive is not truth-conditional. The truth-conditional content of a free factive subjunctive utterance is the same as that of its indicate counterpart. I will show that the contribution of the free factive subjunctive is *not at issue*.

I propose that a successful analysis of the free factive subjunctive should contain the following pieces.

- On the truth-conditional level, the free factive subjunctive is a (partial) identity function
- The distinctive contribution of the free factive subjunctive is non-truth-conditional
- There are two (mostly) independent use conditions that must be met for the free factive subjunctive to be acceptable; in my proposal below they will appear as presuppositions

The proposal that I develop in this chapter aims to do justice to these ingredients by appealing to both decision theory and possible worlds semantics. In fact, I will attempt to translate the tools of decision theory outlined in 2.3 into the (perhaps more familiar) possible worlds framework sketched in 2.1. This allows the use of decision theoretic tools within the framework of compositional semantics without having to introduce new basic types.

The chapter is organized as follows. Section 3.1 shows that the contribution of the free factive subjunctive is not truth-conditional. In section 3.2 I describe how we can model decision problems in a modal framework. Section 3.3 discusses the second presupposition: what it means for a proposition to uniquely identify an action alternative. Finally, section 3.4 develops the (non-at-issue) meaning contribution of the free factive subjunctive morpheme.

The pieces of the analysis developed in sections 3.1-3.4 are brought together in chapter 4.

3.1 Non-truth-conditionality of free factive subjunctives

The observation that not all expressions of natural language contribute to the truth conditions of the utterance they occur in is an old one; it has recently received renewed interest in the formal semantic and pragmatic literature (cf. Potts 2005, 2007, McCready 2010, Gutzmann 2012, and Lauer 2013).

The previous section already hinted that the meaning contribution of the free factive subjunctive is not limited to a truth-conditional component, but that it also adds non-truth-conditional material. I will adopt the following terminology here, borrowing heavily from Potts (2005): a proposition p has truth-conditional content which is *at-issue*; this content can be questioned, negated, etc. The proposition p can also have presuppositions, which contribute to the truth conditions of p without being at-issue. Additionally, p can convey non-truth-conditional meaning which does not contribute to the truth conditions. Potts investigates *conventional implicatures* or CIs which are non-truth-conditional as well as non-at-issue. He develops a battery of tests to identify CIs. I will show that some of his tests work for free factive subjunctives, while others fail. In view of this, I will remain agnostic about whether the contribution of free factive subjunctives should be counted as a conventional implicature or some other type of non-truth-conditional, non-at-issue meaning.

The rest of this section will be devoted to showing that free factive subjunctives do not contribute to the truth conditions of the utterance they occur in (apart from the conditions of use that they impose on the context in order to be felicitous which I will model as presuppositions). I will employ the tests of non-at-issueness as proposed in Potts (2007). While the rest of the chapter will be devoted to finetuning what exactly the FFs contributes, we will paraphrase it as *there might be an opportunity involving p* for now.

(3.6) *Da wäre Pizza im Kühlschrank.*
there is.FFS pizza in-the fridge
'There is pizza in the fridge.'
FFS *contribution:* 'There might be an opportunity involving the fact that there is pizza in the fridge.'

The following data show that this 'sense of opportunity' which I take to be the contribution of the free factive subjunctive stands (most of) the tests for not-at-issue-ness as proposed in Potts (2007).

Independence

Potts formulates the notion of independence in the following way.

(3.7) [Non-at-issue] content contributes a dimension of meaning that is separate from the regular truth-conditional content.

There are different ways to show that non-at-issue content is independent from at-issue content. I show that the free factive subjunctive cannot be the target of ordinary negation ((8) – (10)), it cannot be denied directly ((11) – (13)), and it cannot be questioned ((14) – (16)).

As we already observed in chapter 1, free factive subjunctives often resist co-occurring with negation; therefore it is difficult to test whether they can be the target of ordinary negation. Only when the context is such that learning that *not p* makes salient a particular action alternative, FFS(*not p*) is acceptable. It is unsurprising therefore that the negation in (8) – (10) cannot target the contribution of the FFS in a context where the sentences are acceptable.

Cannot be the target of negation

(3.8) **Context:** The addressee has just complained that every surface in the kitchen is covered in pizza and there is no place to put the beer.

Da wäre keine Pizza im Kühlschrank.
there is.FFS *no pizza in-the fridge*

'There is no pizza in the fridge.'
not available: 'There is pizza, but there is no opportunity involving this fact.'

(3.9) **Context:** The addressee has just explained a desire to walk down a particular path.

Das wäre nicht der Weg zum Gipfel.
it is.FFS not the way to-the summit
'This is not the way to the summit.'
not available: 'This is the way to the summit, but there is no opportunity involving this fact.'

(3.10) **Context:** The addressee has just expressed a desire to meet someone who does not have a beard.

Alex hätte keinen Bart.
Alex has.FFS no beard
'Alex doesn't have a beard.'
not available: 'Alex does have a beard, but there is no opportunity involving this fact.'

To the extent that these examples are grammatical, in each case they can only mean one thing: that the proposition co-occurring with the FFS does *not* hold – there is no pizza in the fridge; this is not the way to the summit, and Alex does not have a beard. What they cannot mean is that while it is true that there is pizza/this is the way to the summit/Alex has a beard, the speaker is not invoking the sense of opportunity which is the contribution of the FFS. The interaction between FFS and negation will be investigated in more detail in section 4.2.2.

Another test for the independence of a meaning contribution is whether or not it is possible to easily deny the contribution. Truth-conditional content can be the target of denial; i.e., the addressee can reject it by replying 'no'. Again the contribution of the free factive subjunctive cannot be the target of this kind of denial.

Cannot be the target of simple denial

(3.11) A: *Da wäre Pizza im Kühlschrank.'*
there is.FFS pizza in-the fridge
A: 'There is pizza in the fridge.'
B: No.
B's reply can only mean: 'I do not believe that there is pizza in the fridge.'

(3.12) A: *Hier ginge es zum Gipfel.*
here goes.FFS it to-the summit
A: 'This is the way to the summit.'
B: No.
B's reply can only mean: 'I do not believe that this is the way to the summit.'

(3.13) A: *Alex hätte einen Bart.*
Alex has.FFS a beard
A: 'Alex has a beard.'
B: No.
B's reply can only mean: 'I do not believe that Alex has a beard.'

Again, we see that while B's denial is perfectly acceptable if used to deny that there is pizza in the fridge/that this is the way to the summit/that Alex has a beard, it cannot be used in a context where B *does* believe those things but wishes to negate the contribution of the subjunctive (roughly: that B can use the information to solve a problem; for example eating the pizza/walk that way/cast Alex as a bearded character). Again I take this as evidence that the contribution of the subjunctive is not part of the truth conditional meaning of A's utterance.

Finally, the contribution of the FFS cannot be questioned.

Cannot be questioned

(3.14) *Wäre da Pizza im Kühlschrank?*
is.FFS there pizza in-the fridge

'Is there pizza in the fridge?'
cannot mean: 'Is there an opportunity involving the fact that there is pizza in the fridge?'

(3.15) *Ginge es hier zum Gipfel?*
goes.FFS it here to-the summit
'Is this the way to the summit?'
cannot mean: Is there an opportunity involving the fact that this is the way to the summit?

(3.16) *Hätte Alex einen Bart?*
has.FFS Alex a beard
'Does Alex have a beard?'
cannot mean: 'Is there an opportunity involving the fact that Alex has a beard?'

Note that these questions are grammatical: if the speaker is ignorant about the existence of pizza/the way to the summit/whether Alex has a beard, she can ask (14) – (16), respectively, and will be understood to ask about the prejacent. What is excluded are contexts in which the speaker already knows that the prejacent is true, and is *only* asking about the FFS contribution.[1]

Nondisplaceability

Another test that Potts (2007) suggests for non-at-issue content is that it cannot be displaced.

(3.17) [Non-at-issue content] predicates something of the utterance situation.

[1] In rhetorical questions this use is (marginally) available, but since their semantics and pragmatics are different from that of information-seeking questions (cf. Sadock 1971, Han 2002) it is not clear whether the test can diagnose at-issue-ness.

(3.i) **Context:** A knows that there is pizza in the fridge and is complaining about being hungry.
B: ?*Wäre da Pizza im Kühlschrank?*
is.FFS there pizza in-the fridge
'Is there pizza in the fridge?'

That is, non-at-issue content is expected to remain tied to the utterance situation and not shift under operators such as past tense, modals, and the antecedent of a conditional. Potts himself already points out that this test is less reliable than the previous one, and that it is in fact possible to displace expressive elements like *bastard* given the right context. The free factive subjunctive can be systematically displaced through modal and temporal operators.

(3.18) *Da wäre Pizza im Kühlschrank gewesen.*
there is.FFS pizza in-the fridge been
'There was pizza in the fridge.'

(3.19) *Hier wäre der Weg zum Gipfel gewesen.*
here is.FFS the way to-the summit been
'This was the way to the summit.'

(3.20) *Alex hätte einen Bart gehabt.*
Alex has.FFS a beard had
'Alex had a beard.'

The contribution of the FFS in (18) – (20) does not pertain to the utterance situation – rather, the speaker is talking about a past situation in which knowing that there was pizza in the fridge/this was the way to the summit/Alex had a beard would have been useful. This interaction of the FFS and past tense will be discussed in more detail in chapter 4. For now it is important to note that the contribution of the FFS can be displaced temporally.

The contribution of the FFS can also be displaced modally across worlds. This is possible when the context is such that there is an opportunity involving the fact the prejacent holds in those worlds.

(3.21) *Da wäre vielleicht/wahrscheinlich Pizza im Kühlschrank.*
there is.FFS maybe/probably pizza in-the fridge
'Maybe/probably there is pizza in the fridge.'
$\rightsquigarrow$ 'There is an opportunity that involves the fact that maybe/probably there is pizza in the fridge.'

Again this will be discussed in more detail below. Let us also consider the behaviour of FFSs in conditionals: given the right context, they are acceptable in

both antecedents and consequents. Consider first the behaviour in the consequent of a conditional.

(3.22) ?? *Wenn Peter einkaufen war, wäre Pizza im Kühlschrank.*
if Peter shopping was is.FFS pizza in-the fridge
intended: 'If Peter went shopping, there is pizza in the fridge.'

We predict that it means 'in all the best worlds where Peter went shopping, there is pizza in the fridge', but (22) is simply odd. But note that free factive subjunctives can occur in the consequent of a conditional if additional markers such as *immerhin 'at least'* or *schon mal 'for now'* are present. (*Schon mal* seems to interact with the free factive subjunctive in an interesting way, but for reasons of space (and the fact that the semantics and pragmatics of discourse particles are notoriously difficult to capture) I will leave this aside for now. The important message to take away is that it is possible to embed free factive subjunctives in the consequent of a conditional.

(3.23) *Wenn Peter einkaufen war, wäre immerhin/schon mal Pizza im*
if Peter shopping went is.FFS at least/for now pizza in-the
Kühlschrank.
fridge
'If Peter went shopping, there is (at least) pizza in the fridge (for now).

As the previous section has shown, it is difficult but not impossible for free factive subjunctives to co-occur with negation. It is also difficult but not impossible for them to occur in the consequent of a conditional.

FFSS can also occur in the antecedent of a conditional, but then the conditional must be interpreted factually, i.e., the antecedent must be interpreted as being true in the actual world. Typically its truth is established as part of the common ground.[2]

[2]If the antecedent cannot be interpreted factually, the conditional is interpreted hypothetically and the subjunctive does not receive a FFS interpretation, but rather an irrealis one. For more details on mood in German conditionals, cf. chapter 5.

(3.24) *Wenn da doch Pizza im Kühlschrank wäre, kannst du die ja*
if there DOCH pizza in-the fridge is.FFS can you it JA
essen.
eat
'If there is pizza in the fridge, you can eat that.'

(3.25) *Wenn hier der Weg zum Gipfel wäre, sollten wir abbiegen.*
if here the way to-the summit is.FFS should we turn
'If this is the way to the summit, we should turn around.'

(3.26) *Wenn Alex doch einen Bart hätte, kannst du ihn ja casten.*
if Alex PART a beard has.FFS can you him cast
'If Alex has a beard, you can cast him.'

In sum, we see that it is somewhat difficult to displace free factive subjunctives across both worlds and times, although not impossible given the right context.

Let me add a brief side note on the presupposition projection properties of conditionals. We will compare the projection of the complement of a factive verb like *know*, an expressive element like *bastard*, and the free factive subjunctive. It is well-known that conditionals interact with presuppositions in an interesting way: if the consequent of a conditional contains a presupposition trigger, then the presupposition does not project if the presupposition itself is entailed by the antecedent of the conditional (cf. e.g. Karttunen and Peters 1979, Heim 1988). Consider (27) which presupposes that Alex is cheating.

(3.27) Lee knows that Alex is cheating.

(3.28) If Alex had cheated on Lee, Lee would have known that Alex did.

(3.29) If Alex had started buying flowers, Lee would have known that Alex was cheating.

If (27) appears in the consequent of a conditional, and if the antecedent of the conditional does entail that Alex cheats on Lee, then the presupposition does not project: (28) does not commit the speaker to believing that Alex did in fact cheat on Lee. The antecedent of (29), on the other hand, does not entail that Alex cheats on Lee. The presupposition in (29) projects: the speaker is committed to Alex

cheating in the actual world.

Expressive elements such as *bastard* are harder to displace. Consider the following set of sentences.

(3.30) Alex is a bastard.

(3.31) If Alex cheats on Lee, I will punch the bastard.

(3.32) If Alex gets a promotion, that bastard will be happy.

(30) conveys that the speaker has a negative attitude towards Alex. If embedded in the consequent of a conditional, this negative attitude is projected both when the antecedent of the conditional provides a reason why the speaker might have a negative attitude (such as in (31)), and when the antecedent does not provide any such reason (as in (32)). However it is also possible to use *bastard* in the consequent of a conditional where it is consistent that the speaker actually likes Alex, and the negative attitude only exists in worlds where the antecedent is true. One such example is (33).

(3.33) If Alex cheats on Lee, what a bastard.

Here it is easy to imagine a context where the speaker of (33) actually likes Alex and is talking about a hypothetical cheating scenario in which she would dislike Alex then.

Perspective dependence

(3.34) [Non-at-issue] content is evaluated from a particular perspective. In general, the perspective is the speaker's, but there can be deviations if conditions are right.

Note that a free factive subjunctive typically conveys a suggestion that the speaker is making for a problem that the addressee is having. But it is also possible for the speaker to make a suggestion for a third party, or for the speaker to report on somebody else making a suggestion.

(3.35) **Context:** The speaker and the addressee are discussing Peter, who is looking to cast bearded men for a part in a movie. The speaker is making a suggestion for Peter (a third party).

A: *Alex hätte einen Bart.*
Alex has.FFS a beard
A: 'Alex has a beard.'

Because the speaker and the addressee are discussing Peter and *his* decision problem, A's utterance is evaluated with respect to Peter's perspective.

In contexts where the speaker is reporting on a suggestion that a third party made, the facts are more difficult to discern: the speaker can use a free factive subjunctive both to add her own suggestion to a statement made by the third party (who herself used an indicative), and to report that the third party was using a free factive subjunctive. But in addition, the *Konjunktiv II* can also be used to simply signal reported speech (cf. chapter 1). The reported speech reading is always available, and it is often not possible to tell whether an additional free factive meaning was intended or not.

(3.36) **Context:** A and B are using Peter's vacation home. They arrive late at night and A calls Peter to let him know that they arrived safely. A then reports:

Peter hat gesagt, da wäre Pizza im Kühlschrank.
Peter has said there is.SUBJ/FFS pizza in-the fridge
'Peter said there is pizza in the fridge.'

There are three possible readings available: Peter merely informed A that there is pizza in the fridge, but A herself is using a free factive subjunctive suggesting they eat the pizza. Or Peter himself used a free factive subjunctive when talking to A, suggesting that A and B eat the pizza. Finally, A could also simply use a reportative subjunctive with no free factive interpretation.
Now consider the following clear-cut case where none of the interlocutors has a decision problem.

(3.37) **Context:** The speaker and Peter went on a weekend trip to Peter's va-

cation home and were hungry when they arrived. The speaker is now reporting this to the addressee, who did not come on the trip.

Peter hat gesagt, da wäre Pizza im Kühlschrank.
Peter has said there is.SUBJ/??FFS pizza in-the fridge
'Peter said there is pizza in the fridge.'

Here the subjunctive can only signal reported speech; it cannot be a free factive subjunctive.

Free factive subjunctives convey that someone has a decision problem, and that someone knows something that might help choose a particular action alternative. Typically the person who knows something is the speaker, and the person who has the decision problem is the addressee. But as this section has shown, other configurations are possible.

Summary While the nondisplaceability test fails, both the independence test and the perspective dependency test can be applied successfully to free factive subjunctives. I take this as evidence that free factive subjunctives contribute non-at-issue meaning to the utterance they occur in. In particular, I take the results of the independence test to mean that free factive subjunctives do not contribute to the truth conditions of the proposition they occur with beyond what their presuppositions contribute in terms of limiting the context of use.

3.2 Presupposition I: the existence of a salient decision problem

In this section I show that the existence of a salient decision problem is presupposed by the free factive subjunctive. Section 3.2.1 gives an overview over the relevant data and performs the *family of sentences* test. Section 3.2.2 proposes how to model decision problems within a possible world semantics.

3.2.1 The data

In this section I show that the existence of a salient decision problem is presupposed whenever a free factive subjunctive is used. We can apply the well-known *family of sentences* test (cf. Langendoen and Savin 1971, Karttunen 1974, Chierchia and McConnell-Ginet 1990):

(3.38) Presupposed material stays presupposed in the following environments:

1. embedding under questions
2. embedding under a modal expression
3. embedding under the antecedent of a conditional
4. embedding under negation

If the existence of a decision problem is indeed presupposed whenever a speaker uses a free factive subjunctive, this should also be the case under negation, under modals, in questions, and in the antecedent of a conditional. We find that this is the case.

(3.39) Da wäre schon mal keine Pizza im Kühschrank.
*'There is.*FFS *no pizza in the fridge.'* NEGATION

(3.40) Da wäre wahrscheinlich noch Pizza im Kühlschrank.
*'There is.*FFS *probably pizza in the fridge.'* MODAL

(3.41) Wäre da noch Pizza?
*'Is.*FFS *there any pizza in the fridge?'* QUESTION

(3.42) Wenn da doch Pizza wäre, kannst du die doch essen.
*'If there is.*FFS *pizza in the fridge, you can eat that.* CONDITIONAL

In each of these cases we understand the speaker to assume that there is a person who has a salient decision problem, and that learning that there is pizza in the fridge will uniquely identify an action alternative.[3]

[3]Note the presence of modal particles in all of these examples! While they are not strictly required, they improve the examples especially when presented out of the blue.

In order to see that (39) – (42) each presuppose a decision problem, consider again the context of the diabetic interlocutor – the one who does not have a decision problem, but who does have to eat something (as before, we assume that when there is only one edible thing and the diabetic person has to eat immediately, there is no decision problem because there is only one action alternative that will not lead to death). In this context, they are extremely odd. By using a free factive subjunctive, the speaker either seems to be tip-toeing around the interlocutor's possibly life-threatening disease, or is not being cooperative.

I will discuss the interaction between the FFs and negation in more detail in section 4.2.2.

Overall we see that when a FFs is present, we can assume that a salient decision problem is presupposed because most of the tests for presupposition-hood are fulfilled. The feeling that 'someone has a decision problem' remains when co-occurring with negation, in questions, and in the antecedent of a conditional. It is further interesting to note that using a free factive subjunctive allows an objection which is a variant of the 'Hey, wait a minute!' test (von Fintel 2004).

Note that von Fintel's version of the 'Hey, wait a minute!' test is designed to contest the presupposition that the existence of an individual is established prior to a given utterance. He shows that only presupposed material can be contested in this way, whereas asserted material cannot.[4] Consider (43) (von Fintel's example (3)).

(3.43) A: The mathematician who proved Goldbach's Conjecture is a woman.
B: Hey, wait a minute. I had no idea that someone proved Goldbach's Conjecture.

A's utterance presupposes that there is a person who proved Goldbach's conjecture, and B contests this. The example in (44) shows that speaker B can also contest the presupposition that B has a decision problem which is presupposed by A's utterance.

(3.44) A: Da wäre Pizza im Kühlschrank.
*'There is.*SUBJ *pizza in the fridge.'*

[4]This idea is explored further in a corpus study, cf. Potts 2008.

B: Hey, wait a minute! You seem to assume I want to eat something, but I don't!

Speaker B contests that it has been established in the previous discourse that he himself is facing a particular decision problem.

3.2.2 The analysis

After establishing that the existence of a salient decision problem is indeed presupposed, I will now propose how to spell out this presupposition using tools from decision theory and translating them into the possible worlds framework of modality.[5] Remember from chapter 2 that there are three elements to a decision problem: a set of action alternatives, a probability function, and a utility function. I will associate the set of action alternatives with a modal base, and the probability and utility functions with ordering sources. Overall my analysis of decision problems will look similar to how modals are analyzed in the literature.

A modal base is a function from a world to a (consistent) set of propositions. I propose that the modal base modelling a decision problem should be *doxastic*, that is, containing only worlds which are consistent with the beliefs of the agent. Since agents often have conflicting beliefs but modal bases must be consistent we choose the largest conflict-free subset of beliefs.

The set of action alternatives forms a partition on this modal base: for an action to be an action alternative, the agent has to believe that it is possible to perform that action, and in each world the agent can only perform exactly one action. Thus the action alternatives partition the modal base.

Note that the trivial action alternative – the agent 'does nothing'; she does not choose any particular action – is also defined as an action alternative.

Whether we allow 'compound' actions or not is a matter of definition. In principle, all that is needed is a set of action alternatives which partitions the modal base. But for simplicity's sake we will only discuss partitions with 'atomic' action alternatives. For example, when an agent is hungry, we could consider a partition

[5]The idea that decision theory enters into the semantics of certain expressions is not new; it has been explored in Cariani et al. 2013 and Levinson 2003 among others.

consisting of three 'atomic' action alternatives: action *a*, opening the fridge; option *b*, ordering Chinese food; and option *c*, buying groceries. *a, b* and *c* partition the modal base. But other partitions are of course also possible, for example *a, b*, and *a and c*. The third action alternative *a and c* is not 'atomic', but the three alternatives together still make up a partition. While it is possible to extend my analysis to these cases, I will ignore them for simplicity.

To recapitulate: The set of action alternatives *A* from decision theory will be associated with a modal base: the (consistent) belief state of the agent.

The probability function *p* of decision theory has a similar function as an ordering source: intuitively the agent uses *p* to rank the action alternatives based on how likely they will yield a positive outcome – that is, if the agent chooses alternative *a*, what is the probability that she will reach her goal?

Ordering sources rank the worlds in the modal base – they identify the 'best' worlds according to the ideal spelled out in the ordering source. In order to reflect the work of the probability function, I propose to use a double ordering source: first, a stereotypical ordering source ranks the worlds in the modal base according to *what is normal*, i.e., it ranks worlds according to how similar they are to the actual world, and what the future holds given a 'normal' course of events. For example, among those worlds which the agent holds doxastically possible, there might be some in which the fridge contains leftover lasagna, but there might also worlds in which the fridge contains a three-course gourmet meal (because the agent's parents are friends with a chef who made them a meal, and the agent's siblings snuck into her apartment and placed the leftovers from that meal in the agent's fridge). For most people, worlds with leftover lasagna will be *more normal* than gourmet meal-worlds, and the stereotypical ordering source will thus rank them higher than the gourmet-meal worlds.

A second ordering source then ranks the worlds according to whether the agent reaches her goal. Note that this ordering source only contains one proposition, *the agent successfully reaches her goal*, because at this point we are only interested in identifying those worlds among the doxastically accessible worlds which are both likely and such that the agent solves her decision problem successfully. The optimal worlds with respect to both of these ordering sources are worlds which

are normal (no improbable things are happening) and the agent reaches her goal. This means that the action alternatives which the agent performs in these optimal worlds are the ones which have the highest probability of success – we have modelled a probability function.

(3.45) Primary ordering source g_1:
stereotypical
Secondary ordering source g_2:
{*The agent successfully reaches her goal*}
(teleological)

A world *w*' in the modal base f=Dox_α is 'better' than a world *w*" iff it is either more 'normal', i.e., $w' <_{g1} w''$, or (if both worlds are equally 'normal'), iff $w' <_{g2} w''$ (i.e., if the agent reaches her goal in *w*' but not in *w*").

The third component of a decision problem is the utility function. The utility function in decision theory models how much an agent 'likes' an action alternative; it models her preferences and compounds costs and payoffs. It assigns each action alternative a utility value which can be seen as a kind of shorthand to measure how attractive a particular action alternative is for the agent. Importantly, the utility function ignores probabilities. For example, the utility for *order Chinese food* is measured based on things like how much the agent likes Chinese food, how long it takes for orders to arrive, and how many leftovers will spoil if she orders it. It does *not* care about how likely the agent thinks it is that the Chinese restaurant is open.

The utility function can be modelled as a third ordering source, namely a bouletic one. Ranking the worlds according to how well they correspond to the agent's wishes corresponds to comparing the utility value of the action alternatives.

This view of the utility function however oversimplifies matters slightly. By simply postulating that we need an (unrestricted) bouletic ordering source, we

create the following problem: since the ordering source is not restricted to wishes relating to the decision problem, we allow cases like the following.[6]

(3.46) Alex is hungry. Her desires regarding the decision problem are:

p_1 the agent saves money

p_2 the agent does not leave the apartment

p_3 the agent does not waste food

Her unrelated desires are:

u_1 the agent is successful

u_2 the agent has a cat

u_3 the agent gets a haircut

Let there be two sets of worlds which are best according to g_1 and g_2: worlds where Alex is successful, has a cat, and gets a haircut (but does not save money, does leave the apartment, and does waste food) and chooses to solve her decision problem by travelling to Brooklyn and getting a muffin, and worlds where she does not leave her apartment and does not waste food (but where she does spend money, is not successful, does not have a cat, and does not get a haircut) and solves her decision problem by ordering Chinese food.

Our intuition is that the second set of worlds is 'better' according to Alex's desires regarding the decision problem – but when ranked according to g_3, the first set of worlds is actually predicted to be better. In the first set, three desires are fulfilled: u_1, u_2, and u_3. In the second set, only two desires are fulfilled: p_2 and p_3. We need to somehow restrict the bouletic ordering source to consider only desires that are somehow 'relevant' to the decision problem.

One way to do so is to postulate a restriction on the kind of desires that are considered in g_3. In the context of (46), we would eliminate the set of 'unrelated' desires from the ordering source (assuming that we can tell for each desire whether it is related to the decision problem or not). By restricting it in this way,

[6]This problem is reminiscent of the Ruud van Nistelrooij problem in anankastic conditionals discussed in Huitink 2008.

we avoid getting the counterintuitive result that the first set of worlds in the context of (46) are ranked higher.

It has been noted by Condoravdi and Lauer (2012) and others that modelling desires by a bouletic ordering source can cause problems: agents often have conflicting desires, and it is easy to come up with scenarios in which a bouletic ordering source does not allow a ranking of which worlds are 'better' than their competitors. Consider the following scenario.

(3.47) Alex is hungry. Her desires regarding the decision problem are {*the agent does not spend money; the agent buys Chinese food*}.
Let there be two sets of worlds which are optimal according to g_1 and g_2: one in which the agent does not spend money (but does not buy Chinese food) and gets food from the fridge, and one in which the agent buys Chinese food (but does spend money).

Clearly the two sets of worlds described in (47) are mutually exclusive. But it is not clear how the bouletic ordering source should rank them: both make exactly one proposition true while making exactly one proposition false.

There are two ways of treating a situation like this: we can either say that there are two optimal action alternatives for the agent (in decision theoretic terms: they have the same expected utility). Then we do not need to modify the analysis. This type of analysis can model decision problems where the agent has narrowed down the set of action alternatives to two or three and does not care which of these she ends up picking.

A second option is to adopt Condoravdi and Lauer's notion of an *effective preference structure* (or an equivalent way of ranking the propositions in g_3). They argue that when an agent has conflicting desires, in order to choose an action the agent resolves any conflicts by strictly ranking the desires. In (47), Alex would decide that either not spending money is more important than buying Chinese food, or buying Chinese food is more important than not spending money. In either case, the desires are strictly ranked, and the two sets of worlds can be strictly

ranked accordingly.

I believe that these options can exist independently of each other: it is easy to imagine cases where agents truly do not prefer one alternative over another, and there are also cases where agents rank their desires and resolve any conflicts.

In sum, we can model decision problems in a possible world semantics as a structure consisting of a modal base and three ordering sources.

(3.48) a. We can model a **decision problem *D*** as consisting of the following components:
f= {w: w∈ Dox_α} (the largest conflict-free subset of the agent's doxastic alternatives as the modal base)
g_1= stereotypical ordering source
g_2={*the agent reaches her goal*}
g_3= bouletic ordering source (possibly with effective preference structure)

b. Π(f)={{w_i: α chooses action alternative a_i}}
(the action alternatives form a partition on f)

One final caveat: this modal model of a decision theory does not work in exactly the same way that decision problems work in decision theory. In decision theory, the probability function and the utility function operate on the same set of action alternatives at the same time. This allows for action alternatives to have the highest expected utility even when their probability of succeeding is very low: the agent simply has to assign them a very high utility value.

Consider an example where an agent wants to get something to eat. She believes it is extremely improbable that her favourite restaurant is open (because it is a holiday, or because she knows the cook is sick, or some other reason). However, she is desperately craving their food; so much so, in fact, that she would rather spend her lunch break going to the restaurant on the off chance that it is open after all than choosing the 'safe' option of going somewhere that is guaranteed to be open.

In a decision theoretic model, we can model the agent's behaviour in the following way.

action	probability of success	utility	expected utility
favourite restaurant	.1	50,000	5000
24-hour diner	.99	10	990

Table 3.1: Modelling the decision of an 'opinionated' agent

As table 3.1 shows, choosing the 24-hour diner (which has a probability of 99% of being open and a utility of 10, resulting in an expected utility of 990) is *less rewarding* for the 'opinionated' agent who absolutely loves her favourite restaurant: even though the favourite restaurant only has a probability of .1 of being open, the utility of going there if it *is* open is 50,000, thus its expected utility is still 5000. Thus decision theory would predict that it is *rational* for the agent to go to her favourite restaurant given these expected utilities.

In the modal system as I have presented it above, we do not get this result: because the ordering sources are strictly ranked, certain worlds may not be available any longer at certain points in the calculation. In this example, the worlds are first ranked according to what is normal via ordering source g_1. Worlds in which the agent's favourite restaurant are closed are thus ranked near the top, while worlds in which it is open are ranked near the bottom. The second ordering source g_2 then applies to the *best worlds* according to the ranking provided by g_1. The worlds in which the favourite restaurant is open are no longer considered at this point, but there might still be worlds among the g_1-best worlds in which the agent goes to the (closed) restaurant. Ordering g_2, which ranks worlds according to whether the agent succeeds at her goal of getting something to eat will now exclude those worlds because going to a closed restaurant means the agent will not succeed in getting something to eat. By the time g_3 ranks the best worlds relative to g_1 and g_2 according to the agent's other preferences, there are no worlds left in which she goes to her favourite restaurant. Thus, there are no favourite-restaurant worlds among the best worlds according to this model: the decision theoretic model and the modal model yield slightly different results.[7]

[7]Note that we do not even need to consider such an extreme case. Even if the favourite restau-

However, we might want to argue that the 'opinionated' agent is not acting rationally and that, in fact, the decision theoretic model is wrong predicting that the most rational course of action for her is to go to the (likely closed) restaurant. But I do not want to argue this. Instead, I argue that we can replicate the decision theoretic prediction through *ordering source promotion*. As pointed out in Büring (2003) speakers may fall into one of two camps: those who care about safety (being more worried about getting food than about getting tasty food), and those who worry more about getting what they prefer (being willing to take the risk of not getting any food over not getting her favourite food when it is available). The 'opinionated' agent falls into the second category: at the risk of not getting any lunch, she goes to her favourite restaurant so that she can have their food in the unlikely case that they are open. The modal model can capture this behaviour by promoting g_3 as the primary ordering source along the lines proposed by von Fintel and Iatridou (2008).

If g_3 first orders the modal base according to the overall desires of the agent, those worlds in which she goes to her favourite restaurant are sorted to the top, and those where she goes elsewhere are sorted towards the bottom. Only then does g_1 apply. It sorts the best worlds (relative to g_3) according to what is likely: now worlds in which the agent goes to the restaurant and it is closed are near the top, and those where it is open are near the bottom. By the time g_2 comes in in order to rank the worlds according to the goal of getting something to eat, the only worlds that are left are worlds where the agent goes to the closed restaurant and she does not get anything to eat; that is, g_2 does not have any work left to do.

This mechanism of ordering source promotion captures the different behaviour of agents. Note that decision theory also allows for some idiosyncratism on the part of the agents: the agent's utilities have to show a large enough preference for one action alternative to make up for that alternative's low probability if we want to derive the 'opinionated' picture as in table 3.1. It is no surprise that we also

rant has a probability of .49 for being open, the primary ordering source in my model would cut out the worlds where it is open. In this case perhaps many people might argue that it is 'worth the risk' going there, which at first glance seems to be different from my predictions. But it is in fact compatible with my system: it simply calls for ordering source promotion as discussed below.

need a different way of ordering worlds to treat cases like that.

Summary

Using a free factive subjunctive is only acceptable if the following presupposition is met:

- There is a decision problem *D*.
  We can model *D* as consisting of the following components:
  - a modal base f={w: w∈Dox$_\alpha$}, the largest conflict-free subset of the agent α's beliefs
  - g_1, a stereotypical ordering source
  - g_2= {α reaches her goal'}
  - g_3= a bouletic ordering source, when necessary plus an effective preference structure
- The action alternatives form a partition on f:
  Π(f)={{w_i: α chooses action alternative a_i}}

3.3 Presupposition II: uniquely identifying an action alternative

The previous section has shown that free factive subjunctives can only occur in contexts in which there is a salient decision problem, and it has provided an analysis of decision problems in a possible worlds framework and argued that the existence of the decision problem can be treated as a presupposition.
In this section, I show that there is a second use condition which I propose to also treat as a presupposition: the free factive subjunctive can only be used if the utterance it occurs in 'helps' the agent in a particular way.

3.3.1 The data

Recall from the detailed discussion in chapter 1 and also from examples (4) and (5) at the beginning of this chapter the contexts where the agent was looking for a beautiful dress. Using a free factive subjunctive to communicate that a particular dress is *ugly*, that is, that it should *not* be chosen by the agent, is not possible (even though the context clearly contains a decision problem and learning that a particular dress is ugly is intuitively relevant for the decision making process in some way).

In the discussion of decision problems in chapter 2, I briefly introduced van Rooij's notion of *relevance*: a proposition p is relevant for a decision problem D if learning that p changes the expected utility of one or more action alternatives.

This notion of relevance is not strong enough to explain what is going on here: an agent who learns that a particular dress is ugly (when looking for a beautiful dress) will adjust the expected utility of the action alternative *choose that dress* – its expected utility will decrease (and thus *change*), so by van Rooij's definition, the proposition *that is an ugly dress* is relevant to the decision problem – but the free factive subjunctive is not acceptable in such a context.

Therefore we have to postulate a second condition on the use of the free factive subjunctive: not only is the expected utility of one or more action alternatives changed, but the agent has to be able to identify one unique action alternative which is *improved the most* by learning that p. The way this action alternative is identified will be left underspecified; we will see that the identification is not a compositional process and is even susceptible to speaker variation.

Intuitively, we understand that when a speaker utters 'there is pizza in the fridge' that this is related to the action alternative 'open the fridge' and it *improves* the expected utility of this alternative (the expected utility of this particular action alternative is raised). Because there is a unique action alternative whose expected utility is *improved*, the free factive subjunctive is acceptable. On the other hand, if the speaker says 'I ate the leftover pizza', the expected utility of 'open the fridge' is *lowered*. There is no unique action alternative whose expected utility is *improved*, so using a free factive subjunctive is not possible. (Of course

learning that the speaker ate the pizza may change the expected utilities of some other action alternatives and thus change the way the agent ranks them – what is important for the use of the free factive subjunctive though is that there is no unique action alternative whose expected utility is raised.) Consider the following (familiar) examples.

(3.49) A: *Was soll ich nur essen?*
what shall I PART eat
'What should I eat?'

(3.50) B: ?? *Da wäre keine Pizza mehr.*
there is.FFS no pizza anymore
intended: 'There is no more pizza.'

(3.51) B': ✓ *Da wäre noch Pizza im Kühlschrank.*
there is.FFS *Part* pizza in-the fridge
'There is pizza in the fridge.'

Speaker B attempts to demote an action alternative; using a free factive subjunctive is prohibited. Speaker B' whose utterance improves an action alternative is acceptable with a free factive subjunctive.

In principle there are two ways in which learning something new can improve an action alternative: either the new fact influences how likely the agent believes an action alternative will lead to a 'positive' outcome (learning that there is pizza in the fridge improves the likelihood that 'open the fridge' will lead to success), or it influences how much the agent 'likes' an action alternative (learning that kale is healthy improves how much the agent 'likes' getting a kale salad).

But we observe that the free factive subjunctive can only occur with utterances that influence the ordering source g_1 (the ordering related to what is (stereotypically) the case). They cannot occur with utterances that influence g_3 which ranks the worlds according to how much the agent 'likes' the action alternatives. Here are some examples of a speaker attempting to influence the third ordering source (note that indicative equivalents of (53) – (56) are acceptable).

(3.52) A: *Was soll ich nur essen?*
what shall I PART eat

'What should I eat?'

(3.53) B: ?? *Du wärst auf Diät.*
you are.FFS on diet
intended: 'You are on a diet.'

(3.54) B': ?? *Pizza wäre ungesund.*
pizza is.FFS unhealthy
intended: 'Pizza is not healthy.'

(3.55) B": ?? *Grünkohl wäre gesund.*
kale is.FFS healthy
intended: 'Kale is healthy.'

(3.56) B"': ?? *Du hättest heute morgen nicht viel gegessen.*
you have.FFS today morning not much eaten
intended: 'You did not eat much this morning.'

It is important to note that neither improving nor demoting an action alternative via the third ordering source is compatible with the free factive subjunctive. B and B' are suggesting to *demote* the action alternative *get pizza*: assuming that A wishes to be healthy, learning that pizza is unhealthy or being reminded that one is on a diet and should not eat pizza should influence the ranking of worlds in which the agent chooses to eat pizza. B" and B"', on the other hand, are suggesting to *improve* an action alternative (*eat kale* in the case of (55) and *eat something hearty* in the case of (56), respectively) by pointing out benefits of certain action alternatives. Importantly, none of these utterances are acceptable with a free factive subjunctive.

Therefore we postulate that the proposition co-occurring with the free factive subjunctive must result in a different ordering by the ordering source g_1 (the stereotypical ordering source). However, the exact process of identifying the 'improved' action alternative seems to rely heavily on world knowledge.

We can again run the *family of sentences* test to see whether we can assume this restriction on the use of free factive subjunctives can be modelled as a presupposition. Consider a context in which the agent is looking for a pretty dress. The family of sentences test predicts that the FFS should be odd in questions, the

antecedent of a conditional, and embedded under a modal operator if the supposed presupposition is violated.

(3.57) ?? *Wäre dieses Kleid häßlich?*
is.SUBJ this dress ugly
'Is this dress ugly?'

(3.58) ?? *Wenn dieses Kleid doch häßlich wäre, kannst du ein anderes*
if this dress PART ugly is.SUBJ can you a other
kaufen.
buy
'If this dress is ugly, you can buy another one.'

(3.59) ?? *Dieses Kleid wäre wahrscheinlich häßlich.*
this dress is.SUBJ probably ugly
'This dress is probably ugly.'

The oddness of these examples shows that the family of sentences correctly predicts the FFs to be odd in these contexts, so we can assume that presupposition 2 is indeed a presupposition.

3.3.2 The analysis

How can we model this condition on the use of the free factive subjunctive within the modal framework? The system so far provides a (doxastic) modal base and three ordering sources: two which rank the worlds according to what the agent believes is likely, and one which ranks them according to how much the agent 'likes' that world. I have noted in the previous section that there is no compositional way to determine which action alternative is uniquely identified by the prejacent – we simply have to posit that the addressee will be able to do this.

When an agent learns the proposition *there is pizza in the fridge*, he adds this proposition to his doxastic alternatives, removing all worlds in which there is no pizza in the fridge. Thus the ordering sources only operate on worlds in which there is pizza in the fridge – if before the agent thought that in the most stereotypical worlds there was no pizza in the fridge, this leads to a re-ranking of which worlds are optimal.

Consider the following toy example. We consider two action alternatives: opening the fridge and ordering Chinese food. We also consider whether there is pizza in the fridge and whether the Chinese restaurant is open. There are 8 types of worlds (for simplicity's sake I ignore worlds where the agent does not do anything).

w_1= pizza ✓, restaurant ✓, open fridge
w_2= pizza ✓, restaurant $\lightning$, open fridge
w_3= pizza $\lightning$, restaurant ✓, open fridge
w_4= pizza $\lightning$, restaurant $\lightning$, open fridge
w_5= pizza ✓, restaurant ✓, order Chinese
w_6= pizza ✓, restaurant $\lightning$, order Chinese
w_7= pizza $\lightning$, restaurant ✓, order Chinese
w_8= pizza $\lightning$, restaurant $\lightning$, order Chinese

Table 3.2: A toy model of a decision problem

Assume that before learning that there is pizza in the fridge, the agent believes the most stereotypical worlds are those where there is no pizza in the fridge. These are worlds w_3, w_4, w_7, and w_8. Ordering g_1 will rank those 4 worlds the highest. Assume that the agent has no beliefs about how likely it is that the Chinese restaurant is open. Ordering g_2 will rank those worlds highest in which the agent gets food. This only happens in w_7 where the restaurant is open and the agent orders Chinese food, so w_7-worlds are optimal according to g_2 applied after g_1. g_3 ranks the type w_7 worlds (this ranking is vacuous).

Now compare this to an agent who learns that there is pizza in the fridge. The doxastic alternatives in which there is no pizza in the fridge are eliminated, leaving only worlds of type w_1, w_2, w_5, and w_6. Since the agent has no beliefs about how likely it is that the Chinese restaurant is open, the stereotypical ordering source g_1 will include all four types of worlds as optimal. Ordering g_2 ranks the worlds according to whether the agent reacher his goal: this happens in worlds of type w_1, w_2, and w_5. Finally, ordering g_3 ranks the worlds according to the agent's desires – e.g. if she wants to stay home, it ranks w_1 and w_2 worlds as optimal.

As the data in the previous section has shown, free factive subjunctives can only co-occur with propositions which influence the ranking of the stereotypical

ordering source in a particular way: the likelihood with which one unique action alternative leads to a 'positive' outcome must be improved.

(3.60) A free factive subjunctive can only occur felicitously if the following second presupposition is met:
∃**a***: for any two worlds w_1, $w_2 \in \text{Dox}\alpha \cap p$ which only differ in whether the agent performs ***a**** or some other action alternative *a* (assume that $w_1 \in$***a**** and $w_2 \in a$): $w_1 \leq_{g1} w_2$

In prose, there is an action alternative ***a**** such that worlds in which the agent chooses this alternative are always ranked as high or higher than worlds in which the agent chooses some other action alternative. The ranking is done by the stereotypical ordering source g_1, applied to the agent's doxastic alternatives intersected with the prejacent proposition *p*.

In the discussion of presupposition 1 I suggested that it does not matter how the action alternatives partition the modal base, but that we would only discuss atomic action alternatives for simplicity's sake. As the present section shows, presupposition 2 requires that there is an action alternative which is as good or better than its alternatives. Consider the following scenario which features non-atomic action alternatives.

(3.61) Alex is hungry. He is considering the following action alternatives: *a*, opening the fridge, *b*, opening the fridge and calling a Chinese restaurant to order food, and *c*, going to the grocery store.

a. *Es wäre Pizza im Kühlschrank.*
it is.FFS pizza in-the fridge
'There is pizza in the fridge.'

The speaker's utterance does not violate the second presupposition: there is an action alternative (namely alternative *a* – open the fridge) which is as good or better than its alternatives after being ranked by g_1.

This system correctly predicts the presuppositions not only for declarative sentences, but for questions as well. Consider (62).

(3.62) *Wäre Pizza im Kühlschrank?*
is.FFS pizza in-the fridge
'Is there pizza in the fridge?'

Presupposition 1 correctly predicts that (62) can only be uttered in a context where there is a salient decision problem. Presupposition 2 predicts that there is a second condition on the felicitous use of the free factive subjunctive in (62): there is an action alternative **a*** such that for two worlds which are doxastic alternatives of the agent and which only differ in whether the agent chooses to perform action **a*** or some other action alternative *and in which p holds*, the world in which he performs **a*** is as good or better as the other world. Note that *p* is the sentence radical *there is pizza in the fridge* without the question operator (as with negation, the question operator scopes over the free factive subjunctive).

The same is true of *wh*-questions. Consider (63).

(3.63) *Wer hätte (denn) einen Bart?*
who has.FFS PART a beard
'Who has a beard?'

Again, presupposition 1 predicts that (63) is only acceptable if the context is such that there is a salient decision problem. Presupposition 2 predicts that for any true answer *p*, there is an action alternative **a*** such that for two worlds which are doxastic alternatives of the agent and which only differ in whether the agent chooses to perform action **a*** or some other action alternative *and in which p holds*, the world in which he performs **a*** is as good or better as the other world.

3.3.3 Additional considerations

So far we have identified the conditions of use for free factive subjunctive and have modelled them as presuppositions. In the following section, we will turn to the non-truth-conditional, non-at-issue contribution of the free factive subjunctive. But before doing that, let me briefly address some additional issues concerning the second presupposition. Since the speaker has incomplete knowledge of the agent's actual beliefs and desires, she can make mistakes about what 'counts' as

an utterance that will improve an action alternative. Consider a speaker who loves brussels sprouts, and an agent who hates them.[8]

(3.64) a. A: *Da wäre Rosenkohl im Kühlschrank.*
there is.SUBJ brussels-sprouts in-the fridge
'There are brussels sprouts in the fridge.'

b. B: Hey wait a minute! Brussels sprouts are disgusting!

Here B rejects A's assumption that brussels sprouts have a high enough utility to make this proposition a helpful contribution to B's decision problem. But note that A's utterance is felicitous because brussels sprouts are edible – A did improve the ranking of certain worlds.

On a related note, consider a context in which the agent has already prepared his favourite dish: a delicious salad. It is sitting on the counter. Meanwhile, the speaker comes home. Without looking at the counter, she says *Da wäre Pizza im Kühlschrank 'there is pizza in the fridge.'* Again this is felicitous even though the agent will likely not change his actions based on the speaker's utterance.

The action alternative whose ranking is *improved the most* is not necessarily the best action alternative overall.

Finally, it is important to note that the speaker is not just using the preferences and rankings that she herself would use if she had the same decision problem as the agent. For example, it is perfectly acceptable for a vegetarian (who herself would assign a very low utility to eating a steak) to utter (65).

(3.65) **Context:** The speaker is a vegetarian and therefore does not want to eat meat.

✓ *Es wäre ein Steak im Kühlschrank.*
it is.SUBJ a steak in-the fridge
'There is a steak in the fridge.'

If the speaker simply used her own ordering sources, she would not be able to make this contribution, since for her, *none of the worlds in the modal base* are such that eating steak is optimal.

[8]This example is due to M. Zimmermann (p.c.) whose example involved the local non-translatable type of sausage *Stracke*.

Summary

The free factive subjunctive can only be used if the following two presuppositions are met:

- There is a decision problem D, consisting of a modal base f=Dox$_\alpha$, a stereotypical ordering source g_1, a teleological ordering source g_2={the agent reaches her goal}, and a bouletic ordering source g_3, when necessary supplemented by an effective preference structure
- There is a unique action alternative a^* such that for any two worlds w_1, w_2 which only differ in whether the agent performs a^* or some other action alternative a (assume that $w_1 \in a^*$ and $w_2 \in a$): $w_1 \leq_{g1} w_2$

3.4 The non-truth-conditional meaning component of the free factive subjunctive

We have seen in section 3.1 that the free factive subjunctive contributes non-truth-conditional, non-at-issue material in addition to its presuppositions. In this section, I make a proposal for what this material is.

(3.66) **Proposal for ⟦Ffs⟧** **(to be revised)**

$$⟦\text{Ffs}⟧^{w,g} = \lambda p_{<i,<s,t>>}.[\exists\, D, \exists\, a_p]\ \frac{p}{\exists w' \in Opt_{g3_D}(Opt_{g2_D}(Opt_{g1_D}(\cap f_D(w)))): a_p(w')=1}$$

where D is a decision problem, consisting of a modal base f_D=Dox$_\alpha$, a stereotypical ordering source g_{1_D}, a teleological ordering source g_{2_D}={the agent reaches her goal}, and a bouletic ordering source g_{3_D}, when necessary supplemented by an effective preference structure,
and a unique action alternative a_p such that for any two worlds w_1, w_2 which only differ in whether the agent performs a_p or some other action alternative a (assume that $w_1 \in a_p$ and $w_2 \in a$): $w_1 \leq_{g1} w_2$

On the truth conditional level, Ffs behaves like a (partial) identity function. It presupposes that there is a decision problem D and a uniquely identified action

alternative a_p in the sense specified in the previous sections. On the non-truth-conditional level, the free factive subjunctive contributes the following: among the worlds which are optimal in view of the agent of the decision problem D, there is (at least) one optimal world in where the agent chooses the action alternative a_p, which is the one uniquely identified by p. Communicating that there are optimal worlds in which the agent performs a_p (rather than that *all* optimal worlds are a_p-worlds) has exactly the 'tentative suggestion' effect the descriptive literature ascribes to the free factive subjunctive.

Before turning to the question of compositionality in the next chapter, I will briefly discuss in prose what this analysis predicts for some of the examples that have appeared in previous chapters. To make the examples easier to read, I present them in the following format.

(3.67) $[\![p]\!] = \frac{\text{truth-conditional meaning of } p}{\text{non-truth-conditional meaning of } p}$

The truth-conditional meaning of a proposition p is written on the numerator, while the non-truth-conditional component is written on the denominator.

(3.68) $[\![\textit{Es wäre Pizza im Kühlschrank.}]\!]^{w,g} =$
$[\![\textsc{Ffs}(\textit{Es ist Pizza im Kühlschrank.})]\!]^{w,g} =$
$[\exists D \text{ and } \exists a_{eat-pizza}]\ \frac{\text{Es ist Pizza im Kühlschrank}}{\exists w' \in Opt_{g_3}(Opt_{g_2}(Opt_{g_1}(\cap f(w)))) : a_{eat-pizza}(w')=1}$

The meaning of *es wäre Pizza im Kühlschrank* is the following: the speaker presupposes that there is a salient decision problem, and that there is an action alternative identified by the prejacent proposition *there is pizza in the fridge* which is as good or better than its alternatives when ranked by the stereotypical ordering source g_1 (I call this action alternative *eat-pizza*). At the truth-conditional at-issue level, the speaker communicates that there is pizza in the fridge. At the non-truth-conditional, non-at-issue level, the speaker communicates that there is a world which is optimal with respect to the decision problem and in which the agent performs the action *eat-pizza*.

Now consider some other examples of free factive subjunctives.

(3.69) $[\![$*Hier ginge es zum Gipfel.*$]\!]^{w,g}=$
$[\![$Ffs(*Hier geht es zum Gipfel*)$]\!]^{w,g}=$
$[\exists D \text{ and } \exists a_{choose-path}] \frac{\text{this is the way to the summit}}{\exists w' \in Opt_{g_3}(Opt_{g_2}(Opt_{g_1}(\cap f(w)))):a_{choose-path}(w')=1}$

The speaker communicates that this is the way to the summit. She presupposes that there is a decision problem (for example, which way should the agent go at a crossroads in order to reach the summit), and that the prejacent proposition identifies one action alternative (for example, choose this particular path). The non-truth-conditional, non-at-issue meaning conveyed by the free factive subjunctive is that there are worlds which are optimal with respect to the decision problem in which the agent chooses this particular path.

We can also analyze example (29) from Duden (2006).

(3.70) $[\![$*Hier hätten wir den Blumenladen.*$]\!]^{w,g}=$
$[\![$Ffs(*Hier haben wir den Blumenladen.*)$]\!]^{w,g}=$

$[\exists D \text{ and } \exists a_{remember-location}] \frac{\text{here we have the florist's shop}}{\exists w' \in Opt_{g_3}(Opt_{g_2}(Opt_{g_1}(\cap f(w)))):a_{remember-location}(w')=1}$

The speaker communicates that this is the florist's shop. She presupposes that there is a decision-problem (for example, which key locations should the agent remember in the new town he is in), and that the prejacent proposition identifies one action alternative (for example, remember the location of the florist). The non-truth-conditional, non-at-issue meaning conveyed by the free factive subjunctive is that there are worlds which are optimal with respect to the decision problem in which the agent chooses to remember the location of the florist.

Finally, let us consider one of the literary examples discussed in chapter 1, *Der Dunkelgraf* by Ludwig Bechstein.

(3.71) $[\![$*Ich hätte noch viel zu sagen.*$]\!]^{w,g}=$
$[\![$Ffs(*Ich habe noch viel zu sagen.*)$]\!]^{w,g}=$

$[\exists D \text{ and } \exists a_{ask-speaker}] \frac{\text{I have much more to say}}{\exists w' \in Opt_{g_3}(Opt_{g_2}(Opt_{g_1}(\cap f(w)))):a_{ask-speaker}(w')=1}$

The speaker communicates that he has more to say. (The context is such that the station of the speaker does not allow him to say more to his interlocutor, whose

position in society is more powerful.) Using the free factive subjunctive presupposes that the interlocutor has a decision problem ('what should I do next?') and the prejacent proposition identifies one action alternative (asking the speaker to say more). The non-truth-conditional, non-at-issue meaning conveyed is that there are worlds which are optimal with respect to the decision problem in which the agent chooses to ask the speaker to say more. In the context of the novel, it is clear that the interlocutor does not have this decision problem, and that he will not ask the speaker to say more. But by using the free factive subjunctive, the speaker makes a conversational move which suggests that it is possible for the interlocutor to accommodate both the decision problem and choosing to ask the speaker to say more.

Summary I have argued that the free factive subjunctive makes three distinct contributions to the meaning of the utterance it occurs in: it carries two presuppositions and a non-at-issue, non-truth-conditional contribution. It presupposes the existence of a decision problem and of an action alternative which is uniquely identified by the prejacent, and then makes an existential claim about the worlds where this action alternative is chosen.
I have provided a rendering of decision problems in a modal framework which will enable us to derive a fully compositional semantics of the free factive subjunctive in the following chapter.

Chapter 4

Composition

As the previous chapter has shown, the contribution of the free factive subjunctive is more than 'just' truth-conditional. Important parts of the content it conveys are non-at-issue material. In order to still provide a compositional semantics, we need to adopt a framework which can handle dealing with non-at-issue material in a compositional way. One such framework is multi-dimensional semantics, and in the present chapter I work out an analysis of the free factive subjunctive in a multi-dimensional semantics.

Recent years have seen an increased interest in multi-dimensional semantic composition. My proposal is in the spirit of Potts (2005, 2007) and follows the important insight in McCready (2010) that elements can at once contribute to the truth conditions *and* to the non-at-issue content of the utterance. I use the logic developed in Gutzmann (2012) which translates McCready's insights into a fully compositional system. Note that I will not spend a lot of time reviewing McCready's or Gutzmann's work; for details on the system, proofs, etc., I refer readers to the original work.

The system works in the following way. Gutzmann argues we need three dimensions which each contain semantic meaning of a different kind. We maintain the familiar truth-conditional dimension with basic types e and t and its application rules (*functional application, predicate modification,* etc.). We also maintain a

Potts-style 'use-conditional' meaning dimension. All material on this dimension is assigned the basic type *u*. Material on the use-conditional dimension cannot participate in semantic composition; any material on this dimension is simply collected and added to make up the expressive content conveyed by an utterance. The 'middle' dimension is where truth-conditional and use-conditional meaning can compose.

An expression like *damn*, as in *that damn Alex*, which is looking for an argument of type *e*, would thus be modelled as having type <*e,u*>: it is a function from individuals to purely expressive meaning. Gutzmann proposes that the basic type *u* can participate in type formation in the same way as the other basic types.

When determining the denotation of an expression, we have to pay attention to all three dimensions: the purely truth-conditional level with its familiar types, the purely use-conditional level with any expressive content that does not participate in composition, and the 'mixed' level.

Consider again the element *damn*. Intuitively it contributes non-truth-conditional material (roughly: *the speaker has a negative attitude towards something*), but it is also a modifier which needs to combine with an argument (in this case, an individual, namely *(that) damn Alex*). It does not seem to contribute any purely truth-conditional material or purely use-conditional material. We conclude that it is of type <*e,u*> because it takes an element of type <*e*> as its argument and returns an element of type <*u*>. Gutzmann suggests the following denotation for *verdammt 'damn'*; his example (5.89).

(4.1) $[\![damn]\!] = \lambda p.\ p \blacklozenge \mathbf{bad}_{<e,u>} \bullet U$

We read the notation in (1) as follows. The lexical content is specified for all three dimensions; first the truth-conditional material, then the 'mixed' content, then purely use-conditional material. In the case of *damn*, there is no purely truth-conditional content. We indicate this with a placeholder identity function which is semantically vacuous. Material on the 'mixed' dimension is introduced by the ♦ symbol; in this case $\mathbf{bad}_{<e,u>}$ which Gutzmann proposes to use as shorthand for 'a function which maps an individual to the use-conditional contribution that the speaker has a negative attitude towards that individual'. Finally, the purely

use-conditional dimension (introduced by •) is empty again and receives the semantically vacuous value of the placeholder *U*.

Gutzmann proposes the following composition rules, as illustrated below.

(4.2) *Functional application*

$$\frac{\alpha\colon \langle\sigma^t, \tau^t\rangle \bullet \gamma \quad \beta\colon \sigma^t \bullet \delta}{\alpha(\beta)\colon \tau^t \bullet \gamma \odot \delta}$$

(4.3) *Expressive application*

$$\frac{\alpha\colon \langle\sigma, \tau\rangle^{u} \bullet \gamma \quad \beta\colon \sigma^t \bullet \delta}{\beta\colon \sigma^t \blacklozenge \alpha(\beta)\colon \tau^t \bullet \gamma \odot \delta}$$

(4.4) *Mixed application*

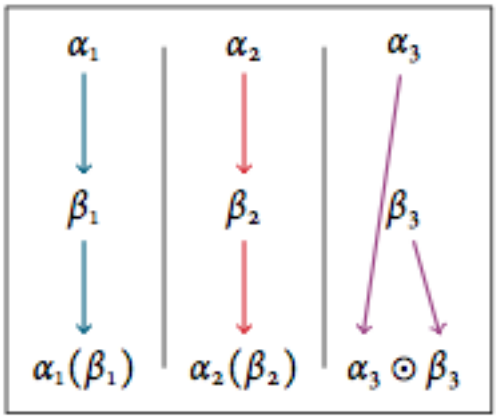
$$\frac{\alpha_1\colon \langle\sigma^t, \tau^t\rangle \blacklozenge \alpha_2\colon \langle\sigma^t, \nu^u\rangle \bullet \gamma \quad \beta\colon \sigma^t \bullet \delta}{\alpha_1(\beta)\colon \tau^t \blacklozenge \alpha_2(\beta)\colon \nu^u \bullet \gamma \odot \delta}$$

(4.5) *Shunting application*

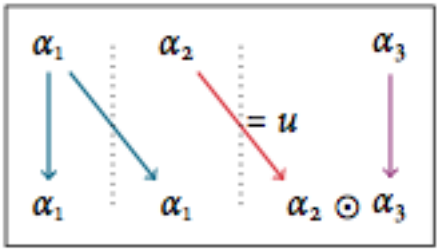
$$\frac{\alpha\colon \langle\sigma^t, \tau^t\rangle \bullet \gamma \quad \beta\colon \sigma^t \bullet \delta}{\mathrm{T},\ \alpha(\beta)\colon \tau^u \bullet \gamma \odot \delta}$$

(4.6) *Shunting elimination*

$$\frac{\alpha\colon \sigma^t \blacklozenge \beta\colon u \bullet \gamma}{\alpha\colon \sigma^t \bullet \gamma \odot \beta\colon u}$$



(a) Multidimensional application



(b) Unary use-conditional elimination

I will not explain the proposal in detail. What is important for my purposes here are rules (4) and (6): *mixed application* and *shunting elimination*. Mixed application defines how a multi-dimensional element can take a purely truth-conditional

element as an argument. Consider again *damn* which, on its mixed dimension, is looking for an argument of type <e>. For *damn* to be able to combine with an element of type <e> (which is of course purely truth-conditional), we have to assume that the content of the truth-conditional dimension is always available for composition at the 'mixed' level (so the truth-conditional content of the expression *Alex* is available at the mixed level).

(4.7) a. ⟦*damn Alex*⟧=

b. $\mathbf{damn}_{<e,u>}$ [$\mathbf{Alex}_{e}$]=

c. $\lambda p.\ p$ ♦ $\mathbf{bad}_{<e,u>}$ • U[$\mathbf{Alex}_{e}$♦ $\mathbf{Alex}_{e}$• U]=

d. $\mathbf{Alex}_{e}$♦ $\mathbf{bad(Alex)}_{u}$• U=

e. $\mathbf{Alex}_{e}$♦ $\mathbf{Alex}_{e}$• $\mathbf{bad(Alex)}_{u}$

We apply *damn* to *Alex*. Since *damn* is semantically vacuous on the truth-conditional level, the truth-conditional content of the complex predicate is only the individual *Alex*. At the mixed level the function $bad_{<e,u>}$ finds its argument of type <e>: it combines with *Alex* (line (7d)). Note that after combining it is now of type <u>.
Line (7e) illustrates the rule of *shunting elimination*: because the element on the mixed dimension saturated its argument position in the previous step of the computation and is now of type <u>, it gets *shunted* to the use-conditional dimension. It is now no longer available for further computations on the 'mixed' dimension.

We predict that the meaning of *(that) damn Alex* is only *Alex* at the truth-conditional level, and (very roughly) 'the speaker expresses a negative attitude towards Alex' on the use-conditional level. (The truth-conditional content remains available at the 'mixed' level for future composition with use-conditional elements which may be met later in the tree.)

4.1 The free factive subjunctive: a compositional analysis

With this mechanism in place, we can now provide a compositional semantics for the free factive subjunctive. Please take note of the following important fact: the expressions and formulae in this chapter will get very long. Therefore I will not spell out the presuppositions that are attached to the lexical elements except in the present section. In the remainder of this chapter, the reader should add them herself.

I propose the following meaning for the free factive subjunctive.

(4.8) **Proposal for ⟦Ffs⟧** **(final)**

⟦Ffs⟧= $\lambda p_{<i,<s,t>>}$. λi. [$\exists\, D_i$, $\exists\, a_p$]

λi. $p(i)$

♦ [$\exists(w',t') \in Opt_{g_{3_D}}(Opt_{g_{2_D}}(Opt_{g_{1_D}}(\cap f_D(w))))$: $a_p(w',t')=1 \wedge i<t']_{<<i,<s,t>>,<i,u>>}$

• U

where i is a time interval, D is a decision problem, consisting of a modal base f_D=Dox_α, a stereotypical ordering source g_{1_D}, a teleological ordering source g_{2_D}={the agent reaches her goal}, and a bouletic ordering source g_{3_D}, when necessary supplemented by an effective preference structure, and a unique action alternative a_p such that for any two worlds w_1, w_2 which only differ in whether the agent performs a_p or some other action alternative a (assume that $w_1 \in a_p$ and $w_2 \in a$): $w_1 \leq_{g1} w_2$

In prose: the Ffs presupposes that there is a decision problem D at time i and a uniquely identified action alternative a_p in the sense specified in the previous sections.[1] On the truth conditional level, Ffs behaves like a (partial) identity function. On the 'mixed' level, the free factive subjunctive contributes the following: among the worlds which are optimal in view of the agent of the decision problem D, there is (at least) one optimal world in which the agent chooses the action alternative a_p (and performs it at a time t' shortly after i), which is the one uniquely identified by p. Communicating that there are optimal worlds in which the agent

[1] The presuppositions carry over to the other dimensions; cf. Liu 2012.

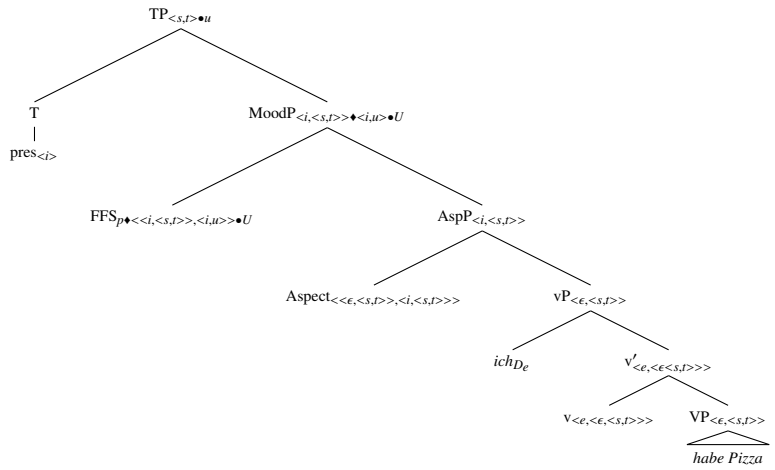
performs a_p (rather than that *all* optimal worlds are a_p-worlds) has exactly the 'tentative suggestion' effect the descriptive literature ascribes to the free factive subjunctive.[2]

The type of the mixed level denotation of the free factive subjunctive is <<*i*,<*s*,*t*>,<*i*,*u*>> – a function from propositions which are still missing their time argument to functions from times to use-conditional content.[3] The use-conditional dimension contains a placeholder because the FFS does not contribute any purely use-conditional content.

Modifying the syntactic structure proposed in Kratzer (1998) I propose to add a MoodP node between AspP and TP.

(4.9) a. *Ich hätte Pizza.*

b.



The denotation of the free factive subjunctive given in (8) then yields the following meaning (ignoring all presuppositions for easier legibility).

[2]Remember that for the reasons outlined in section 3.3.2 it is not possible to give a more precise method of deriving the action alternative. It does depend on the content of the prejacent, but cannot be identified compositionally; it can only be identified via world knowledge.

[3]I assume that modals allow existential quantification over times as argued for in Condoravdi 2002, Kusumoto 2005, Arregui 2007, and others.

(4.10)

Ffs	*ich habe Pizza*
p	(λi. **have(pizza, sp)** at i)$_{<i,<s,t>>}$
♦ Ffs$_{<<i,<s,t>>,<i,u>>}$	♦ (λi. **have(pizza, sp)** at i)$_{<i,<s,t>>}$
• U	• U
Ffs(*ich habe Pizza*)	
(λi.**have(pizza, sp)** at i)$_{<i,<s,t>>}$	
♦ (11)$_{<i,u>}$	
• U	

For reasons of space, the denotation of (11) is given below.

(4.11) ♦λi.$\exists$(*w'*,*t'*) $\in$ $Opt_{g_{3_D}}(Opt_{g_{2_D}}(Opt_{g_{1_D}}(\cap f_D(\text{w}))))$: $\text{a}_{\textbf{have(pizza,sp)}}(w',t')=1$ $\wedge$ i<t'

The final step of the computation happens when the expression at MoodP meets the time variable. I follow the referential analysis of tense developed in Partee (1973) in its instantiation in Heim's lecture notes on tense which assumes that tense refers to time intervals in a similar way as pronouns do to individuals:

(4.12) Pres$_k$ is only defined if $g(k)=t$ where t is the utterance time.
When defined, $[\![\text{Pres}]\!]^{t,g}$= g(k) (Heim's example (7))

(4.13) Past$_k$ is only defined if $g(k)<t$ where t is the utterance time.
When defined, $[\![\text{Past}]\!]^{t,g}$= g(k). (Heim's example (1a))

I follow von Roncador (1988) in assuming that the *Konjunktiv II* is interpreted as a present tense and *not* as a past tense. This makes sense intuitively since it can co-occur with *genau jetzt 'right now'*. Then we can compute the meaning of (Ffs(*I have pizza*))(Pres) as follows.

(4.14)

Ffs(*have pizza*)	*pres*
(λi. **have(pizza, sp** at i))$_{<i,<s,t>>}$	**g(k)**$_{<i>}$
♦ (11)$_{<i,u>}$	♦ **g(k)**$_{<i>}$
• U	• U
(**have(pizza,sp)** at **g(k)**)$_{<s,t>}$	
♦ (15)	
• (16)	

(4.15) (**have(pizza,sp)** at **g(k)**)$_{<s,t>}$ (*after shunting*)

(4.16) $\exists(w',t') \in Opt_{g_{3_D}}(Opt_{g_{2_D}}(Opt_{g_{1_D}}(\cap f_D(\mathrm{w})))): \mathrm{a}_{\mathbf{have(pizza,sp)}}(w',t')=1 \wedge \mathbf{g(k)} \prec \mathrm{t}'$
(*after shunting*)

At the 'mixed' level, an expression of type <*i,u*> combines with an expression of type <*i*> to form an expression of type <*u*>. This expression is then shunted to the •-dimension (given in (16)). At the 'mixed' level, the truth-conditional content is made available for any further computation.

The non-truth-conditional meaning in (16) in prose is as follows. There is a world in the set of best worlds (relative to three ordering sources and a modal base which are all relative to the (presupposed) decision problem) at which the unique action alternative made salient by the proposition 'I have pizza' is carried out at a time in the near future (relative to the utterance time). Note that this condition 'in the near future' is necessary, as evidenced by the following context.

(4.17) **Context:** A (a freshman in high school): When I graduate from college, I want to travel around the world.
B: ?? *Dort wäre ein Reisebüro.*
there is.FFS a travel-agency
intended: 'There is a travel agency.'

B's utterance is odd even though there is a salient decision problem (A wants to travel the world) and B is making a contribution towards choosing an action (go to the travel agency that is right there). However, the action alternative 'go to the travel agency' is not one that makes sense for A to choose soon after the utterance (it is known that A will not travel for at least another 7 years). Note that B could have used a free factive subjunctive to point out what A should do *right now* in order to pursue the dream of travelling the world.

(4.18) B: ✓ *Hier wäre dein Chemiebuch.*
here is.FFS your chemistry-book
'Here is your chemistry book.'

The action alternative that is made salient by B's utterance ('study chemistry so you can graduate on time') is one that A can carry out in the near future in pursuit of the goal.

4.2 Interaction with other operators

Now that we have an analysis of the free factive subjunctive, we can test what meanings it predicts when it interacts with other operators. As we have seen in chapter 1, the free factive subjunctive can co-occur with past tense, and it (often) resists combining with negation. In this section, I will account for this compositionally. I also briefly discuss the effect of the free factive subjunctive in questions and its interaction with other expressions that have a multi-dimensional semantics.

This is where our hard work pays off: any proposal which does not allow the systematic composition with other operators is bound to fail, while the current proposal can straightforwardly capture the meaning contribution of the Ffs in those cases.

4.2.1 Past tense

As already discussed in chapter 1, the free factive subjunctive can co-occur with past reference. In fact, the construction is very productive with past reference as shown below. Intuitively, the meaning of free factive subjunctive plus past reference is entirely compositional. We simply get the intuition that there was a decision problem in the past, a salient action alternative in the past, and that in the past the agent had an opportunity involving that action alternative. Note that a conservative notion of (Gricean) relevance cannot help us analyze the meaning of the Ffs + *past*: it is not relevant to the agent *now* that there was an opportunity in the past.[4]

(4.19) *Hier hätte gestern die Sonne geschienen.*
here has.Ffs yesterday the sun shone
'Here the sun was shining yesterday.'

(4.20) *Hätte der Imbiss gestern aufgehabt?*
has.Ffs the food-stand yesterday be-open

[4] I assume that the form of the subjunctive used here – *Konjunktiv II Perfekt* – exhibits the same ambiguity the indicative *Perfekt* exhibits: it is ambiguous between a 'past tense' interpretation and a perfective interpretation, cf. Kratzer 1998. I will informally refer to the form as the Ffs's 'past tense' where applicable, e.g. in contexts where it makes contextual sense to combine it with *gestern 'yesterday'*.

'Was the food stand open yesterday?' **Question**

(4.21) *Wenn du gestern Hunger hattest, da wäre Pizza im*
if you yesterday hunger had there is.FFS pizza in-the
Kühlschrank gewesen.
fridge been
'If you were hungry yesterday, there was pizza in the fridge.' **Consequent of a conditional**

The free factive subjunctive can productively occur with past reference not only in unembedded contexts, as in (19), but also in embedded contexts as in the question in (20) and the consequent of a conditional in (21). This productivity poses a compositionality puzzle – how does the contribution of the free factive subjunctive interact with the past tense?

Following Partee (1973), Kratzer (1998), Ogihara (2007), Hatav (2012), Beck and Gergel (2014) and others, I assume that past reference is more than existential quantification over past times, namely that there is a particular point in time which is in the past that a speaker refers to. I assume that using the past tense presupposes that there is such a point in time, and I repeat here the denotation of the past tense that I assume (following Heim 2014).

(4.22) PAST$_k$ is only defined if $g(k)<t$ where t is the utterance time.
When defined, $[\![\text{PAST}]\!]^{t,g} = g(k)$. (Heim's example (1a))

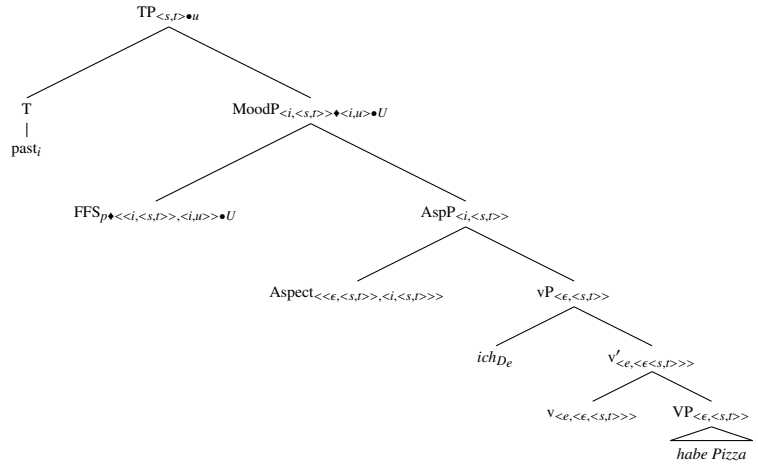
Note that because the past reference is contributed as a presupposition, nothing in the computation changes. As already mentioned, presuppositions – as part of the truth conditions – are available at the 'mixed' level. Remember again the presupposition that there is a salient decision problem. This presupposition was time-indexed by the temporal variable i. When the time selected by i lies in the past relative to the utterance time, the decision problem itself must also have existed in the past at time i.[5] Then we can simply compute the meaning of past tense

[5]The case is slightly different if the agent has a decision problem now, and the speaker is pointing out that a solution was available at a past time. The interlocutors would have to accommodate a (counterfactual) decision problem in the past in that case. I will ignore this here.

occurrences of the free factive subjunctive as before. I call this scopal configuration the 'past over FFS' configuration.

(4.23) a. *Ich hätte Pizza gehabt.*

b.



The free factive subjunctive first combines with the tenseless phrase 'I have pizza' as is familiar by now.

(4.24)

FFS	*ich habe Pizza*
p	(λi. **have(pizza, sp)** at i)$_{<i,<s,t>>}$
♦ FFS$_{<<i,<s,t>,<i,u>>}$	♦ (λi. **have(pizza, sp)** at i)$_{<i,<s,t>>}$
• U	• U
FFS(*ich habe Pizza*)	
(λi.**have(pizza, sp)** at i)$_{<i,<s,t>>}$ ♦ (25)$_{<i,u>}$ • U	

(4.25) ♦λi.$\exists$(*w'*,*t'*) $\in$ $Opt_{g3_D}(Opt_{g2_D}(Opt_{g1_D}(\cap f_D(\mathrm{w}))))$: $\mathrm{a}_{\mathbf{have(pizza,sp)}}(w',t')=1$ $\wedge$ i<t'

The difference in interpretation from the present tense case arises as expected: the speaker is not committed to having pizza *now*, but at the relevant past time picked out by the past tense.

(4.26)

FFS(*have pizza*)	*past*
(λi. **have(pizza, sp)** at i)$_{<i,<s,t>>}$	**g(k)**$_{<i>}$
♦ (25)$_{<i,u>}$	♦ **g(k)**$_{<i>}$
• U	• U
(**have(pizza,sp)** at **g(k)**)$_{<s,t>}$	
♦ (27)	
• (28)	

(4.27) (**have(pizza,sp)** at **g(k)**)$_{<s,t>}$ (*after shunting*)

(4.28) $\exists(w',t') \in Opt_{g_{3_D}}(Opt_{g_{2_D}}(Opt_{g_{1_D}}(\cap f_D(\mathrm{w})))): \mathrm{a}_{\mathbf{have(pizza,sp)}}(w',t')=1 \wedge \mathbf{g(k)}<\mathrm{t}'$

As before, the 'mixed' level expression is shunted to the • dimension, and it is communicated that there is a world among the best worlds (relative to the three ordering sources and the modal base which themselves are relative to the presupposed decision problem) where the action uniquely identified by the prejacent proposition is carried out at a time *t'* shortly after *g(k)*, the reference time in the past selected by the variable assignment.

Note that so far we have only discussed cases where the *Konjunktiv II Perfekt* form of the FFS is interpreted as a past tense, i.e., where the past scopes over the FFS. However, because the German *Perfekt* is also compatible with a perfect interpretation, we should find examples where it is interpreted as present tense + perfect aspect. This is indeed the case.

Perfective interpretations of the FFS As pointed out in Kratzer (1998), the German *Perfekt* is ambiguous between a true past tense meaning and a perfect interpretation (present tense plus perfect aspect). For the FFS this translates to contexts where the decision problem has a reference time of *now* (present), but a *past* event time. We do find examples like this, as follows.

(4.29) **Context:** A is making a documentary about men who were in the military in the 1970s. B knows someone who was in the military then (who is long retired).

B: *Peter wäre in den Siebzigern bei der Bundeswehr gewesen.*

'Peter was in the army in the seventies.'
$\rightsquigarrow$ 'There is an opportunity (now) to interview Peter.'

Speaker A has a decision problem at the time of B's utterance (present). What B conveys is that it is *currently* relevant for A to know that Peter was in the military *in the past*. That is, the time selected by $g(k)$ is the utterance time.

Following Kratzer (1998) I assume that the 'perfect' meaning of the German *Perfekt* is as follows.

(4.30) λP. λi. λw. $\exists\epsilon$ (time(ϵ) $<i$ and P(ϵ)(w)=1

Since AspP is below MoodP, we assume that the proposition *Peter be in the army in the Seventies* first combines with *Perfekt*, yielding the following.

(4.31) λi. λw. $\exists\epsilon$ (time(ϵ) $<i$ and *Peter be in the army in the Seventies*(ϵ)(w)=1.

In prose: There is an event prior to time i which is an event of Peter being in the army. Now this proposition combines with Fs in the by now familiar manner, yielding that there is an opportunity (at i) connected to the fact *Peter was in the army in the Seventies* was true at a time before i. Finally, we apply (present!) tense for all values of i.

(4.32)

Fs	*Peter ist bei der Bundeswehr gewesen.*
p	(λi. $\exists\epsilon$. Time(ϵ)<i and **army(Peter)**(ϵ)(w)=1)$_{<i,<s,t>>}$
$\blacklozenge$ Fs$_{<<i,<s,t>,<i,u>>}$	$\blacklozenge$ (λi. $\exists\epsilon$. Time(ϵ)<i and **army(Peter)**(ϵ)(w)=1)$_{<i,<s,t>>}$
$\bullet$ U	$\bullet$ U
Fs(*Peter ist bei der Bundeswehr gewesen*)	
((λi. $\exists\epsilon$. Time(ϵ)<i and **army(Peter)**(ϵ)(w)=1)$_{<i,<s,t>>}$ $\blacklozenge$ (33)$_{<i,u>}$ $\bullet$ U	

For reasons of space, the denotation of (33) is given below.

(4.33) $\blacklozenge\lambda$i. $\exists(w',t') \in Opt_{g_{3_D}}(Opt_{g_{2_D}}(Opt_{g_{1_D}}(\cap f_D(\text{w}))))$: $a_{\textbf{army(Peter)}}(w',t')=1 \wedge$ i<t'

(4.34)

FFS(*Peter ist bei der Bundeswehr gewesen*)	*pres*
(λi. $\exists\epsilon$. Time(ϵ)<i and **army(Peter)**(ϵ)(w)=1)$_{<i,<s,t>>}$	**g(k)**$_{<i>}$
♦ (33)$_{<i,u>}$	♦ **g(k)**$_{<i>}$
• U	• U
($\exists\epsilon$. Time(ϵ)<**g(k)** and **army(Peter)**(ϵ)(w)=1))$_{<s,t>}$	
♦ (35)	
• (36)	

(4.35) ($\exists\epsilon$. Time(ϵ)<**g(k)** and **army(Peter)**(ϵ)(w)=1))$_{<s,t>}$ (*after shunting*)

(4.36) $\exists(w',t') \in Opt_{g_{3_D}}(Opt_{g_{2_D}}(Opt_{g_{1_D}}(\cap f_D(w)))))$: $a_{\textbf{army(Peter)}}(w',t')=1 \wedge$ **g(k)**<t'
(*after shunting*)

This yields precisely the meaning that we want to derive: There was an event of Peter being in the Bundeswehr prior to the utterance time, and this gives rise to an opportunity for the agent shortly after the utterance time.

The following example is a frequently-occurring example of the same kind.

(4.37) *Das hätte ich erledigt.*
'I finished this (in the past).'
$\rightsquigarrow$ 'There is an opportunity to start something new (now).'

Again, the speaker conveys that something that happened in the past is relevant for a decision problem she is having at the utterance time.

The analysis can straightforwardly account for the contribution of the free factive subjunctive as it combines with tense and aspect.

4.2.2 Negation

As discussed in chapter 1, free factive subjunctives often resist co-occurring with negation in out-of-the-blue contexts.

(4.38) **Context:** The speaker's guest is hungry.

?? *Ich hätte keine Pizza.*
I have.FFS no pizza
intended: 'I don't have any pizza.'

But note that it is not the negation which makes the speaker's utterance odd. An utterance containing no overt negation but a similar propositional content is just as odd.

(4.39) **Context:** The speaker's guest is hungry.

??*Der Kühlschrank wäre leer.*
the fridge is.FFS empty
intended: 'The fridge is empty.'

The reason why both (38) and (39) are bad is because presupposition 2 is violated: there is no unique action alternative which is *promoted*. Free factive subjunctives are only compatible with negation if the negated proposition itself presents an 'opportunity'. (This automatically excludes the NEG > FFS scope configuration.)

When the context is such that a proposition containing a negation does promote a unique action alternative, the free factive subjunctive is perfectly acceptable.

(4.40) **Context:** The hotel is almost booked out, but there are some smoking rooms left. A is looking for a room.
Host: ✓*Die Raucherzimmer wären (noch) nicht belegt.*
The smoking rooms are not booked up (yet).
⇝ 'There is an opportunity involving the not-booked-up smoking rooms.'

(4.41) **Context:** A and B want to discuss A's date, but don't want C to overhear.

B: ✓ *Jetzt wäre C nicht da...*
now is.FFS C not here
'C is not here now.'

Note that the negation takes narrow scope, and the FFS scopes over it. In this case, we predict that the presuppositions are as follows: there is a decision problem *D*, and the prejacent proposition *C is not here* uniquely identifies an action alternative (for example 'we can talk now while C is away'). Then the multidimensional composition takes place as before, with negation *inside* the prejacent of the free factive subjunctive.

(4.42)

FFS	*C is not here*
p	(λi. **not(be-here(C))** at i)$_{<i,<s,t>>}$
♦ FFS$_{<<i,<s,t>,<i,u>>}$	♦ (λi. **not(be-here(C))** at i)$_{<i,<s,t>>}$
• U	• U
FFS(*C is not here*)	
(λi.**not(be-here(C))**) at i$_{<i,<s,t>>}$	
♦ (43)$_{<i,u>}$	
• U	

For reasons of space, the denotation of (43) is given below.

(4.43) ♦λi.$\exists$ (w', t') $\in$ Opt$_{g_{3_D}}$(Opt$_{g_{2_D}}$(Opt$_{g_{1_D}}$($\cap f_D$(w)))): a$_{\textbf{not(be-here(C))}}$(w', t')=1 $\wedge$ i<t'

As before the final step of the computation happens when the expression at MoodP meets the time variable.

(4.44)

FFS(*C not here*)	*pres*
(λi. **not(be-here(C))** at i)$_{<i,<s,t>>}$	**g(k)**$_{<i>}$
♦ (43)$_{<i,u>}$	♦ **g(k)**$_{<i>}$
• U	• U
(**not(be-here(C))** at **g(k)**)$_{<s,t>}$	
♦ (45)	
• (46)	

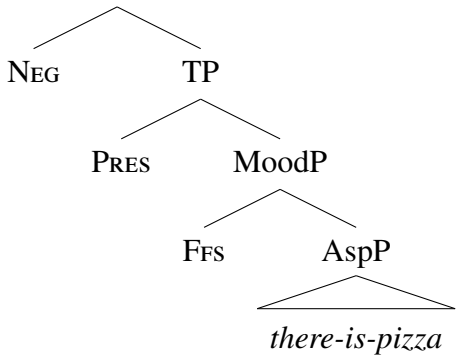
(4.45) (**not(be-here(C))** at **g(k)**)$_{<s,t>}$ (*after shunting*)

(4.46) $\exists$ (w', t') $\in$ Opt$_{g_{3_D}}$(Opt$_{g_{2_D}}$(Opt$_{g_{1_D}}$($\cap f_D$(w, t)))): a$_{\textbf{(not(C here))}}$(w', t')=1 $\wedge$ **g(k)**<t'

Negation cannot take wide scope over the free factive subjunctive. Consider the following example.

(4.47) ?? *Da wäre keine Pizza.*
there is.FFS no pizza
intended: 'There is no pizza.'

(4.48)



The presuppositions are the following: There is a salient decision problem D, and the prejacent of the subjunctive (which does not contain the negation) uniquely identifies an action alternative.

The free factive subjunctive combines with the prejacent at MoodP and we compute that there is a world (optimal with respect to the ordering sources and the modal base) in which the agent chooses that unique action alternative. This material is then shunted to the 'use-conditional' dimension at TP. But only then does the negation meet the prejacent. So on the truth-conditional level the speaker communicates that there is no pizza in w_0, while on the use-conditional level communicating that there are worlds where choosing an action alternative *based on the fact that there is pizza in those worlds* is optimal in those worlds. This results in an odd utterance: First we calculate the meaning of FFS(*there is pizza*)(*pres*) as before. Only then do we apply the negation.

(4.49)

FFS	*there is pizza*
p	$(\lambda$i. **pizza** at i$)_{<i,<s,t>>}$
♦ $\text{FFS}_{<<i,<s,t>,<i,u>>}$	♦ $(\lambda$i. **pizza** at i$)_{<i,<s,t>>}$
• U	• U
FFS(*pizza*)	
$(\lambda$i.**pizza** at i$)_{<i,<s,t>>}$	
♦ $(50)_{<i,u>}$	
• U	

For reasons of space, the denotation of (50) is given below.

(4.50) $\blacklozenge\lambda$i.$\exists$ (w', t') $\in \text{Opt}_{g_{3_D}}(\text{Opt}_{g_{2_D}}(\text{Opt}_{g_{1_D}}(\cap f_D(\text{w}))))$: $\text{a}_{\textbf{pizza}}$(w', t')=1 $\wedge$ i$<$t'

Now the expression in MoodP meets the time variable.

(4.51)

FFS(*pizza*)	*pres*
(λi. **pizza** at i)$_{<i,<s,t>>}$	**g(k)**$_{<i>}$
♦ (50)$_{<i,u>}$	♦**g(k)**$_{<i>}$
• U	• U
(**pizza** at **g(k)**)$_{<s,t>}$	
♦ (52)	
• (53)	

(4.52) (**pizza** at **g(k)**)$_{<s,t>}$ (*after shunting*)

(4.53) $\exists$ (w', t') $\in$ Opt$_{g3_D}$(Opt$_{g2_D}$(Opt$_{g1_D}$($\cap f_D$(w, t)))): a$_{\textbf{pizza}}$(w', t')=1 $\wedge$ **g(k)**$\prec$t'

In prose, at this point (before negation) the truth-conditional content is: there is pizza in the fridge at the utterance time. At the use-conditional level (importantly: already shunted so no longer available for computation) the speaker is conveying that there is a world among the best worlds regarding the agent's decision problem in which the agent performs the action uniquely identified by 'there is pizza' shortly after the utterance time.

What happens when negation meets this expression? The truth-conditional content is negated straightforwardly. However, because the use-conditional content is no longer available for computation, it does not interact with the negation.

(4.54)

FFS(*pizza*)(*pres*)$_{<s,t>}$	NEG$_{<<s,t><s,t>>}$
(**pizza** at **g(k)**)$_{<s,t>}$	NEG$_{<<s,t><s,t>>}$
♦ M	♦ M
• $\exists$ (w', t')...: a$_{\textbf{pizza}}$(w', t')=1 $\wedge$ **g(k)**$\prec$t'	• U
(**no pizza** at **g(k)**)$_{<s,t>}$	
♦ M	
• $\exists$ (w', t')...: a$_{\textbf{pizza}}$(w', t')=1 $\wedge$ **g(k)**$\prec$t'	

I introduce the shorthand M here to indicate that nothing interesting is happening at the mixed level (♦). Technically speaking the material from the truth-conditional dimension is copied to the ♦ level and the exact same calculations are carried out there as well.

So while the truth-conditional content of the utterance is 'there is no pizza at the utterance time', the use-conditional content that is communicated is about which

actions the agent should take in those worlds where there is pizza in the fridge. This results in the utterance being odd. Because negation cannot interact with the contribution of the free factive subjunctive once it has met the tense variable and has been shunted to the use-conditional dimension, negation cannot take wide scope.

4.2.3 Questions

As I have shown throughout the present text, the free factive subjunctive can co-occur with questions. Both polar questions and *wh*-questions are acceptable if the context they occur in is such that the presuppositions of the free factive subjunctive are met.

(4.55) *Wäre (da) Pizza im Kühlschrank?*
is.FFS PART pizza in-the fridge
'Is there pizza in the fridge?'

(4.56) *Hätte Peter einen Bart?*
has.FFS Peter a beard
'Does Peter have a beard?'

(4.57) **Context:** The speaker is wondering whether she should take the car or the subway, depending on where the car is parked.

Wo wäre (denn) das Auto?
where is.FFS PART the car
'Where is the car?'

(4.58) **Context:** The speaker is hosting a party and is wondering whether he should put more appetizers in the oven.

Wer hätte Hunger?
who has.FFS hunger
'Who is hungry?'

As predicted by standard theories of presuppositions, the presuppositions in these questions project, and in each case the speaker is committed to there being a salient decision problem.
Spelling out a particular semantics for the FFS in questions is beyond the scope

of the present work; I will therefore limit myself to briefly sketching what the proposal should look like. Following Stenius (1967) I assume that questions consist of a question operator **?** and a sentence radical p which can take the form of a proposition (in the case of a polar question) or of a property (in the case of a *wh*-question).

(4.59) a. **Polar question:** λw.proposition-content(w) (proposition)

b. **Constituent question:** $\lambda w.\lambda x$.property-content(w)(x) (property)

c. **Multiple consituent question:**
$\lambda w.\lambda x_1 \ldots \lambda x_n$.relation-content($w$)($x_1$)...($x_n$)
(intensional relation between two or more individuals)

Then we get the following semantics for questions containing the Ffs.

(4.60) ?(Ffs(p))
$\{p; \neg p\}$
$\rightsquigarrow$ There is an opportunity related to p.

(4.61) . ?λx(Ffs($p(x)$))
$\{x.|p(x)\}$
$\rightsquigarrow$ λx. There is an opportunity related to $p(x)$.

For example, the question *Is*(Ffs) *there pizza in the fridge?* asks whether there is pizza in the fridge. On the non-at-issue level, it signals that there is an opportunity connected to the sentence radical (that is, there is an opportunity connected to *there is pizza in the fridge*).

For a *wh*-question such as *Who is.*Ffs *hungry?*, the contribution of the Ffs at the non-at-issue level is 'There is an opportunity connected to *x is hungry*' for relevant x.

4.2.4 Free factive subjunctives and other multi-dimensional expressions

Given the denotion of the free factive subjunctive in (8), there is nothing that should prevent the free factive subjunctive from co-occuring with other expres-

sions which have a multi-dimensional semantics. Remember that 'use-conditional' material can simply be added at the • level.

(4.62) **Context:** A is the last guest at B's party. A is hungry, but there is only one kind of pizza left (that B finds disgusting).

B: *Ich hätte* *die scheiß Pizza.*
I have.Ffs the shit pizza
'I have that shitty pizza.'

Let us assume the following (crude) denotation for *scheiß 'shitty'*.

(4.63) $[\![\textit{scheiß}]\!] = \text{T} \blacklozenge \mathbf{bad}_{<<e,t>,u>} \bullet \text{U}$

The contribution of *scheiß 'shitty'* is that the speaker has a negative attitude towards something. Then we get the following meaning for *scheiß Pizza*.

(4.64)

scheiß	Pizza
p	$\mathbf{pizza}_{<e,t>}$
$\blacklozenge\ \mathbf{bad}_{<<e,t>,u>}$	$\blacklozenge\ \mathbf{pizza}_{<e,t>}$
U	U
$\mathbf{pizza}_{<e,t>}$	
$\blacklozenge\ \mathbf{pizza}_{<e,t>}$	
$\bullet\ \mathbf{bad(pizza)}_{u}$	

After *scheiß* has combined with pizza, its 'use-conditional' contribution is shunted to the • level. It no longer interacts with the rest of the computation. The meaning of *ich habe scheiß Pizza* is computed only on the truth-conditional level (up to MoodP), with the use-conditional meaning of *scheiß Pizza* stored away in the U dimension. Then we apply Ffs in the familiar manner.

(4.65)

Ffs	*I have shitty pizza*
p	$(\mathbf{have(sp, pizza)})_{<i,<s,t>>}$
$\blacklozenge\ [\ \lambda i.\ \exists\ (w', t')...: a_p(w', t')=1 \wedge i<t']_{<<i,<s,t>,<i,u>>}$	$\blacklozenge\ (\mathbf{have(sp, pizza)})_{<i,<s,t>>}$
U	$\bullet\ \mathbf{bad(pizza)}_{u}$
$(\lambda i.\ \mathbf{have(sp, pizza)}$ at i$)_{<i,<s,t>>}$	
$\blacklozenge\ [\ \lambda i.\ \exists\ (w', t')...: a_p(w', t')=1 \wedge i<t']_{<<i,<s,t>,<i,u>>}$	
$\bullet\ \mathbf{bad(pizza)}_{u}$	

The FFs only contributes material on the second dimension. It takes as input the material found in the truth-conditional dimension, ignoring the use-conditional content. That is, the fact that the speaker has a negative attitude towards the pizza does not enter the computation because it is no longer available. The final step again consists of combining with tense.

(4.66)

FFs(*I have shitty pizza*)	*pres*
(λi. **have(pizza, sp)** at i)$_{<i,<s,t>>}$	**g(k)**$_{<i>}$
♦ (λi. $\exists$ (w', t')...: a_p(w', t')=1 $\wedge$ i$\prec$t')$_{<i,u>}$	♦ **g(k)**$_{<i>}$
• **bad(pizza)**$_u$	• U
(**have(pizza,sp)** at **g(k)**)$_{<s,t>}$	
♦ (67)	
• (68)	

(4.67) (**have(pizza,sp)** at **g(k)**)$_{<s,t>}$ (*after shunting*)

(4.68) ($\exists$ (w', t') $\in$ $\text{Opt}_{g_{3_D}}(\text{Opt}_{g_{2_D}}(\text{Opt}_{g_{1_D}}(\cap f_D(\text{w}))))$: $a_{\textbf{have(pizza,sp)}}$(w', t')=1 $\wedge$ **g(k)**$\prec$t')$_u$ $\odot$ **bad(pizza)**$_u$ (*after shunting*)

This corresponds to our intution: the speaker is both contributing the non-truth-conditional information that the pizza is shitty, but also that there are worlds among the 'best' worlds in which A chooses the action alternative made salient by the prejacent proposition. That is, even though the pizza is shitty, if A is really hungry, he might consider eating it nonetheless.

4.3 Summary

In this chapter, I have provided a formal analysis of free factive subjunctives that is fully compositional. I have employed a multi-dimensional semantics to capture its meaning. (For reasons of legibility I have not included each expression's presuppositions in my computations.) I have shown how the semantics work for the basic case, and I have sketched how we can apply the semantics of the free factive subjunctive in cases where it interacts with other operators such as negation and past tense.

The free factive subjunctive can be analyzed formally as follows.

(4.69) $[\![\text{FFS}]\!] = \lambda p_{<i,<s,t>>}.\ \lambda i.\ [\exists\ D_i, \exists\ a_p]$
$\lambda i.\ p(i)$ ♦ $[\exists(w', t') \in Opt_{g_{3_D}}(Opt_{g_{2_D}}(Opt_{g_{1_D}}(\cap f_D(w)))):\ a_p(w', t')=1 \wedge i<t']_{<<i,<s,t>>,<i,u>>}$ • U
where i is a time interval, D is a decision problem, consisting of a modal base f_D=Dox_α, a stereotypical ordering source g_{1_D}, a teleological ordering source g_{2_D}={the agent reaches her goal}, and a bouletic ordering source g_{3_D}, when necessary supplemented by an effective preference structure,
and a unique action alternative a_p such that for any two worlds w_1, w_2 which only differ in whether the agent performs a_p or some other action alternative a (assume that $w_1 \in a_p$ and $w_2 \in a$): $w_1 \leq_{g1} w_2$

Chapter 5

Free factive subjunctives and relevance conditionals

In this chapter I discuss the intuition that because free factive subjunctives and relevance conditionals fulfill similar functions, we might be able to come up with an alternative analysis of Ffss in terms of relevance conditionals. The most famous example of a relevance conditional is given in (1) and appeared first in Austin (1956); in fact this example has given rise to the alternative name *biscuit* conditional. I will use the more descriptive term *relevance* conditional, following Iatridou (1994) and others.

(5.1) There are biscuits on the sideboard if you want them.

The chapter first gives a very brief introduction of what relevance conditionals are and how they differ from other types of conditionals in section 5.1. Section 5.2 motivates the intuition that free factive subjunctives and relevance conditionals are somehow related, and it gives a brief overview over the existing theories of relevance conditionals on the market. Section 5.3 argues that it is actually not possible to use relevance conditionals to explain what free factive subjunctives are and what they mean. I show that existing analyses of relevance conditionals simply do not capture the properties of free factive subjunctives.

Instead, I introduce novel data on relevance conditionals in section 5.4, and I explore the interaction between relevance conditionals and tense. Section 5.5 proposes a unified analysis that can account for the past tense data. Finally sec-

tions 5.6 and 5.7 raise two side issues: 5.6 discusses a problem for analyes of present counterfactuals, and 5.7 presents some experimental data on word order in German conditionals.

5.1 Relevance conditionals

Consider the following minimal pair.[1]

(5.2) If Alex went shopping, there is pizza in the fridge.

HYPOTHETICAL CONDITIONAL

(5.3) If you are hungry, there is pizza in the fridge.

RELEVANCE CONDITIONAL

Our intuition is the following: a speaker who utters (2) is not committed to there being pizza in the fridge in the actual world. If the addressee hears (2) and finds no pizza, it is perfectly natural for the speaker to continue, 'oh, Alex must not have gone shopping then.' Moreover, the hearer cannot complain that the speaker said there was going to be pizza in the fridge. By contrast, if the speaker utters (3) and the addressee does not find pizza in the fridge, it is weird for the speaker to say 'oh, you must not be hungry then', and it is perfectly acceptable for the addressee to complain when there is no pizza.

To put this more technically, the speaker of (2) conveys a complex belief: she does not believe that there is definitely pizza in the fridge in the world of evaluation. Instead she is committed (very roughly) to the belief that in all worlds where Alex went shopping there is pizza in the fridge.

But the intuition for (3) is different: here the speaker does seem to be committed to there being pizza in the fridge in the world of evaluation. Whether the addressee is hungry or not (i.e., whether the antecedent is true or not) does not seem to play a role. This is the hallmark of a relevance conditional: the speaker is taken to be committed to the truth of the consequent proposition in the actual world, whether or not the antecedent proposition turns out to be true.

[1] Example 3 goes back to Ebert et al. 2008.

Before addressing the connection between relevance conditionals and free factive subjunctives, let me very briefly introduce some terminology. For a conditional of the form *if p, q* the proposition *p* is called the *antecedent* whereas *q* is called the *consequent*. I assume a standard analysis following Lewis (1975) and Kratzer (1981, 1986), taking conditionals to be modal sentences, with the antecedent modifying the restrictor of the modal. I assume the semantics in the notation of von Fintel and Heim (2011), given in (4).

(5.4) $[\![\textit{if } p,\ q]\!]^{w,g} = \lambda f.\ \lambda g.\ \forall w' \in Opt_g(\cap f(w) \cup p):\ q(w') = 1.$

In prose, all the (best, relative to ordering source *g*) worlds in the modal base *f* in which *p* also holds are worlds in which *q* holds.

As we will see in the following section, it is a matter of some debate whether the semantics in (4) applies only to hypothetical conditionals, or to relevance conditionals as well.

5.2 Free factive subjunctives and relevance conditionals

As was shown in chapter 1, free factive subjunctives can be used when there is a salient decision problem. A speaker who wishes to suggest an action alternative without appearing 'pushy' can use a free factive subjunctive (this is why the free factive subjunctive has been described as having a *tentative* or *polite* meaning). Of course there are numerous other ways of providing tentative advice.

(5.5) You could eat some pizza. POSSIBILITY MODAL

(5.6) If you want to eat something, you could have some pizza.
ANANKASTIC CONDITIONAL

(5.7) Why don't you eat some pizza? NEG/RHET. QUESTION

(5.8) If you are hungry, there is some pizza in the fridge.
RELEVANCE CONDITIONAL

Of the options presented above, the one that is intuitively perhaps the most similar to the free factive subjunctive is the relevance conditional in (8): the speaker

has to be committed to the truth of *there is pizza in the fridge* and the 'proposal' that the addressee eat the pizza is somewhat indirect. Compare the other cases where some version of *you eat pizza* is explicitly mentioned; this is not possible in either the FFS or the relevance conditional. In both cases the utterance is compatible with a scenario in which the speaker already knows that the addressee is hungry (in this case the antecedent of the relevance conditional is interpreted factually). Crucially it is also compatible with a scenario in which the speaker is not sure.

One reasonable approach to analyzing free factive subjunctives could therefore be to argue that they are not in fact 'free' after all, but rather that they are always the consequent of a relevance conditional. For the cases where there is no overt antecedent (the 'unembedded' cases discussed in the previous chapters of the present text) we simply assume a hidden antecedent. It is intuitively easy to reconstruct a possible antecedent: since free factive subjunctives always presuppose a salient decision problem, the antecedent can simply make this explicit, and we can even formulate an explicit 'recipe' for retrieving a possible antecedent. Consider again our paradigm example in (9).

(5.9) Es wäre Pizza im Kühlschrank.
truth-conditional import: 'There is pizza in the fridge.'
presupposed: A salient individual is hungry and wondering what to do about that.

Instead of having the presupposition that there is a salient individual who is hungry, we can construct a relevance conditional which contains this information in the antecedent as in (10). In this case, the factive subjunctive in the consequent is no longer 'free'; instead we have a relevance conditional with a factively interpreted subjunctive in the consequent.

(5.10) *Wenn du Hunger hast, da wäre Pizza im Kühlschrank.*
if you hunger have.IND there is.FFS pizza in-the fridge
'If you are hungry, there is pizza in the fridge.'

A 'hidden relevance conditional' style analysis along these lines is especially attractive in view of the fact that a similar proposal has been made for unem-

bedded counterfactual subjunctives for English and German: Kasper (1992) and Schueler (2008) propose that unembedded counterfactuals should be analyzed as the consequent of a counterfactual conditional with a hidden antecedent.

(5.11) I would have passed that test.

(5.12) *If I had taken it,* I would have passed that test.

Kasper proposes that an unembedded counterfactual such as (11) is interpreted semantically as the consequent of a counterfactual conditional such as (12). He suggests that a plausible antecedent can be reconstructed from the context – typically it is a 'necessary precondition' for the truth of the consequent. For example, the speaker can only pass the test by taking it. Note that Kasper allows the antecedent to not be uniquely identified: depending on context, other plausible antecedents for (11) could be *if I had studied more* or *if I had arrived on time*. Kasper's analysis is very elegant: it provides a modal, counterfactual meaning for unembedded counterfactual subjunctives that corresponds to our intuitions, and it moreover reduces the – crosslinguistically atypical – unembedded subjunctive to the better-understood counterfactual conditional case, which is also attested more widely cross-linguistically.

It is intuitively easy to come up with a parallel story for free factive subjunctives as sketched above. We can propose the following alternative analysis of free factive subjunctives.

(5.13) **Proposal (to be rejected).** A free factive subjunctive Ffs(p) with a contextually salient decision problem D_p should be analyzed as a relevance conditional of the form:
If the agent is wondering about D_p, Ffs(p).
(with the meaning of Ffs to be determined.)

In order to see whether it is possible to implement the proposal in (13), I will briefly review the existing analyses of relevance conditionals. Note that the argument I will eventually make to reject (13) will not hinge on choosing a particular analysis; it is purely data-driven.

5.2.1 Theories of relevance conditionals

There are two main types of analyses available for relevance conditionals: those that propose the same syntax and semantics for relevance conditionals as we assume for hypothetical conditionals (DeRose and Grandy 1999, Franke 2007, 2009, Scheffler 2008), and those who do not (Davison 1983, Iatridou 1994, Siegel 2006, Predelli 2009, Swanson 2013, Ebert et al. 2008, 2014). Authors who assume a different syntax and semantics at least partially base this decision on the following empirical observation for German. German relevance conditionals generally prefer to occur with V2 word order in the consequent, whereas hypothetical conditionals prefer V1 word order. By some authors this obsevation has been strengthened to a general rule 'German relevance conditionals require V2 word order in the consequent.' In section 5.7 I show empirically that the data are actually not as clearcut, and that basing a theory on the ungrammaticality of relevance conditionals with V1 word order in the consequent is perhaps flawed.

In what follows, I call theories who base their analysis of relevance conditionals on the general assumption that they have a different syntax and/or semantics *syntax-based theories*. Theories which assume that the syntax and semantics of relevance conditionals are the same as that of hypothetical conditionals and that the difference in interpretation comes about through pragmatic means will be called *pragmatic theories*.

Let me first very briefly summarize what is claimed by the syntax-based theories. They differ in the details, but all share the common assumption that the syntax of relevance conditionals is different from that of hypothetical conditionals, which in turn causes them to receive a different semantic interpretation. For Iatridou (1994), it is the relevance conditionals' (perceived) inability to host *then* in the consequent. Ebert et al. (2014) also assume that it is the presence of *then* which forces a hypothetical conditional reading (for them, *then* serves as a world pronoun which picks out the world described by the antecedent; they follow Schlenker 2004 in assuming that the antecedents of conditionals are definite descriptions of worlds).

Because the syntax-based theories base their analyses on a set of facts which I have shown not to hold for German (speakers do not perceive relevance condi-

tionals with V1 word order in the consequent to be ungrammatical), I conclude that these analyses do not quite capture the meaning of relevance conditionals yet. Let us therefore turn our attention to the pragmatic theories.

DeRose and Grandy (1999) propose a 'conditional assertion' account: the consequent of a conditional is only asserted if its antecedent is true (in the case of a hypothetical conditional) or if its antecedent is relevant (in the case of a relevance conditional). This kind of analysis has been shown to be problematic on the basis of two types of examples: first, there are examples where the consequents still have an effect on the public commitments of the speaker even when the antecedent is false. For example, Siegel (2006) argues that an utterance of *If you want to know, the gardener was the murderer* still commits the speaker to the belief that the gardener was the murderer (and therefore perhaps even asserts the consequent, even if the antecedent was false). A second type of example are those where the consequent is not an assertion, but a different speech act type, e.g. an imperative (*If I may be honest, better call Andreas as soon as possible*), as argued in Schwager (2006).

Scheffler (2008) suggests that relevance conditionals have a two-dimensional semantics. Following Potts (2005), and in particular his proposal for speaker-oriented adverbs, she proposes that relevance conditionals assert their consequent and communicate the entire conditional as a conventional implicature (CI). The semantics of the conditional at the CI level are those of a hypothetical conditional.

(5.14) If you are hungry, there is pizza in the fridge.
asserted: There is pizza in the fridge.
conventional implicature: If you are hungry, there is pizza in the fridge.

The account remains problematic even if we assume that it is possible to extend Scheffler's account straightforwardly to other speech act types to account for the examples such as (15).

(5.15) a. If we now turn to page 5, where is the summary?
b. If we now turn to page 5, please provide a brief summary!

Since we would probably not want to propose that the consequents of (15) are somehow *asserted*, we would have to somehow come up with an analysis that

would allow us to retrieve the speech act type of the (embedded!) consequent. But even if this was possible, the following problem remains. Scheffler's main argument for proposing an analysis of this kind is the embeddability properties of relevance conditionals (which she argues are similar to those of speaker-oriented adverbs). But Franke (2009) argues that relevance conditional readings are available independently of special embedding properties. This is a convincing argument, and we conclude fthat a different mechanism must be at stake.

Franke (2007, 2009) proposes that relevance conditionals have the same semantics as hypothetical conditionals. The reason why the speaker is assumed to be committed to the truth of the consequent in the actual world is the result of pragmatic reasoning paired with *conditional independence*.

Franke proposes that two propositions p and q are conditionally independent if changing your beliefs about one of them will not result in a change of your belief of the other. Consider a hypothetical conditional such as (16), which is conditionally *dependent*.

(5.16) If Alex went shopping, there is pizza in the fridge.

Once you change your beliefs about whether or not Alex went shopping, you are likely to also change your beliefs about whether there is pizza in the fridge. This means that *Alex went shopping* and *there is pizza in the fridge* are conditionally dependent. But compare (17).

(5.17) If you are hungry, there is pizza in the fridge.

Learning that the addressee is hungry will not change your beliefs about whether there is pizza in the fridge – this means that *you are hungry* and *there is pizza in the fridge* are conditionally independent.

Conventionally, a conditional construction is used when two propositions are conditionally dependent, resulting in hypothetical conditionals like (16). But when two propositions are conditionally independent and are still conjoined in a conditional construction, Franke proposes that the following chain of pragmatic reasoning occurs on the part of the addressee:

1. The speaker pronounced a conditional.

2. The antecedent and consequent are conditionally independent.

3. The speaker knows this, and knows that the addressee also knows this.

4. Therefore the speaker must have independent evidence for the truth of the consequent.

In the final step the addressee infers that the speaker is committed to the truth of the consequent in the actual world, but crucially this is an effect of pragmatic reasoning, not part of the semantics.

It is important to note that while Franke's analysis seems to fare better than its syntax-based competitors, it also has some problems. For example, the meaning expressed by a hypothetical conditional can also be conveyed in a number of different ways which do not have the form *if p, q*, for example parataxis (*p. q.*). It seems to be almost impossible to give a relevance conditional interpretation to two propositions in a paratactic structure (cf. von Fintel 2015)

(5.18) a. The sun comes out. You are happy.
≈ *whenever the sun comes out, you are happy; if the sun comes out, you are happy.*

b. You are hungry. There is pizza in the fridge.
≉ *if you are hungry, there is pizza in the fridge.*

We observe that the paratactic structure in (18a) can be used to convey a hypothetical conditional meaning, while it is impossible to get a relevance conditional interpretation for (18b). We must ask, first, whether (18a) can be thought of as a conditional. If the answer is yes, and we want to maintain Franke's hypothesis that hypothetical and relevance conditionals have the same semantics, there would be a problem: then we should be able to read (18b) as a conditional which receives a relevance interpretation via pragmatic reasoning. While this goes beyond the scope of the present work, I want to sketch a way out. Remember that the starting point for the pragmatic reasoning that Franke describes is that the speaker *pronounces a conditional* with an antecedent and a consequent which are conditionally independent. The reason why an addressee starts pragmatic reasoning is a repair mechanism: the speaker utters a structure which is structurally dependent,

but conditionally independent, and the addressee needs to make sense of this. But the speaker of (18b) did not pronounce a conditional. She pronounced two conditionally independent *and structurally independent* clauses. Therefore the addressee does not need a repair mechanism; the two clauses can simply be interpreted independently of each other and do not need to be made sense of by additional pragmatic reasoning.

5.3 A relevance conditional analysis of free factive subjunctives

For now, we will leave the matter of how to appropriately analyze relevance conditionals behind: no matter which analysis we choose, there are empirical problems with trying to analyze free factive subjunctives in terms of relevance conditionals. Recall from the previous section that the intuitive way to go would be to emulate Kasper's proposal for unembedded counterfactual subjunctives.

Kasper conceded that reconstructing the hidden antecedent (of a counterfactual conditional) results in some vagueness, and we also have to assume a certain underspecification with respect to the antecedent of a reconstructed relevance conditional. For example, we can imagine that the granularity of the decision problem might depend on the context.

Thus, *da wäre Pizza im Kühlschrank 'there is*.FFS *pizza in the fridge'* could be expanded into the following acceptable relevance conditionals depending on what the context suggests is the decision problem under consideration.

(5.19) *Wenn du über Essen nachdenkst, da wäre Pizza im Kühlschrank.*
if you about food think there is.FFS pizza in-the fridge
'If you are thinking about food, there is pizza in the fridge.'

(5.20) *Wenn er zu Hause essen will, da wäre Pizza im Kühlschrank.*
if he at home eat want there is.FFS pizza in-the fridge
'If he wants to eat at home, there is pizza in the fridge.'

Compared to the conditional with the 'standard' antecedent *if you are hungry*, (19) is mentioning a more coarse-grained decision problem (thinking about food more generally), whereas (20) is more fine-grained: thinking about what to eat at home is more specific than thinking about what to eat.

Assuming that there is a way to deal with this vague mechanism for reconstructing an antecedent, both for Kasper's counterfactual subjunctives and for free factive ones – what then is the meaning of the free factive subjunctive in relevance conditionals such as (19) and (20)?

We run into a problem here. Relevance conditionals do not typically contain a subjunctive in the consequent. Kasper's proposal for unembedded counterfactual subjunctives is so attractive because it explains precisely why the subjunctive occurs where it does: counterfactual conditionals (in German) always use a subjunctive in their consequents. It also predicts their meaning: all we have to do is employ our favourite semantics of counterfactual conditionals (and add an appropriate antecedent) to calculate the meaning of an unembedded counterfactual subjunctive.

But the case is very different for free factive subjunctives which are embedded in the consequent of a relevance conditional. Relevance conditionals typically *do not* have a subjunctive in their consequents. The analyses of relevance conditionals therefore do not allow us to simply adopt our favourite theory of relevance conditionals to account for the meaning of free factive subjunctives.[2]

In particular, we observe the following problem: unlike counterfactual conditionals, relevance conditionals in German do *not* always use a subjunctive in their

[2] Swanson 2013 discusses true counterfactual uses of relevance conditionals. Note that in those cases both the antecedent and the consequent show the morphology that is associated with counterfactual conditionals, and they also receive a counterfactual interpretation. Consider his examples (1) and (2) reported below which according to Swanson receive a counterfactual interpretation (the speaker is not committed to the presence of biscuits on the sideboard in the actual world) in a context where she is fantasizing about an ideal Sunday afternoon in Paris.

(5.i) There would be biscuits on the sideboard, if one were so inclined.

(5.ii) There would have been biscuits on the sideboard, if one had been so inclined.

consequents. In fact, there is a subtle difference in meaning between (more familiar) purely indicative relevance conditionals and the ones with a subjunctive consequent.

(5.21) *Wenn du Hunger hast, da ist Pizza im Kühlschrank.*
if you hunger have.IND there is.IND pizza in-the fridge
'If you are hungry, there is pizza in the fridge.'

(5.22) *Wenn du Hunger hast, da wäre Pizza im Kühlschrank.*
if you hunger have.IND there is.FFS pizza in-the fridge
'If you are hungry, there is (FFS) pizza in the fridge.'

Both (21) and (22) are relevance conditionals. They only differ in the choice of mood in the consequent. However, this choice of mood results in a subtle difference in their meaning which is – crucially – the same as the difference in meaning between an unembedded free factive subjunctive and its indicative counterpart!

This difference in meaning will cause me to reject the alternative proposal. The difference between (21) and (22) forces us to provide a non-empty semantics for the subjunctive in (22). We cannot use either the reportative or the irrealis meaning. Thus we are in the same situation that we were in at the outset. Adding a relevance conditional antecedent does not gain us anything.

For completeness' sake, I will briefly spell out how we can deal with (22). We could assume that the free factive subjunctive is semantically vacuous in a relevance conditional. If there is no overt antecedent, it would simply serve as a signal to retrieve a relevance conditional antecedent. This predicts that (21) and (22) have the exact same meaning, which is empirically wrong.

Assuming that the subjunctive in (22) has a reportative meaning also contradicts our intuitions, and it is also not the case that it conveys weakened epistemic commitment to the fact that there is pizza in the fridge. Thus, we can also exclude an irrealis interpretation. There are three opportunities which would make a relevance conditional analysis attractive: if the subjunctive in the antecedent of a relevance conditional is vacuous; if it is always reportative, or if it is always an irrealis use. Empirically none of these is the case. Thus, thinking of free fac-

tive subjunctives as the consequents of a hidden relevance conditionals does not help us interpret the free factive subjunctive itself. We still have to assume a non-vacuous meaning of the subjunctive, and crucially, we have to assume a meaning which is different from either of the two established meanings, the reportative and the irrealis.

Overall, it is clear that abandoning the analysis I have outlined in chapters 3 and 4 in favour of a 'hidden relevance conditional antecedent' one is not favourable because, unlike in the seemingly parallel case of unembedded counterfactual subjunctives, we do not retain any of that analysis' explanatory power. Instead we simply inherit the difference in meaning that already exists between a plain indicative and its free factive subjunctive counterpart and now also have to contend with a conditional semantics on top of that. Therefore I propose to abandon this alternative theory for the time being. In order to make it work we would still have to assign a (non-empty and not previously established) meaning to the subjunctive in the consequent. But this is exactly what my analysis developed in chapters 3 and 4 sets out to do.

5.4 Problem-solving and discourse-structuring relevance conditionals

Even though looking to relevance conditionals in order to learn something about free factive subjunctives might be less productive than one's first intuition may have suggested, it is still worth taking a closer look at relevance conditionals which allow a free factive subjunctive in their consequent.

(5.23) a. *Wenn du Hunger hast, da ist Pizza im Kühlschrank.*
if you hunger have.IND there is.IND pizza in-the fridge
'If you are hungry, there is pizza in the fridge.'

b. ✓ *Wenn du Hunger hast, da wäre Pizza im Kühlschrank.*
if you hunger have.IND there is.FFS pizza in-the fridge
'If you are hungry, there is pizza in the fridge.'

(5.24) a. *Wenn es dich interessiert, es gibt eine Kandinsky-Ausstellung in*
if it you interests it has.IND a Kandinsky-exhibition in
der Neuen Nationalgalerie.
the Neue-Nationalgalerie
'If you are interested, there is a Kandinsky exhibit in the Neue Nationalgalerie.'

b. *Wenn es dich interessiert, es gäbe eine Kandinsky-Ausstellung in*
if it you interests it has.FFS a Kandinsky-exhibition in
der Neuen Nationalgalerie.
the Neue-Nationalgalerie
'If you are interested, there is a Kandinsky exhibit in the Neue Nationalgalerie.'

There is a contrast in acceptability when we add past reference: the conditionals that make a decision problem salient can have a past tense antecedent, whereas those that make a discourse move salient cannot. (This is true both for free factive subjunctive consequents as well as – perhaps more surprisingly – for indicative consequents.)

(5.25) *Wenn du Hunger hattest, da war Pizza im Kühlschrank.*
if you hunger had there was pizza in-the fridge
'If you were hungry, there was pizza in the fridge.'

(5.26) *Wenn du Hunger hattest, da wäre Pizza im Kühlschrank*
if you hunger had there is.FFS pizza in-the fridge
gewesen.
been
'If you were hungry, there was pizza in the fridge.'

(5.27) ?? *Wenn es dich interessiert hat, es gab eine Kandinsky-Ausstellung*
if it you interested has it existed a Kandinsky-exhibition
in der Neuen Nationalgalerie.
in the new national-gallery
intended: 'If you were interested, there was a Kandinsky exhibition in the New National Gallery.'

(5.28) ?? *Wenn es dich interessiert hat, es hätte eine Kandinsky-Ausstellung in*
if it you interested has it had a Kandinsky-exhibition in
der Neuen Nationalgalerie gegeben.
the new national-gallery existed

intended: 'If you were interested, there was a Kandinsky exhibition in the New National Gallery.'

(5.29) ?? *Wenn ich* (gestern) *ehrlich war, du sahst müde aus.*
if I yesterday honest was you looked tired
intended: 'If I was being honest (yesterday), you looked tired.'

Importantly we can replicate this contrast in acceptability of past reference in English: relevance conditionals which make a decision problem salient can have an antecedent which expresses past reference, but those that make a discourse move salient cannot.

(5.30) a. If you are hungry, there is pizza in the fridge.
b. ✓ If you were hungry yesterday, there was pizza in the fridge.

(5.31) a. If I am being frank, you look tired.
b. ?? If I was being frank yesterday, you looked tired.

It is important to note here that this contrast in acceptability only exists for the antecedents – it is perfectly acceptable to have a present tense antecedent with a past tense consequent.

(5.32) ✓ If I am being frank now, you looked tired yesterday.

(5.33) ?? If I was being frank yesterday, you look tired now.

In what follows I am not interested in the tense configuration in (32) for reasons that will become obvious below. I propose the following terminology: I call relevance conditionals like (30) *problem-solving* relevance conditionals (PSRCs) because their antecedents make a (decision) problem salient. Relevance conditionals like (31) will be called *discourse-structuring* relevance conditionals (DSRCs) because they structure the discourse in a particular way (explored below).

Another way to distinguish between the two types of relevance conditionals is that *in case* paraphrases of the antecedent are only available for the type compatible with past reference (Larry Horn, Kai von Fintel, p.c.). Compare the following sentences.

(5.34) In case you are hungry, there is pizza in the fridge.

(5.35) ??In case I'm being frank, you look awful.

There are two additional intuitive differences between problem-solving RCs and discourse-structuring RCs: problem-solving RCs allow the speaker to be unbiased about the truth of p (they can be pronounced even if the speaker knows that p is false), and the addressee can reject p. Pronouncing a discourse-structuring RC when its antecedent is known to be false crashes the discourse, and it is extremely difficult for the addressee to reject p.

Bias towards truth of *p* Problem-solving RCs do not convey that the speaker has an opinion about the antecedent p. It is even possible to assert $if_{PS\,RC}\ p,\ q$ when the speaker knows that p is false.

(5.36) **Context:** B has just complained that he is very full.
A: ✓Well, but don't forget. If you are hungry, there's pizza in the fridge.

The same is not true for discourse-structuring RCs.

(5.37) **Context:** B has just complained that A is too blunt.
A: ?? Well, but don't forget. If I'm being frank, you look tired.

A's assertion of the discourse-structuring RC is very odd.

Rejecting *p* When a speaker utters a problem-solving RC whose antecedent happens to be false, the addressee can simply state this, effectively rejecting the antecedent.

(5.38) A: If you are hungry, there is pizza in the fridge.
B: ✓Well, I'm not hungry.

This has led DeRose and Grandy (1999) to propose the conditional assertion analysis for RCs – if the antecedent is false, the consequent is 'not relevant' and not asserted.

But this goes wrong for discourse-structuring RCs. As has been pointed out by Siegel (2006), the speaker is taken to be committed to the truth of the consequent

even if the antecedent turns out to be false.[3] Moreover, it is extremely difficult for the addressee to reject the antecedent in the first place.

(5.39) A: If I may be frank, you look tired.
B: ?? Well, you may not be frank!

(5.40) A: If I am being frank, you look tired.
B: ?? Well, you are not being frank!

These differences motivate a closer look at discourse-structuring RCs, and they invite the question: Are discourse-structuring RCs even conditionals, or are they just 'borrowing' the form to express something very different? I will propose that they can in fact be analyzed as conditionals, and that the reason that they cannot be used with a past tense is because they are self-verifying expressions.

The reason why I propose to treat discourse-structuring RCs as conditionals and not as something else is simple. They share the form *if p, q* with other types of conditionals, even cross-linguistically. Treating them as something else would force us to come up with a principled reason why many languages choose to express them in conditional form, but without them being conditionals. We would then have to come up with a compositional analysis which somehow derives the fact that despite their conditional form, they are not interpreted as conditionals. Note that a compositional analysis of their (conditional) meaning is possible with a Franke-style analysis along the lines proposed below.

Before proposing my analysis, I will briefly review the large and growing body of literature on relevance conditionals. Notice that discourse-structuring RCs are a problem for current theories of relevance conditionals because all theories treat relevance conditionals as a homogenous class – no theory predicts that only some should be able to co-occur with past reference (or free factive subjunctives which we set aside for the moment). Let us consider Franke (2009)'s theory in more detail. I will show that it does not predict the difference in acceptability between the past tense problem-solving RC (30b) and the unacceptable past tense discourse-

[3] Interestingly, the examples discussed by DeRose and Grandy are problem-solving RCs, while the examples discussed by Siegel are discourse-structuring RCs, but both treat the two classes as being of the same kind.

structuring RC (31b).

Franke argues that relevance conditionals have the same semantics as hypothetical conditionals. Hypothetical conditionals can occur with past reference, as illustrated in (41a) – (41b).

(5.41) a. If Alex takes the train at three, he will be here at five.

b. If Alex took the train at three, he got here at five.

Hence Franke predicts relevance conditionals should also be able to occur with past reference.

German hypothetical conditionals can also occur with 'mixed moods', i.e., with an indicative antecedent and subjunctive consequent or vice versa.[4]

(5.42) *Wenn der Zug pünktlich ist, dann wäre Alex um sieben da.*
if the train punctual is then is.SUBJ Alex at seven here
'If the train is on time, Alex will be here at seven.'

(5.43) *Wenn er um drei losgefahren wäre, dann ist er um sieben da.*
if he at three left has.SUBJ then is he at seven here
'If he left at three, he will be here by seven.'

Franke's theory works fine for problem-solving RCs which can occur with past reference: since he predicts that they have the same semantics as hypothetical conditionals, their distribution is expected to be parallel to that of hypothetical conditionals. Analyzing them is easy: we simply choose our favourite semantics of hypothetical conditionals and apply Franke's steps of pragmatic reasoning to derive the additional 'relevance' interpretation.

[4]Note that current theories of conditionals do not predict the existence of 'mixed mood' or 'mixed tense' conditionals, especially those based on some notion of agreement or sequence of tense. Even those analyses that are explicitly interested in tense or mood in conditionals seem to focus on 'uniform' mood/tense configurations, e.g. von Stechow and Grønn 2011, Schulz 2008, 2014, Ippolito 2006, 2013. An unpublished BA thesis by Carina Kauf may address some of these problems but I have not been able to read it.

However, since he does not assume a difference between problem-solving and discourse-structuring RCs, Franke does not predict the unacceptability of (29) and (31b). His theory seems to break down for discourse-structuring RCs.[5]

In what follows I propose how to rescue Franke's proposal: there are two independent reasons why discourse-structuring RCs are odd with past reference.

5.5 An analysis of discourse conditionals

A relevance conditional *if p, q* is a discourse-structuring RC if its antecedent can be uttered *self-referentially* (in the sense of Eckardt 2012), and the entire conditional is *self-verifying*.[6] Eckardt proposes that an utterance is self-referential if the utterance 'denotes a proposition about the existence of a certain kind of event and, at the same time, *might be* such an event' (p.40). An utterance is self-verifying if 'it can never fail to hold in any situation where it is uttered' (p. 45). Consider the example below.

(5.44) I am using a verb.

The speaker's utterance is self-referential: it claims there is an event of the speaker using a verb, while at the same time containing the verb *use*. The presence of *use* causes the utterance to be an event of the speaker using a verb. Moreover, the utterance is self-verifying – there is no way in which the speaker could utter (44) where it fails to be true. We can model the denotation of *be using* as follows. I adopt Eckardt's formalization which makes use of Davidsonian assumptions about

[5] Scheffler 2008 has a similar problem since she proposes that relevance conditionals assert their consequents (this should be unproblematic), and the entire conditional is interpreted hypothetically at CI level. This is where she inherits Franke's problem: there is nothing in the semantics of hypothetical semantics that explains why discourse-structuring RCs should be unacceptable with past reference while problem-solving ones are fine. Therefore she also does not predict the unacceptability of (29) and (31b).

[6] Because the topic of self-referentiality is not central to the present text as a whole, I do not review the literature on this topic, but instead refer readers to the references in Eckardt 2012 and Lauer 2013.

events (cf. Davidson 1980), and Reichenbachian assumptions about tense (cf. Reichenbach 1966).

(5.45) λy.λx.λe. [USE(x, e, y, w_0) and R⊆t(e) and S⊆R]

(5.46) a. *I am using a verb.*

b. λy.λx.λe. [USE(x, e, y), w_0]

c. ∃e.[USE(**sp**, e, **verb**, w_0) and R⊆t(e) and S⊆R]

Eckardt suggests that if we are in a context where ϵ_{13} is a sincere utterance of (44), it holds that

(5.47) ∃e.[USE(**sp**, e, **verb**, w_0) and R⊆t(e) and S⊆R] = 1 because USE(**sp**, ϵ_{13}, **VERB**, w_0) and R⊆t(ϵ_{13}) and S⊆R]) =1

Crucially, the utterance that *there is an event such that the speaker uses a verb* is true because the utterance itself is such an event. Now let us consider the truth conditions for (48).

(5.48) I am being frank.

I propose that to be frank involves a communication event in which the speaker sends an honest message, but it is the communication event itself which counts as frank.[7]

(5.49) a. *frank*

b. $\lambda y.\lambda x.\lambda m.\lambda e$. During e, x sends message m to y, and HONEST(e, m).

In prose, for an utterance event to be frank, the speaker needs to send an honest message to an addressee. (Note that *being frank* is not self-referential in quite the same way as *using a verb* is: the speaker needs to send an additional message m. This explains why it is odd to use (48) in a context where nothing else is said all day.)

With these semantics for *frank* in place, *I am being frank* has the semantics given in (50b).

[7] This formalization of the meaning of *frank* is rather crude and merits further investigation, but this is outside the scope of the present work.

(5.50) a. *I am being frank.*

b. $\exists m.\exists e.x$ sends m to y, and HONEST(e, m), and R⊆$t(e)$, and S⊆R.

The speaker is asserting that there is an ongoing communication event e during which she honestly sends the message m to an addressee y. I follow Reichenbachian assumptions about aspect, assuming that the event time $t(e)$ includes the reference time R, and that R includes the speech time S.
Thus in a sincere utterance situation ϵ_{15} during which the speaker sends honest message m_3, (50a) is judged as true because the speaker *is* sending an honest message to the addressee.

(5.51) *I am being frank.*
$\exists m.\exists e.$ x sends m to y and HONEST(e,m), and R⊆$t(e)$ and S⊆R = 1 because **sp** sends $\mathbf{m}_3$ to **ad** and HONEST(ϵ_{15}, $\mathbf{m}_3$), and R⊆$t(\epsilon_{15})$ and S⊆R =1.

Let us now consider the meaning of the relevance conditional (52).

(5.52) *If I am being frank, you look tired.*

For a sincere utterance ϵ_{34} of the relevance conditional (52) we assume a standard semantics of the conditional. Because the antecedent and consequent are conditionally independent, the speaker is also understood to be committed to the truth of the consequent. Therefore the consequent can serve as the kind of message required for felicitous use of *frank*: *you look tired* = m_5. Now we get the following semantics for (52).

(5.53) a. *If I am being frank, you look tired.*

b. $\forall w' \in Opt_g(\cap f(w_0) \cup [\![\text{I-AM-BEING-FRANK}]\!]^{w'})$: YOU-LOOK-TIRED(w')=1 because

c. $\forall w' \in Opt_g(\cap f(w_0) \cup$(**sp** sends $\mathbf{m}_5$ to **ad** and HONEST(ϵ_{34}, $\mathbf{m}_5$), and R⊆t(ϵ_{34}) and S⊆R): ADD-LOOKS-TIRED(w')=1.

Because of conditional independence, the speaker is understood to be sending the 'honest' message m_5 in w_0. Therefore a sincere utterance of (52) counts as an instance in which the speaker is being frank. This means that the antecedent is true in w_0, and the speaker's utterance of (52) is self-verifying: she is asserting

that in all the worlds most similar to w_0 where she is sending an honest message the addressee looks tired, and at the same time making sure that the world of evaluation w_0 is one such world.

Let us consider another example.

(5.54) If we now turn to point 5 on the agenda, here is a chart.

Again, the antecedent proposition *we now turn to point 5 on the agenda* is self-referential: it is a proposition denoting the existence of a turning-to-point-5-event while at the same time *being* such an event. We assume the following truth conditions for *turn to*.

(5.55) *turn to*
$\lambda y.\lambda x.\lambda e$. [TURN($x$, e, y), and t(e)⊆R and R=S]
There is a turning event e which involves an agent x and a patient y. The time of e is included in the reference time R which coincides with the speech time S.

A sincere utterance ϵ_{12} of *We now turn to point 5* is again self-referential.

(5.56) *We now turn to point 5.*
$\exists e$. [TURN-TO(**sp+ad**, e, **point5**), and t(e)⊆R and R=S] =1 because
[TURNTO(**sp+ad**, ϵ_{12}, **point5**), and t(ϵ_{12})⊆R and R=S] =1

Finally, a sincere utterance ϵ_{17} of (54) is self-verifying.

(5.57) a. *If we now turn to point 5 on the agenda, here is a chart.*
b. $\forall w' \in Opt_g(\cap f(w_0) \cup [\![$WE-ARE-TURNING-TO-POINT-5$]\!]^{w'})$: I HAVE PREPARED A CHART(w')=1 because
c. $\forall w' \in Opt_g(\cap f(w_0)$ ∪(TURNTO(**sp+add**, ϵ_{17}, **point5**), and t(ϵ_{17})⊆R and S=R): SP-PREPARED-CHART(w')=1.

Because the actual world is one in which the interlocutors are turning to point 5, and the actual world is one in which the speaker has prepared a chart, the worlds closest to w_0 are also such worlds – the conditional is made true by virtue of being

uttered. This means it is self-verifying.

What goes wrong if the antecedent contains a past tense as in (58)?

(5.58) ?? If I was being frank yesterday, you looked tired.

Because of conditional independence, the addressee will again pragmatically infer that the speaker is committed to the truth of the message m_7='*you looked tired*'. But note that this message is being sent in the current utterance situation, *not* at the relevant time in the past. But the antecedent proposition makes a claim about a frank communication event of the speaker *in the past*.[8]

(5.59) a. ??*If I was being frank yesterday, you looked tired.*

b. $\forall w' \in Opt_g(\cap f(w_0) \cup [\![\text{I-WAS-BEING-FRANK-YESTERDAY}]\!])$: YOU-LOOKED-TIRED(w')=1.

c. $\forall w' \in Opt_g(\cap f(w_0) \cup$ (**sp** sends **m** to **ad** and HONEST(e, m), and $R \subseteq t$(**e**) and R<S)): AD-LOOKED-TIRED(w')=1.

The current utterance situation ϵ_{28} and message m_7 fail to make (58) true in w_0: for a reference time R_1 with $R_1 \subseteq t(\epsilon_{28})$, $R_1 \not<$S. It is not guaranteed that there is a different communication event ϵ_2 and honest message m_9 in w_0 with $R \subseteq t(\epsilon_{28})$ and R<S. Because this is not guaranteed, (58) is not self-verifying.

Of course we can give a compositional account of what the meaning of (58) should be – but this meaning is so far removed from anything that world knowledge tells us can be true in the actual world, it is extremely unlikely we would ever utter it, and therefore it appears to be odd.

Note that not much is known about conditionals that 'go wrong'. Hypothetical conditionals are only acceptable if it is possible to construct some kind of (causal) relationship between antecedent and consequent. Franke suggests that whenever such a relationship is unavailable, the conditional receives a relevance conditional interpretation, but this is clearly exaggerated. Even in relevance conditionals, there is some kind of discourse relation between the antecedent and the

[8] I do not address potential interactions between self-referential/self-verifying expressions and negation.

consequent (I propose to call them problem-solving and discourse-structuring, but we can give them other names). But we do observe conditionals where antecedent and consequent do not appear to be in a relationship, causal or otherwise. Those conditionals are very odd.

(5.60) ?? If I cook split pea soup tomorrow, Peter missed his train yesterday.

While our semantics predicts a meaning for (60), it is very hard to imagine a context in which a speaker can reasonably utter it. 'In all the best worlds in which the speaker cooks pea soup tomorrow, Peter missed his train yesterday.' Note that even though world knowledge tells us that antecedent and consequent are most likely conditionally independent, the (very odd) default interpretation we assign to (60) is that of a hypothetical conditional (contra Franke): speakers try to accommodate a context in which my cooking pea soup tomorrow will have caused Peter missing his train. I propose that the oddness of (58) is of the same kind.

Note that when used non-referentially, *I was being frank* is a perfectly fine antecedent for a (hypothetical) conditional.

(5.61) a. *If I was being (too) frank yesterday, I apologize.*

b. $\forall w' \in Opt_g(\cap f(w_0) \cup [\![\text{I-WAS-BEING-FRANK-YESTERDAY}]\!]^{w'})$: YOU-LOOKED-TIRED$(w')=1$.

c. $\forall w' \in Opt_g(\cap f(w_0) \cup (sp$ sends m to ad in w' and HONEST(e, m), and $R \subseteq t(\mathbf{e})$ and $R<S))$: SP-APOLOGIZE$(w')=1$.

(61a) receives a straightforward hypothetical conditional interpretation: in all the best worlds in which there was a communication event in the past during which the speaker sent an honest message, she apologizes.

Before moving on, let me briefly return to the tense configuration we left behind in (32), repeated here as (62).

(5.62) If I am being frank (right now), you looked tired yesterday.

It now easily follows from my account why (62) is acceptable: the antecedent contains a present tense, thus making a claim that is self-referential if it can be

verified by the current utterance situation. Because the consequent is conditionally independent, it counts as an (honest) message. Thus the conditional is self-verifying.

5.6 Present counterfactuals

In the previous section I have shown that there is a contrast in acceptability between discourse-structuring RCs and problem-solving RCs with respect to whether they allow past reference in their antecedents: only problem-solving RCs do, while discourse-structuring RCs do not. This is because discourse-structuring RCs are *self-verifying* – whenever the present context does not allow them to self-verify (such as when they refer to a past context), they are odd.

So far I have ignored that English often uses past tense to express counterfactuality. This phenomenon has been termed 'fake past' in Iatridou (2000) and has received a large amount of attention in the literature, for English as well as cross-linguistically. There are presently two types of analyses on the market: those that suggest the label 'past' actually covers a range of phenomena which mark *remoteness* (e.g. Iatridou 2000, Wiltschko and Ritter t.a.; Wiltschko t.a.) and those that propose to derive the 'fake' past from a purely temporal past (e.g. Ippolito 2002, 2013, Arregui 2009).

If the analysis of discourse-structuring relevance conditionals that I have outlined in the previous section is correct, it allows us to pit these theories against each other: we can show that *both* problem-solving and discourse-structuring relevance conditionals can occur with 'fake' past. The following examples are present counterfactuals.[9]

[9]Note that German does not employ a fake past, but uses the *Konjunktiv* in its irrealis meaning in this type of context.

(5.i) *Wenn du Hunger hättest/*hattest, es ist Pizza im Kühlschrank.*
if you hunger have.SUBJ/have.PST.IND it is pizza in-the fridge
'If you are hungry, there is pizza in the fridge.'

(5.63) If you **were** hungry (right now), there is pizza in the fridge.

(5.64) If I **was** being frank (right now), you look tired.

We observe the following. Problem-solving RCs such as (63) can occur with a 'fake' past in the antecedent. Perhaps this is unsurprising, given that I have shown in the previous section that they can also occur with a 'real' past tense that conveys anteriority. We would still need to address the intuition that the past tense morphology in (63) does not seem to express anteriority (clearly shown by the fact that it is compatible with *right now*), and also explain the mismatch of fake past in the antecedent and present tense in the consequent.

'Mismatched' tenses are not explained by current theories of counterfactual conditionals.

We also observe that the discourse-structuring RC in (64) is acceptable. It shows the same mismatched tenses as (63). Remember from the previous section that discourse-structuring RCs cannot co-occur with past reference. Clearly the past tense morphology in the antecedent is not interpreted as anteriority (again shown by the presence of *right now*).

The data in (63) and (64) are troubling for theories of counterfactual conditionals: theories which do not analyze fake past in terms of remoteness, but purely temporally, will have to say something about discourse-structuring RCs which resist temporally interpreted past tense in their antecedents, but which are acceptable with fake past such as (64). But more generally, it is not clear how theories of conditionals which assume that there is only one node where tense or mood can be interpreted can deal with 'mismatched' conditionals like (63) and (64) where clearly tense and/or mood are interpreted separately for antecedent and consequent.

(5.ii) *Wenn ich ehrlich wäre/*war, du siehst müde aus.*
if I honest am.SUBJ/was.IND you look tired PART
'If I was being honest, you look tired.'

5.7 Conditional word order in German

As discussed in section 5.2, the literature on relevance conditionals can be divided into two groups: some authors believe that there is no syntactic or semantic difference between relevance conditionals and hypothetical conditionals (e.g. Scheffler 2008, Franke 2009). A large number of authors, however, believe that there is such a difference (e.g. Iatridou 1994, Siegel 2006, Ebert et al. 2014). One of these authors' main arguments comes from German and goes back to an observation in Davison (1983): German allows both V1 and V2 word order in the consequent of a conditional, and in fact it seems as if V1 word order coincides with a hypothetical conditional interpretation, whereas V2 word order coincides with a relevance conditional interpretation. The status of the relationship between word order and interpretation is the crucial difference between the pragmatic and the syntactic-semantic accounts.

The syntax-based accounts propose that the word order of the consequent *causes* the interpretation (while differing in the implementation). On this view a conditional with V2 word order obligatorily receives a relevance interpretation – if the context and content are such that only a hypothetical interpretation makes sense, a V2 conditional is predicted to be odd. Likewise, a conditional with V1 word order obligatorily receives a hypothetical interpretation, and if the context and content are such that only a relevance interpretation makes sense, the conditional is predicted to be odd.

This type of account also predicts that when an interlocutor encounters a conditional which is in principle compatible with either a hypothetical or a relevance reading, the word order always disambiguates. Consider the minimal pair (65) and (66).

(5.65) *Wenn du mich brauchst, bin ich in meinem Büro.*
if you me need am I in my office
(reported: unambiguously hypothetical) 'If you need me, I'll be in my office.'

(5.66) *Wenn du mich brauchst, ich bin in meinem Büro.*
if you me need I am in my office

(reported: unambiguously relevance) 'If you need me, I'll be in my office.'

Note that the claim made by syntax-based analyses is very strong: whenever the context strongly suggests one interpretation but the word order is the 'wrong one', (i.e., when the word order signals a hypothetical conditional, but the context calls for a relevance interpretation, or vice versa), the utterance is predicted to be ungrammatical (not just pragmatically odd). This is empirically wrong. There is already experimental evidence from Köpcke and Panther (1989) which shows that speakers accept hypothetical conditionals with V2 word order, and Franke (2009) argues that additionally, relevance conditionals can occur with V1 word order. Consider the following minimal pair, and note that no context is needed to yield the intended meaning.

(5.67) *Wenn du ihm davon erzählst, hau ich dir eine!*
if you him about tell beat I you one
'If you tell him about it, I'll beat you!'

(5.68) *Wenn du ihm davon erzählst, ich hau dir eine!*
if you him about tell I beat you one
'If you tell him about it, I'll beat you!'

We observe that both (67) and (68) are acceptable (albeit perhaps slightly degraded). Moreover, they both work as threats – in particular, (68) is *not* interpreted as a relevance conditional despite its V2 word order. The speaker is *not* committing herself to beating the addressee no matter what. She is understood to only be committed to beating him in worlds where the antecedent is true. This is a hypothetical interpretation, which syntax-based accounts argue should be unavailable. Now consider the following examples in which only a relevance interpretation makes sense. Again no context is needed to help disambiguate.

(5.69) *Wenn du Hunger hast, da ist Pizza im Kühlschrank.*
if you hunger have there is pizza in-the fridge
'If you are hungry, there is pizza in the fridge.'

(5.70) *Wenn du Hunger hast, ist da Pizza im Kühlschrank.*
if you hunger have is there pizza in-the fridge
'If you are hungry, there is pizza in the fridge.'

Both sentences receive a relevance conditional interpretation. To Franke (and myself) they are both perfectly acceptable, but the syntax-based analyses which discuss German claim that (70) is odd. In the experiment reported on in this section, I set out to collect acceptability judgments on precisely how acceptable (67) and (68) are on the one hand, and (69) and (70) on the other. I show that (70) at least is perfectly acceptable.

It is worth mentioning that while I do not share the intuition that (68) and (70) are ungrammatical, they are somewhat marked. Franke suggests this is due to a 'default' word order for each type (V1 for hypothetical conditionals and V2 for relevance conditionals). If the context can disambiguate, the dispreferred word order is possible. In contexts that do not disambiguate, the interpretation corresponding to the dispreferred word order is harder to get but not impossible. Franke's pragmatic account, unlike the syntactic accounts, predicts that the dispreferred word order is at least *not ungrammatical*.

Experiment design

In order to show that Franke's (and my own) intuitions correspond to those of naive native speakers, I conducted an acceptability judgment experiment which asked participants to rate the acceptability of hypothetical conditionals (threats), problem-solving RCs, and discourse-structuring RCs on a 7-point scale.[10]

The experiment was designed as follows: There were two experimental factors (consequent **word order** with two levels: V1 and V2; and **conditional type** with three levels: HC, PS and DS). Both factors were tested within-subjects; *conditional type* was tested between-items unlike *word order*. Crossing these factors resulted in six conditions, given in (71).

(5.71) a. HC V1 (hypothetical conditional with V1 word order in the consequent)

[10]I gratefully acknowledge help with the experiment design and statistics from Thomas Weskott, and with running the experiment from his research assistants Melanie Hoffmann and Stephan Simon.

b. HC V2 (hypothetical conditional with V2 word order in the consequent)
c. PS V1 (problem-solving RC with V1 word order in the consequent)
d. PS V2 (problem-solving RC with V2 word order in the consequent)
e. DS V1 (discourse-structuring RC with V1 word order in the consequent)
f. DS V2 (discourse-structuring RC with V2 word order in the consequent)

I also added two types of fillers: sentences containing *weil 'because'*, a complementizer for which both verb-final and V2 complementizers are attested, and sentences containing *da 'because'* which only allows V-final complements.[11] Both types of fillers were presented with the complementizer co-occuring with verb-final and V2 complements in order to achieve a kind of benchmarking (while *da* with verb final word order should be fully acceptable, it should be unacceptable with V2 word order). I tested the following hypotheses:

1. Hypothetical conditionals (HC) will be more acceptable with V1 word order than with V2.

2. Problem relevance conditionals (PS) will be more acceptable with V2 word order than with V1.

3. Discourse-structuring relevance conditionals (DS) will be more acceptable with V2 word order than with V1.

4. The less preferred word order in all cases will still be significantly better than benchmark fillers which are ungrammatical (*da*-V2).

5. The acceptability in the V1 condition is as follows: HCV1 > PSV1 > DSV1

6. The acceptability in the V2 condition is as follows: PSV2 = DSV 2 > HCV2

Two experimental lists were created by combining the conditional sentences (12 per conditional type) with the benchmarking items (*weil* and *da*; 6 each per

[11] For an overview of the literature on *weil*-V2, cf. Antomo and Steinbach 2012, Reis 2013.

word order condition) and some additional fillers according to a latin square design. These two lists were pseudo-randomized (items from different conditional types should not follow each other immediately), and two further lists were created by inverting the original order to control for possible ordering effects. 24 native speakers of German (undergraduates from Göttingen University, aged 18-23) filled out the questionnaire; thus each cell of the design contained 6 observations per subject, and 12 per item. The participants were asked to assess the acceptability of each sentence on a scale ranging from 1 (*completely unacceptable*) to 7 (*fully acceptable*).

The following is a sample item. 'V1' indicates that the word order in the consequent is V1, and 'V2' indicates V2 word order in the consequent.

(5.72) HC condition

a. *Wenn du mich ärgerst, rufe ich Mama.*
if you me anger call I mom
'If you bother me I am calling Mom.' *V1*

b. *Wenn du mich ärgerst, ich rufe Mama.*
if you me anger I call mom
'If you bother me, I am calling Mom.' *V2*

(5.73) PS condition

a. *Wenn du Toner suchst, ist der hier im Schrank.*
if you toner search is it here in-the closet
'If you are looking for toner, it is here in this cabinet.' *V1*

b. *Wenn du Toner suchst, der ist hier im Schrank.*
if you toner search it is here in-the closet
'If you are looking for toner, it is here in this cabinet.' *V2*

(5.74) DS condition

a. *Wenn ich ehrlich bin, siehst du übermüdet aus.*
if I honest am look you tired PART
'If I am honest, you look really tired.' *V1*

b. *Wenn ich ehrlich bin, du siehst übermüdet aus.*
if I honest am you look tired PART
'If I am honest, you look very tired.' *V2*

Experiment results

The experiment results are as follows. The descriptive statistics show that participants preferred V1 word order for hypothetical conditionals, and V2 word order for problem-solving and discourse-structuring conditionals (table 5.1 lists the mean followed by standard deviation in brackets).

	V1	V2
HC	6.51 (1.21)	3.14 (1.62)
PS	5.4 (1.62)	5.93 (1.13)
DS	4.75 (1.99)	5.64 (1.35)

Table 5.1: Descriptive statistics

Inferential statistics (ANOVA) show the following results:

Hypothesis 1 The acceptability of hypothetical conditionals with V1 word order in the consequent is significantly higher than that of hypothetical conditionals with V2 word order, both by subject ($F_1(1,23)=218.8$, $p<.001$, $\eta^2_G=.79$) and by item ($F_2(1,11)=195.2$, $p<.001$, $\eta^2_G=.89$). Hypothesis 1 was confirmed.

Hypothesis 2 The acceptability of problem-solving RCs is marginally significantly higher for V2 word order than for V1 word order ($F_1(1,23)=6.1$, $p=.2$, $\eta^2_G=.08$; $F_2(1,11)=4.05$, $p=.7$, $\eta^2_G=.13$). Hypothesis 2 was (weakly) confirmed, but note that the effect is not significant by items.

Hypothesis 3 The acceptability of discourse-structuring RCs with V2 word order is significantly higher than that of conditionals with V1 word order ($F_1(1,23)=11.7$, $p=.02$, $\eta^2_G=.17$; $F_2(1,11)=4.7$, $p=.053$, $\eta^2_G=.17$). Hypothesis 3 was (weakly) confirmed, with only a marginally significant effect by items.

Hypothesis 4 I present the results for comparing the lowest-rated experimental condition (HC V2) with the ungrammatical *da*-V2 fillers. Again there is a significant difference ($F_1(1,23)=42.00$, $p<.001$, $\eta^2_G=.19$). Hypothesis 4 was confirmed:

the ungrammatical fillers have a significantly lower acceptability than the lowest-rated conditionals. (Therefore the ungrammatical fillers are also less acceptable than all other experimental conditions.)

Hypothesis 5 and 6 The effect sizes reported are generalized eta-squared values (cf. Bakeman 2005). Since the designs employed here are one-factorial within-subjects and within-items designs, generalized-eta-squared gives a conservative approximation of partial eta-squared. This in turn is interpretable as percentage of variance explained for one-factorial designs. Comparing the eta-squared values for the V1 conditions, we observe HC (.79)>DS (.17)>PS (.08). For the V2 conditions, we observe HC (.89)>DS (.17)>PS (.13). The hypotheses were partially confirmed: the largest effect was observed in the HC condition, with PS and DS being close together.

Figures 5.1 and 5.2 graphically represent the results.

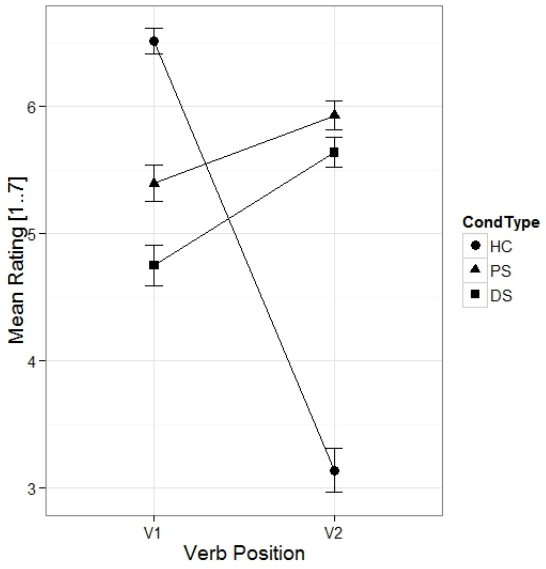


Figure 5.1: Experimental results

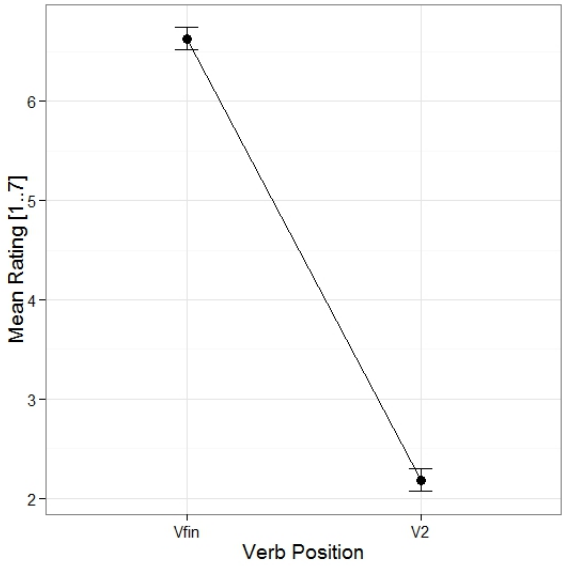


Figure 5.2: Filler results

Discussion

I propose the following conclusions from the data. Franke proposes that there is a *preferred* word order for hypothetical conditionals (V1) and for relevance conditionals (2). This was confirmed in the data: speakers rated V1 HCs and V2 RCs higher than their counterparts with the dispreferred word order. However, Franke also proposes that the dispreferred word order is not ungrammatical (there is no syntactic or semantic 'violation'). This is definitely true for (PS and DS) relevance conditionals whose acceptability is high in both V1 and V2 conditions. And even the dispreferred word order of hypothetical conditionals (HC V1) is significantly higher rated than the ungrammatical *da*-V2 sentences.

I take this as evidence in favour of Franke's analysis, and against analyses which argue for a syntactic difference between hypothetical conditionals and relevance conditionals. If V1 relevance conditionals were truly syntactically ungrammatical, their acceptability should have been much lower. In fact, there should have been no difference between the ungrammatical *da*-V2 fillers, the V2 HCs and both kinds of V1 RCs. But this is not how speakers judge these sentences. While a syntax-based account of relevance conditionals cannot explain why V1 relevance

conditionals show almost no degradation, and even V2 hypothetical conditionals are more acceptable than 'real' word order violations, a pragmatic account can straightforwardly explain the data: there is a preferred word order (and thus, a bias towards V2 RC and V1 HC), but if necessary, the dispreferred structure can also be interpreted.

Syntax-based analyses would have to explain why V1 relevance conditionals do not show the extreme degradation that other syntactically ill-formed complements of German show (such as *da*-V2 complements).

Conclusion

In this dissertation I have set out to describe a phenomenon I have called the free factive subjunctive, and to provide an analysis of its meaning and use that is compositional. Thus the analysis I have proposed allows to make predictions about what the free factive subjunctive means in simple contexts as well as for how it interacts with other operators.

I have shown that the meaning of the free factive is quite complex; it has two presuppositions and makes a non-at-issue contribution to the meaning of the utterance it occurs in. Using a free factive subjunctive presupposes that there is a salient decision problem, and that the prejacent proposition uniquely identifies an action alternative (this action alternative is the one whose 'chance for success' is improved the most by learning the prejacent). The non-at-issue contribution of the free factive subjunctive is to make an existential claim about the worlds in which the agent chooses the uniquely identified action alternative – some of these worlds are among the optimal worlds in which the agent reaches her goal. Because the claim is only existential, there is a tentative effect, and I have provided data showing that each of these ingredients is necessary for an acceptable use of the free factive subjunctive.

My analysis contained two important pieces: a proposal for how to model decision problems within a modal framework to ensure compositionality, and a multidimensional denotation for the free factive subjunctive operator itself. I showed that the predictions made by my proposal match our intuitions regarding the meaning of simple free factive subjunctives on the one hand, and the FFs's interaction with operators such as tense and negation on the other.

In the final chapter, I briefly digressed to discuss a possibly attractive alternative analysis of the free factive subjunctive: namely being the consequent of a relevance conditional with a hidden antecedent. I argued against such an analysis: without making any independent assumptions about its meaning such an analysis is not powerful enough to capture the meaning of the free factive subjunctive.

I then discussed the interaction of the FFS's meaning with the meaning of relevance conditionals, and I introduced the notion of *problem-solving* and *discourse-structuring* relevance conditionals. I showed that only the former can co-occur with past reference, and I provided an analysis in terms of self-referential expressions to explain this fact.

Of course the present work has raised more questions than it could answer. Because it is the first work that provides a formal treatment of the free factive subjunctive, there is much that is left to discover. Below I list a selection of puzzles and briefly discuss their potential impact.

Free factive subjunctives and disjunction Free factive subjunctives can teach us something about other constructions. For example, epistemic indefinites like *irgendein 'any'* have been taken to have a similar meaning as disjunction (cf. Alonso-Ovalle and Menéndez-Benito 2011 and references therein). But while the FFS is acceptable with the epistemic indefinite *irgendein 'any'*, it is only acceptable with a disjunction if the speaker is committed to the truth of both disjuncts.[12]

(5.75) **Context:** Alex, Bert and Clark are living together. Whenever Bert goes shopping, he buys cheddar, and whenever Clark goes shopping, he buys gouda. Alex knows that either Bert or Clark went shopping this morning, but is not sure which one.

a. Alex: *Da wäre Cheddar oder Gouda im Kühlschrank,* ?? *aber*
there is.FFS cheddar or gouda in-the fridge but
ich weiß nicht, was genau.
I know not which exactly
intended: Alex: 'There is cheddar or Gouda in the fridge, but I don't know which.'

[12] I am grateful to Seth Yalcin (p.c.) for bringing disjunction to my attention.

b. Alex: *Da wäre irgendein Käse im Kühlschrank,* ✓ *aber ich*
there is.FFS *irgendein* cheese in-the fridge but I
weiß nicht, was genau.
know not which exactly
Alex: 'There is some cheese in the fridge, but I don't know which exactly.'

The epistemic indefinite *irgendein* is acceptable with a free factive subjunctive as long as the speaker is committed to the fact that there is cheese in the fridge (without forcing the speaker to be committed to more precise knowledge about what type of cheese it is). This is surprising for analyses which assume that epistemic indefinites like *irgendein* behave like disjunctions, that e.g. *irgendein Käse 'any cheese'* has the same meaning as *Gouda cheese or Emmenthal cheese or Cheddar cheese or Münster cheese or Edam cheese or cottage cheese or . . .*, and it deserves further attention.

A unified analysis for the *Konjunktiv II* I have been conspicuously silent about a potential unified analysis of the different uses of the *Konjunktiv II* in German: the irrealis, reportative, and free factive uses. I cannot help but observing that the analysis I have provided for the FFS is hard to reconcile with any analysis of a subjunctive expressing an irrealis or a reportative, but so are the data. A speaker using an FFS is fully committed to the truth of the prejacent, while a speaker using an irrealis subjunctive (and to some extent perhaps also a reportative one) is doing so to express something like weakened epistemic commitment to the prejacent. Hardwiring the notion of weakened epistemic commitment into the semantics of the *Konjunktiv* will make it incompatible with the FFS use. But I showed that alternative analyses such as the competition-based *elsewhere-case* are problematic as well. That is not to say that it is impossible to provide a unified analysis, but it will be challenging to account for the particular distribution of the FFS in a more general account.

The typological landscape of subjunctivity While my investigation has not been a typological one, it was clear almost immediately that the free factive use of the subjunctive seems to be incredibly rare if not unique, at least among Indo-

European and Slavic languages. Perhaps this is another sign that a unified account is not possible, but more typological work is needed in order to better understand in which direction the search for a unified analysis of the *Konjunktiv* should go.

Mood in DGS (German sign language) Part of a typological investigation should be to look at German sign language (DGS). Since – as I showed – the free factive subjunctive occurs in written texts, speakers of DGS encounter this use frequently. It would be interesting to learn whether DGS uses the same morphology expressing irrealis, reportative, and FFS uses of the subjunctive as in spoken German – or if it employs different morphology as in other languages.

The *Konjunktiv* diachronically Another line of attack for learning whether the three uses of the *Konjunktiv* share a common semantic core is to look at its history (to the extent that this is possible). When is the free factive interpretation attested? Do the data allow hypotheses about the kind of trajectory that the *Konjunktiv* has taken?

The interaction between mood and modals I have carefully avoided discussing examples containing modals, leaving this for future work. The question of whether the meaning of 'weakened' modals can be derived from their 'strong' counterparts has been discussed in the literature (cf. e.g. von Fintel and Iatridou 2008, Rubinstein 2012, 2013). German modals have distinct 'past tense' and 'weakened/subjunctive' forms and are therefore interesting to study. For example, *müssen 'must'* has the past tense form *musste* and a weakened form *müsste*; *dürfen 'be allowed to* has *durfte* and *dürfte*, and *können 'can'* has *konnte* and *könnte*. The question arises whether it is possible to provide a compositional semantics for the weakened forms using the strong modal meanings plus the reportative, irrealis, and free factive uses of the subjunctive. Consider the following examples.

(5.76) Calvin: *Hobbes kann schon zählen.*
'Hobbes can count.'
Susie: *Calvin sagt, Hobbes könnte schon zählen.* REPORTATIVE
'Calvin says Hobbes can count.'

(5.77) *Ach, wäre Calvin doch nur letztes Jahr eingeschult worden! Dann könnte er jetzt zählen!* IRREALIS
'If only Calvin had started school last year! Then he would be able to count now!'

(5.78) Susie: *Wir brauchen noch jemanden zum Zählen!*
'We need someone to count!'
Calvin: *Hobbes könnte zählen.* FFS
'Hobbes could count.'

These examples are highly suggestive of a possible compositional semantics for *müsste*. However, it also raises cross-linguistic questions – languages like English or French which also have weakened modals do not have a free factive subjunctive. Why?

The role of tense and mood in conditionals; the syntax of conditionals I pointed out that the interpretation of mood in conditionals is more free than previously assumed. In particular, I argued that it is possible to have configurations where tense and mood need to be interpreted independently in the antecedent and the consequent. Under the present analyses (based on agreement/sequence of tense) it is not clear how these meanings would be derived.

Modelling plans and decision making More generally, the question of how we use language to talk about desires, plans, and the decision making process has become of interest in recent years. In the present work I have not had the time and space needed to compare my proposal to others which are potentially addressing some of the same concerns. By shedding some light on the free factive subjunctive construction, I hope to have provided a piece to this bigger puzzle.

In view of my own plans, I can now say *Die Dissertation wäre schon mal geschafft.*

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