

On mood in complements of intensional and factive predicates in German

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1 Introduction

The approach outlined in this paper is based on the assumption that the ontological difference between facts and propositions can be accounted for via *de se* vs. *de se* interpretation of variable verbal mood. With facts, the world variable has to be interpreted *de re* and thus be situated in the actual world, while on the other hand with non-facts, the world variable is bound by the attitude verb and can only be interpreted *de se*. Furthermore, I assume tentatively that facts are situations and that situations are extensions of propositions.

Note that this approach is valid only for German in the first place. So far, I have nothing to say about the English mood system in factive contexts.

2 Framework

Variable tense As shown in Kratzer (1998) (amongst many others), tenses behave like pronouns as they have free and bound interpretations. I will assume familiarity with tense as a variable approaches: In addition to indexical tenses present and past, there is zero tense which – if realized phonetically – inherits the features of the matrix tense. In clauses embedded under attitudes, matrix tense is raised and binds the tense of the embedded tense. Just like *de re/de se*-differences for variable bound pronouns, there is bound tense which is interpreted *de se* (i. e. ‘seen’ from the holder’s subjective now), and marginally, tense can be interpreted *de re* under attitudes in English in present-under-past sentences. Present under past cannot be anaphoric to matrix past so that it cannot be a zero tense underlyingly, hence it must be interpreted as an indexical tense.

However, this does not hold for German, as in German present-under-past seems to be the unmarked case, cf. (1). Past-under-past is possible as well like in (2).

- (1) Peter glaubte, dass Maria in Paris ist.
- (2) Peter glaubte, dass Maria in Paris war.

In (1) the event time of the embedded clause is anchored not to the utterance time but to the subjective now. Given this, I claim that present in German sometimes behaves like zero tense. If we accept that both in German and English, attitudes select for properties of times¹, then what looks like present tense must not be other than an instance of zero tense. Kratzer (1998) mentions that it is always the weakest permissible pronoun given in a language which is used as zero pronoun. I propose that zero-present tense in German serves as a zero which borrows its form from the present. Consequently, a present tense form is ambiguous between zero tense and present tense. Note that I do not indicate that present may ‘come into life’ as zero tense and then appear as a present tense (as it may be the case in English in bound present) but that zero-present tense itself is a zero tense form, just like *he* is a zero pronoun in some contexts, i. e. a zero form which lacks any presuppositions, for example gender in (3) or simultaneity with the utterance time in (1).

(3) Who_i thinks he_i is God? [= Kratzer (1998)]

Crucially, we can observe that present-under-past cannot be interpreted *de se* under factive predicates in German:

(4) Peter bedauerte, dass Maria in Paris ist.

(4) has the reading that we know from English attitude contexts. This means that what looks like present tense in German embedded under factive predicates cannot be a zero tense. As we would not like to assume that zero-present tense may not serve as a zero tense form in certain contexts, it is likely that factives do not select for properties of times but for objects which have a bound tense, hence not $\langle\langle i, \langle s, t \rangle \rangle\rangle$, $\langle e, \langle s, t \rangle \rangle$, but $\langle e, \langle s, t \rangle \rangle$; and leaving the subject aside, we need something of the type $\langle s, t \rangle$.

Marginally, in (5), we get a reading with quantification over times. This shows that tense is bound.²

(5) Peter bedauerte oft, dass Maria in Paris ist.

Variable mood I would like to show that the puzzle holds for mood as well: mood under attitudes can be anaphoric as in (6) (there is also a *de re*-reading):

(6) Peter würde glauben, dass Maria schwanger wäre.

¹We will have to modify this with regard to mood.

²I am open to other judgements in this case. In fact, this is a point I am not sure about. If the sloppy temporal reading is disregarded for tense (and with mood, I am not sure either), we would have to assume that in factive contexts, tense and mood are not bound at all. Since *de re* and unbound indexical tense and mood do not differ with respect to their temporal and modal interpretation, I will base this paper on the assumption that sloppy readings are possible in factive complements as well. I know that the unmarked complementizer for both modal and temporal sloppy readings is *wenn* as in (1) and (2).

(1) Peter würde es in jedem Fall bedauern, wenn Maria in Paris wäre.

(2) Peter bedauerte oft, wenn Maria in Paris war.

- (7) Peter würde glauben, dass Maria schwanger ist.

The indicative-under-konjunktiv-sentence in (7) shows that what looks like indicative mood seems to be a weak form of its paradigm just like present and can function as zero mood. Basically, this is trivial as it is generally assumed that complements of attitudes are of type $\langle s, t \rangle$. I propose (along with Stone 1997, Schlenker 2004, Speas 2004) that mood is bound by the attitude analogously with tense. Note that again the bound version with feature inheritance is not possible in factive contexts:

- (8) Peter würde bedauern, dass Maria schwanger wäre.
(9) Peter würde bedauern, dass Maria schwanger ist.

I am not sure whether (8) has the reading that the conditions triggering the konjunktiv (i. e. a conditional) in the matrix and the embedded clause are different or the same. It surely has a reading that they differ, for instance, take *Wenn Peter aufmerksamer wäre, dann würde er bedauern, dass Maria vermutlich unglücklich wäre, wenn sie alleine wäre*. I doubt that we can construct cases in which one antecedent can have both the matrix and the embedded clause as a consequent.³ Thus there is no *de se* reading with anaphoric mood (mood features inherited) as we might assume as a parallel case of past-under-past in English. The question is whether tense and mood in factive complements are unbound and indexical or bound and *de re* (s. footnote 2). They are likely to be *de re* rather than indexicals because we have cases of sloppy readings, I think. According to Fabricius-Hansen (1980), (10) can be given the paraphrase in (11).

- (10) John bedauerte oft, wenn er am Vorabend keinen Sport gemacht hatte.
(11) Wenn er am Vorabend keinen Sport gemacht hatte, bedauerte John oft, dass er keinen Sport gemacht hatte.

The topicalized *wenn*-clause quantifies over worlds, and the fact that John has not done any sports, holds in each of these worlds.

However, in (9) mood is interpreted *de re*, in contrast with (7). Consequently this indicates that factive predicates select for object with indexed tense and indexed mood. They select for objects of type $\langle t \rangle$. But what is the extension of a proposition? Traditionally, extensions of propositions are truth values, and one could make it easy by claiming that complements of factive predicates are simply true propositions (i. e. only the propositions which have truth value 1). The counterarguments of facts as true propositions are well-known. I will therefore follow Kratzer (2002) who suggests that facts are situations and propositions are sets of situations.

Situations as extensions of propositions How can we refer to a particular situation? An expression which makes it possible to refer to one situation must make it clear which world the situation ‘belongs’ to, i. e. mood must be indexical or *de re*. By ‘naming’ a situation, for instance all coming-late-situations of Peter (including subsituations but that

³?Wenn Maria und Peter zusammen wären, dann würde er bedauern, dass Maria unglücklich wäre (wenn sie zusammen wären).

is a general problem) and situating it in time and world (or in a world history) we can refer to one situation (felicity conditions of reference preconditioned). Reference can be resolved just like definite DPs via familiarity in the sense of Heim (1982, 1983).⁴ Ontologically we now have what we wanted. There remains one problem. If I say that indexical indicative situated situations in the actual world, we have to distinguish between assertive and non-assertive contexts (see below) because the former do not presuppose the existence of the situation in the actual world while the latter does.⁵

Thus, factivity can be explained compositionally. It is the combination of reference to a single situation (due to indexing for tense and mood) and presupposition via non-assertion.

Hence, what can we say about the formal properties fact-denoting clauses must have? I say that it is that mood and tense must be able to be interpreted referentially, and this is possible only with finite clauses. Why this? German indicative and present which may be zero also have a referential interpretation in the case tense or mood has to be interpreted being unbound or *de re*, a possibility which the zero-form infinitive lacks. Infinitival zero mood and tense have to be bound⁶. This means that infinitives may refer to a single situation but only via variable binding, and that they cannot be presupposed. I claim that this exactly is the case. Cognitive factives like *bemerken* are disregarded with infinitival complements⁷ and emotive factive lose their presupposition when occurring with infinitival complements.

(12) Peter bedauert sehr, sie zu kränken, dabei macht es ihr gar nichts aus.

(13) #Peter bedauert sehr, dass er sie kränkt, dabei macht es ihr gar nichts aus.

The only difference between infinitival complement and *dass*-clause lies in the fact that infinitives cannot be asserted separately as they contain zero-mood and zero-tense which has to be bound and therefore lose their presuppositional character.

3 De re and de se mood and tense

I would now like to present some phenomena which can be explained in a quite straightforward way in this framework. I claim that there are attitude verbs which do not only

⁴In that respect, the two classes of factives differ: emotive factives usually presuppose familiarity with the fact while cognitive factives can introduce the situation denoted in the complement. One hint in that direction is that emotive factives are much better with correlate *es* than cognitive factives:

(1) Peter bedauert es, dass Petra zu spät kommt.

(2) Peter bemerkt (es), dass Petra zu spät kommt.

es-correlates are, I suppose, nothing but scrambled pronouns but I still have to work this out.

⁵There is one syntactic approach by Barbiers 2000 who works out the adjunct-hypothesis of factive complements. Factive complements are adjuncts to VP which gives them a presupposed/specific reading (in the style of Diesing 1992).

⁶Recall that Chierchia (1987) showed that infinitival PRO can only be interpreted *de se*.

⁷Note that introspection may be misleading here. Corpus research in COSMAS (written language) shows that – opposed to the general trend that infinitives are preferred in written texts – cognitive predicates rarely occur with infinitival complements.

bind tense and mood of the complement but which additionally insert a shift in tense or mood. This means that *bound* tenses/moods are modified in some respect.

Lexical temporal shift One predicate class which triggers temporal shifts are future-oriented verbs like *erwarten* (cf. Abusch 1997, Katz 2001). Their complement has to be futurate. We have seen that present tense in English cannot count as zero tense itself (of course it may have been generated as zero tense), thus finite complements require overt *will*. Interestingly, infinitival complements can do without *will*⁸ and still have a future-oriented interpretation. I assume that the matrix tense binds zero tense from the infinitive clause and in some way, due to the lexical meaning of *expect* shifts it into future. For finite complements, we might say that this temporal requirement of the verb towards its complement is fulfilled *de re*, i. e. that the futurate-orientation is ‘emulated’ so to speak.⁹

(14) Peter expects that he will win.

(15) Peter expects to win.

This is relevant for me because the infinitival tense is shifted invisibly by the lexical meaning as English present tense (itself) cannot be zero tense. I have shown above that this is possible in German, so that we can explain why a present tense gets a shifted reading as well as the infinitive.

(16) Peter erwartet, dass er gewinnt/gewinnen wird.

(17) Peter erwartet zu gewinnen.

(16) shows that in German, finite complements can either be *de se* or express the required temporal orientation *de re*.

Lexical modal shift The second phenomenon are modal causative that I have presented in Rau (2007). I now have a better understanding of how to account for them. I assume that they are analogous to future-oriented verbs but in the modal domain. They shift the mood variable of their complement to modal worlds. So *erwarten* is *glauben dass sein wird dass*, and for instance *zwingen* is *machen, dass sein muss dass* or *befehlen* is *machen, dass soll*. Note that this shifting holds only when the corresponding mood or tense is interpreted *de se*. Again, in a finite complement clause the modal shifting can be overt (cf. (19)), but a finite indicative clause can also be zero (cf. (18)). The infinitival clause is shifted modally obligatorily (cf. (20)). Under the assumption that deontic *sollen* cannot be iterated, we can now tell why (21) is ungrammatical, as the infinitival clause is zero mood and has to be bound, which leads to an iterated modality.

(18) Er befiehlt ihr, dass sie kommt.

(19) Er befiehlt ihr, dass sie kommen soll.

⁸I know that there is no infinitival *will* in English so this is not a straight argument.

⁹One might also analyse *will* as anaphoric to a tense arising somewhere in the derivation, for example if we take *expect* to be parsed as *believe that it will be the case that*.

- (20) Er befiehlt ihr zu kommen.
 (21) *Er befiehlt ihr kommen zu sollen.

Most interestingly, it is possible to have finite complements under *tell to* in English but only with overt modal verb. The zero-mood is not available for indicative finite clauses in English. (Again, this corresponds to temporal shifters like *expect*, where present finite complements are not possible but only those with overt *will*.)

- (22) He told her that she ought to leave.
 (23) *He told her that she leaves. (deontic reading)

Another analogous case is epistemic complements (cf. Spears (2004)) with the difference that epistemic modality may be iterated so that (27) is not ruled out.

- (24) Er glaubt, dass er krank sein muss_{epistemisch}.
 (25) Er glaubt, dass er krank ist.
 (26) Er glaubt krank zu sein.
 (27) Er glaubt, krank sein zu müssen_{epistemisch}.

Informally, the attitude requires a complement that may count as a ‘believed thing’. Either zero mood in the complement has to be bound by the attitude or we have to express the ‘believedness’ *de re*. An epistemic modal can do the job. Hence, (24) is a *de re* case while (25) is the *de se* case. Infinitival complements are interpreted *de se*.

Hence, not only modal shifting can be ‘emulated’ in modal causatives but also the world-shift an attitude brings along.¹⁰

Note that the semantic relation between matrix predicate and the required complement type can be ‘broken’ if we use a tense/mood which cannot be zero:

- (28) Er befahl ihr, dass sie hingeht.
 (29) Er befahl ihr, dass sie hingehen muss.
 (30) Er befahl ihr, dass sie hingehen musste.
 (31) Er befahl ihr, dass sie hinging.

In (28), the embedded tense is zero tense, the indicative is zero mood, hence it has the right type to be interpreted as the complement of *befehlen*. In (29) on the other hand, tense is zero, mood (i. e. the shifted world index) is expressed *de re*. The interpretation corresponds to the one in (28). (30) shows that tense and mood go hand in hand in some way, it is the *de re* case of both tense and mood – an emulated complement I would call it. In (31), the past tense cannot be zero tense. As mood and tense go hand in hand, the interpretation is factive but the overt modal verb is missing; hence the clause may not be an emulation of a complement of the right type; this sentence gets a factive reading.

¹⁰Very interesting are examples like *Ich kann nicht glauben, dass das richtig sein soll*. Negation of *glauben*, as we will see below, require a *de re* interpretation of mood because a *de se* reading is impossible. Mood in this example is another case of ‘emulation’ of epistemic worlds.

This is a very strong argument for my approach which boils factivity down to non-*de se*. When we construct cases in which the complement type cannot be achieved neither via *de se* nor via what I call ‘emulation’ then the only possible reading is the independent factive reading.

Modal double access-readings As is well-known, present-under-past sentences have an interpretation which is called double access. I assume that factive predicates are alike for the domain of mood (for a similar case see Speas (2004), see also Schlenker (2004) on *de re* mood). This holds especially for emotive factives:

(32) Er bedauert, dass Petra zu spät kommt.

In order to have an attitude towards a situation, the matrix subject must be having a mental representation of this situation. As a suitable candidate propositions come to mind. Maybe an attitude ascription can also be accounted for via a shifting of the world variable in a way that ‘belief worlds’ are maximal situations. By binding mood and tense under an attitude, the person-parameter is shifted obligatorily which may count as a special case of world-shifts. Zero-world-variables of the embedded clause receive the index of a belief world. This accounts for non-presuppositional readings of emotive predicates (which we can observe with infinitivals in first place, but marginally also with finite complements, but only with emotives as we can conceptualize a scenario where only the attitude holder presupposes that a particular situation holds in his actual world). If, on the other hand, embedded mood is interpreted *de re* then the situation has to be situated both in the belief world and in the actual world – a double access reading is required.

An interesting question is to see whether there is a *de se* interpretation ‘behind’ every *de re* reading. Schlenker 2004 believes that we can never decide. Sauerland & Percus 2003 have found a way to do so for pronouns and one would have to see whether this might be possible for mood and tense as well.

There is one piece of data which, in my eyes, can provide evidence for the assumption that the belief world (that we get with *de se* mood) differs systematically from *de re* mood is the fact that the NPI *any* is licenced under *surprised*:

(33) I am surprised he has any friends.

Giannakidou (1999) used the term veridicality in order to account for the distribution of NPI. NPI can only occur in non-veridical contexts. Veridicality transferred to my framework means that a world variable is bound by an individual anchor, may this be the speaker or an attitude holder. The complement clause does not have to be true absolutely but only in someone’s belief world. I believe that veridicality has to do with *de se* interpretation. (Assertivity is not accounted for exhaustively by *de se* bound by attitudes or in root contexts; in German, verb second seems to play a role.¹¹) Complements of

¹¹Maybe zero mood variable plus verb second leads to assertivity. This would have the effect that we would have to analyse tense and mood in root clauses as zero and bound by the utterance situation. This is quite unconventional but worth thinking about. Still, I do not understand what the verb movement ‘does’ semantically.

glauben are veridical while complements of *nicht glauben* are not. I assume that in affirmative contexts the world variable is bound *de se* while in negated matrix clauses it is interpreted *de re* because it cannot be situated in the holder's belief world. Indeed, V2 complements and factive complement (i. e. *de re* mood) are distributed complementary. Furthermore, sentences with an infinitival complement are also ruled out under negated belief predicates (cf. (35)). Zero mood cannot be interpreted indexically and matrix negation requires *de re* mood in the complement.

(34) Er glaubt (*nicht), er hat recht.

(35) Er glaubt (?nicht) sie zu kennen.

Veridicality and the NPI *any* exclude each other, therefore *surprised* allows only *de re* mood. Still, there are also factive predicates which licence *some* and must be veridical contexts such as *be glad*. One would have to find ways to see whether they are really factive in a stricter sense, meaning that the embedded clause really has a speaker-presupposition. We can observe that factives like *froh sein* are rarely negated, but often occur with infinitival complements. I suspect that there are predicates that we know as factives and which allow *de se* mood as well and then behave like verbs like *befürchten*. Just like emotives, *befürchten* has two meaning ingredients, first the holder's belief, second an emotional attitude towards this modally shifted situation. It is so-to-speak an emotive predicate with modally shifted world variable but anchored to the holder's belief world. This might be the right interpretation for factives which does not require *de re* mood obligatorily. I suspect that with these verbs, negation of the matrix clause like in (39) can be interpreted in a way that Lucy does not believe that the situation holds. Therefore, a *de se* reading is no longer possible and a factive reading is forced – licencing the NPI.

(36) *Lucy is glad that she talked to anybody.

(37) Lucy bedauert, dass sie sich das hat zweimal sagen lassen. (*sich zweimal sagen lassen* ist NPI)

(38) *Lucy ist froh, dass sie sich das hat zweimal sagen lassen.

(39) Lucy ist nicht froh, dass sie sich das hat zweimal sagen lassen.

There is a subtle difference I have observed with regard to factives and the domain of assertion. If we interpret mood *de re*, then – I assume – it corresponds to the world variable of the closest higher mood in an assertive domain. Consider these sentences:

(40) Er glaubt, dass Petra bedauert, dass er recht hat.

(41) Er glaubt, Petra bedauert, dass er recht hat.

In (40), in my eyes, the second *dass*-clause is presupposed by the speaker. This does not hold for (41). I feel like there is a reading in which Petra is the one who presupposes it. If we accept this, factive complements must be anchored to the next higher assertional domain, i. e. *de re* mood will always be linked to the next higher zero mood connected with verb second. (An argument contra the assumption that 'factive' mood is interpreted indexically and not *de re*.)

Modal de re in believe contexts Using the same ingredients, we can now account for examples like (42):

(42) Er glaubt, dass die Erde rund wäre.

This *dass*-clause has two functions. First it gives the subject's 'belief content', second it reports the speaker's attitude towards the situation claiming that this situation is not part of the actual world. As the evaluation world does not correspond to the holder's world, embedded mood must be *de re*. Konjunktiv I is a similar case. Schlenker (2004) dubs this 'logophoric mood'. Konjunktiv I carries the presupposition that the situation holds in a person's belief world different from the speaker (cf. Fabricius-Hansen/Saebø 2004). The world-shift triggered by the attitude verb (and taking the perspective of another person can be subsumed under world shift) is not taken over by zero mood *de se* but is expressed *de re*. The speaker's belief is not involved here (in contrast with konjunktiv II-complements):

(43) #Er glaubt, dass die Erde rund wäre, und das ist auch so.

(44) Er glaubt, dass die Erde rund sei, und das ist auch so.

The personal perspective can be coindexed with the matrix subject's perspective. However, there is a reading where mood is anaphoric to another person's belief world. Within matrix negation, claiming that the situation holds in the subject's belief world would be illogical. Hence, the presupposition of someone's belief world cannot correspond to the subject's belief. This produces a reading where we assume that someone else has brought this belief into play, for instance Peter.

(45) Er glaubt (z. B. im Gegensatz zu Peter) nicht, dass die Erde rund sei.

Subject clauses with factive adjectives I have argued that infinitival complements can never be factive in a stricter sense. However, there is a class of factive adjectives and predicates (cf. Karttunen 1971 and many more) which are analysed as proper factives. This challenges my hypothesis, so let me have a closer look on these cases. I will show that under certain circumstances they have a factive reading and that we can derive the circumstances from our compositional approach of factivity.

Tense, mood and person in infinitival clauses again are zero-variables which have to be bound. In subject clauses like (46), the variable binding might be the same as with object clauses.

(46) Es war weise von dir, die Bank nachts auszurauben.

As mentioned before, adjectives like *wise* are subsumed under factives. But *weise* does not always presuppose its external argument:

(47) Es ist weise, die Bank nachts auszurauben.

(47) can still be a generic assertion about all situations in which a bank is hit by night. The PP *von dir* allows (contextually) to reduce the situation set denoted by the infinitival clause to all situations in which the addressee is the robber. This might still be generic.

Furthermore past tense reduces the situation set to all past situations and indicative reduces it to all situations from the actual world. Note that also a past tense/indicative expression with *weise* can be generic:

(48) Im 19. Jahrhundert war es weise, die Bank nachts auszurauben. Heutzutage nicht.

The situation set is now shrunk to all bank-robbery-situations including the addressee as the agent, and which are situated via variable binding in a particular time in the actual world. This is now a single situation, and this is the first condition for factivity, namely the ontologic condition. Still, it lacks a speaker's presupposition. But note that it necessarily is the speaker who characterizes the situation as *weise*. This is the crucial point because in him giving a characterization we can infer that he believes that the situation holds in the actual world at that particular time. If we replace *ist weise* with *DP findet es weise* then the presupposition does not come up with the infinitival clause:

(49) Peter fand es weise von dir, die Bank nachts auszurauben. Dabei war es doch 9 Uhr morgens!

Note that the presupposition does arise with the finite complement:

(50) Peter fand es weise von dir, dass du die Bank nachts ausgeraubt hast. # Dabei war es doch 9 Uhr morgens! ¹²

Summary

I have given an account which parallels variable mood with variable tense (and pronouns). Contrary to English, German has finite zero forms which do not have to inherit their features but may remain zero morphologically. These zero forms equal the present tense and the indicative.

Control predicates differ in whether they contribute shiftings of the bound variables. Attitudes shift the modal variable to a belief world. Modal causatives insert a modal meaning of the complements. Future-oriented verbs involve a temporal shift. These contributions come into play only with *de se* readings but can be emulated via special mood like *konjunktiv I, II* or via epistemic or deontic and circumstantial modal verbs. This is the *de re* reading of the complement's variables – a way to by-pass the meaning contribution of the matrix predicate to the complement. Factive complements have to be analysed as having *de re* reading of tense and mood.

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¹²There might be a marginal reading of zero mood here.

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