

BINDING MOOD BY INFLUENCE PREDICATES

JENNIFER RAU

Collaborative Research Centre "Linguistic Data Structures" (SFB 441)

University of Tübingen

Draft: July 30, 2008

jennifer.rau@uni-tuebingen.de

Contents

1. Introduction	1
1.1. The puzzle	2
2. Data and approaches	3
2.1. The semantics of influence predicates	3
2.2. Finite complement clauses	3
2.2.1. Transmitted modals	4
2.2.2. Modal concord	5
2.3. Infinitival complement clauses	5
3. Proposal	7
3.1. Embedded future	7
3.2. Embedded modality	11
3.3. Infinitives and dass-clauses again	12
4. Conclusion	14

1. Introduction

This paper is concerned with modal markers in complement clauses under certain matrix predicates. The leading question will be whether overt modal auxiliaries in complement clauses are interpreted or not and how we can account for the modal interpretation of simple complement clauses. After giving an overview over the German data, I will discuss two approaches, one by Fabricius-Hansen and Stechow 1982, the other by Geurts and Huitink 2006, and show that both do not make the right predictions for infinitival complements. To show how we can cover both finite and infinitival clause, I will draw a comparison between influence predicates and future-oriented predicates (cfr. Abusch 2004) and show that treating tense as a variable can well be transferred to mood in the style of Kratzer 1998. Mood variables and *de re* interpretation mood can account for the whole puzzle under consideration.

1.1. The puzzle

Consider (1) to (4).

- (1) Er zwingt sie dazu, dass sie arbeitet.
He forces her PART that she works.
'He forces her to work.'
- (2) Er zwingt sie dazu, dass sie arbeiten muss.
He forces her PART that she work-INF must.
'He forces her to work.'
- (3) Er befiehlt ihr, dass sie arbeitet.
He orders her that she works.
'He orders her to work.'
- (4) Er befiehlt ihr, dass sie arbeiten soll.
He commands her that she work-INF ought.
'He orders her to work.'

The semantic equivalence of (1) vs. (2) and (3) vs. (4) suggests that the modal verbs in (2) and (4) do not contribute any additional meaning to the complement. This is problematic for the semantic compositionality principle – does it mean modal auxiliaries are not interpreted in these complement clauses? We will see that the picture is even more puzzling when we consider not only finite complement clauses but also infinitival complements. Infinitival clauses can in principle have an overt modal auxiliary except for deontic *sollen* which is ill-formed in the infinitival complement (but not in the finite complement cfr. (4)).

- (5) Er zwingt sie zu arbeiten.
He forces her to work.
'He forces her to work.'
- (6) Er zwingt sie, arbeiten zu müssen.
He forces her work-inf to must-inf.
'He forces her to work'
- (7) Er befiehlt ihr zu arbeiten.
He orders her to work.
'He orders her to work.'
- (8) *Er befiehlt ihr, arbeiten zu sollen.
He orders her work-inf to ought-inf.
'He orders her to work'

In this paper, I will give an outline of two approaches concerned with 'superfluous' modal auxiliaries. I will examine whether they account for the data presented for finite and for infinitival complements. Second, I will compare the modal phenomenon

to a related temporal phenomenon in future-oriented predicates. I will then present a new analysis for influence predicates which makes use of Kratzers (1998) zero tenses and *de re* interpretation for some finite complements.

2. Data and approaches

2.1. The semantics of influence predicates

The control predicates I will be concerned with here will be called 'influence predicates'. I will capture their semantics as modal causatives. Cause is a semantic operator in the style of Dowty 1979 which embeds a proposition. I will argue that in the case of influence predicates, this target proposition is modalised. It is thus the causation of a circumstantial or deontic effect. There are influence predicates involving both modal forces:

- (9) Er zwingt sie dazu, dass sie arbeiten muss.
He forces her to-it that she work must.
'He forces her to work.' circumstantial necessity
- (10) Er befiehlt ihr, dass sie arbeiten soll.
He orders her that she work-INF ought.
'He orders her to work.' deontic necessity
- (11) Er ermöglicht ihr, dass sie arbeiten kann.
He enables her that she work can.
'He enables her to work.' circumstantial possibility
- (12) Er erlaubt ihr, dass sie arbeiten darf.
He allows her that she work-INF may.
'He allows her to work.' deontic possibility

This semantic verb class corresponds i. e. to the *order and permit type* in Sag 1991, where one participant is being influenced to perform a certain action. It includes predicates like *persuade, bid, command, impel, induce, influence, press, forbid* and *permit*.

2.2. Finite complement clauses

In the preferred reading, all complement clauses under influence predicates are interpreted modally. The question is where the modality comes from and why absence and presence of the modal lead to the same interpretation of the complement clause. At first sight, there are two ways to argue. The first one is to assume a covert modal in all cases. Either there is one already, then we do not have to insert one, or there is no overt modal auxiliary, then we will have to add one at LF. I will exemplify this idea by an approach by Fabricius-Hansen and Stechow 1982 which deals with

subject clauses which have to be interpreted modally. I will give an outline of their approach in section 2.2.1. and refer to it as *modal transmission approach*.

The second intuition people have about the puzzle is to consider the overt modals an agreement element. I will present the *modal concord* approach of Geurts and Huitink 2006. The modal auxiliary is seen as a mere reflex of the modality in the clause. An outline will be given in section 2.2.2.

2.2.1. Transmitted modals

According to Fabricius-Hansen and Stechow 1982, a modal verb has to be inserted when not present in order to assure interpretability in the following examples. They argue that (13) and (14) are semantic equivalents.

- (13) Dass Ede Professor wird, ist eine Möglichkeit.
That Ede a professor becomes, is a possibility.
- (14) Dass Ede Professor werden könnte, ist eine Möglichkeit.
That Ede a professor become-INF could, is a possibility.

As a consequence, the interpretation of (14) should be '*It is possible that it is possible that Ede becomes a professor*', which is not the case. One of the modal markers must not be interpreted – but which of them is redundant? The minimal pair in (15) and (16) can clarify this.

- (15) Dass Ede Professor werden könnte, ist eine erfreuliche Möglichkeit.
That Ede a professor become-INF could, is a pleasing possibility.
- (16) Dass Ede Professor werden könnte, ist erfreulich.
That Ede a professor become-INF could, is pleasing.

Again, both clauses are semantically equivalent. As there is no modal marker in the matrix clause in (16), it must be the modality marker in the complement which is relevant. Fabricius-Hansen and Stechow 1982 conclude that the complement clause has to be interpreted modally in all similar cases. When there is no overt modal it has to be 'transmitted' (p. 189) from the matrix clause into the complement for a correct interpretation.

Applying this *modal transmission approach* to modal verbs in complement under influence predicates, we would have to insert a modal verb in every complement clause which does not contain an overt modal. Complements of the form in (17) would be interpreted as (18).

- (17) Peter ermöglicht Paula, dass sie gewinnt.
Peter enables Paula dass she wins.
- (18) Peter ermöglicht Paula, dass sie gewinnen kann.
Peter enables Paula that she win can.
'Peter enables Paula to win.'

For finite complements, this seems to work fine. We will see later that this approach leads to difficulties with infinitival complements.

2.2.2. Modal concord

Geurts and Huitink 2006 suggested that apart from negative concord we can assume modal concord as well. Their example involves modal concord of adverbials and auxiliaries as in (19). A cumulative meaning as in (20) does not seem to be intended, so the doubling in (19) must be a concord effect.

- (19) You may possibly have read my little monograph upon the subject.
- (20) It is possible that it is possible that you have read my little monograph upon the subject.

Applying this idea to complement clauses this means that the complement clause itself is modally marked and that the modal merely indicates modal agreement. When interpreting the sentence, the modal has to be ignored because modality is present covertly and independently of the modal. Considering (21) and (22), it could be triggered by the matrix predicate with regard to modal type as well as quantificational force.

- (21) Er ermöglicht ihr, dass sie arbeiten kann.
He enables her that she work-INF can.
- (22) Er befiehlt ihr, dass sie arbeiten soll.
He orders her that she work-INF should.

Considering only finite complement clauses, both positions are equally well. The complement clause is to be interpreted modally and it does not matter in this case whether we transmit modality via a covert modal or assume inherent modality because of the presence of an agreeing element.

2.3. Infinitival complement clauses

Let us turn to infinitive complements. Both examples in (23) and (24) are semantically equivalent.¹ Under the modal transition view, the modal in (24) has to be interpreted. Under the modal concord view, it must *not* be interpreted.

- (23) Er zwingt sie zu arbeiten.
He forces her to work.
- (24) Er zwingt sie, arbeiten zu müssen.
He forces her work-INF to must.

Let us have a look at infinitival complement clauses embedded under a deontic predicate:

¹There is a reading in which the modal is interpreted. But it is hard to imagine a necessity to work which follows from a different forcing source than the matrix predicate (for a short discussion see 3.3.).

- (25) Er befiehlt ihr zu arbeiten.
He commands her to work.
- (26) *Er befiehlt ihr arbeiten zu sollen.
He commands her work-INF to should.

(26) shows that the modal *is* is interpreted, leading to ungrammaticality. If considering modal auxiliaries as modal concord markers, (26) should be grammatical analogously to (24). Recall that in the finite complement in (22) the deontic auxiliary is grammatical. First of all, why might (26) not well-formed? Castañeda 1970 shows that iteration of modality is not allowed in the case of *sollen* while it is possible – even though redundant – for other modality types (cf. (27) and (28)).²

- (27) *Er soll arbeiten sollen.
He should work-inf should-inf.
- (28) Er muss arbeiten müssen.
He must work-inf must-inf.

The modal transition approach runs into trouble here. Why should it be the case that we must not insert the modal into infinitival clauses? Before moving to the structural difference between infinite and finite complement clauses, let us see how the data can be explained in the modal concord approach.

The ungrammaticality of (26) is a strong argument against the modal concord approach. Modal concord elements should not be restricted to certain contexts, and deontic modality normally allows concord elements (see examples in Geurts and Huitink 2006). Janneke Huitink (p.c.) pointed out to me that possibly we could assume that infinitival *sollen* does not have the same meaning as finite *sollen*. The modality triggered by *befehlen* might have the same meaning as in finite *sollen* but differ from the meaning of infinitival *sollen*. She taught me that infinitival modals rarely participate in modal concord. Still, (27) shows that there are infinitival complements which allow to stick to the source of obligation.³

- (29) Peter glaubt, arbeiten zu sollen.
Peter believes, work-inf to ought-inf.
'Peter believes that he is obliged to work.'

Anyway, what is important for this issue is the fact that iteration of deontic *sollen* is disallowed and leads to ungrammaticality. It shows that in infinitival complements

²A formal approach for explaining why deontic *sollen* cannot be iterated might be possible in regard of Fintel and Iatridou 2008. I will not go into this here.

³J. Huitink's idea is that this is due to the fact that *sollen* needs a connection to who is the source for this obligation and only finite *sollen* can fulfill this. As there are counter examples like (29), I will not rest on this argument. Still, in tendency I share this intuition although I have no idea how to deduce this structurally.

like (26) which I repeat in (30), there is an underlying deontic modality which corresponds to *sollen*. This is not the case in finite complements like (22) repeated in (31).

- (30) *Er befiehlt ihr arbeiten zu sollen.
He commands her work-inf to should-inf.
- (31) Er befiehlt ihr, dass sie arbeiten soll.
He orders her that she work-inf should-inf.

3. Proposal

In my proposal, I will argue that the crucial difference between infinite and finite clauses is the fact that infinitives lack mood just as they lack tense. Generally, *sollen* should not be allowed in complement clauses under *befehlen* but it is possible because finite complements allow an interpretation *de re* where the modalised mood is moved out of the scope of *befehlen*. This is why finite clauses can contain overt modals without redundancy or ill-formedness.

To do this, I will rely on the treatment of tense in Kratzer 1998. She analyses tense as variables analogous to pronouns. As there are referential and bound pronouns, there is indexical and zero time. The latter are featureless variables which get their features at PF from their antecedent. I will assume that control predicates serve as binders for person, tense and world variables (cfr. Stechow 2001). The complements of influence predicates just like the complements of attitudes are analysed as properties of tense and mood (and person which I will ignore here). Before I move on to ‘modal embedding’, I would like to present a similar puzzle concerning tense. Analogously to the modally shifted reading of the complement clause under influence predicates, there are predicates which involve a temporally shifted interpretation of the complement. They have been investigated by Abusch 2004 and I will present her approach and the criticism of Katz 2001 before passing on to mood.

3.1. Embedded future

Abusch 2004 addresses non-tensed complements having a future interpretation. They are embedded under so called F-verbs. Their interpretation is future-oriented (32), while present-oriented ‘B-verbs’ have a simultaneous interpretation (33).

- (32) Paula expects to meet Paul.
- (33) Paul believes to meet Paula.

Under the assumption that infinitive complements themselves have a present interpretation, it must be the semantics of the predicate which specifies the temporal interpretation of the complement. To account for the difference between future-oriented

and present-oriented verbs, she proposes that the former specify a futurate interpretation of the complement. *Expect*, in her account, can be paraphrased as *believe + will*.

Katz 2001 points to the fact that this lexical-future analysis is unsatisfying when we take finite complements under future-oriented predicates into account as well.

(34) *Paula expects that she meets Paul.

(35) Paula expects that she will meet Paul.

(34) is ungrammatical (at least for most speakers), the complement has to be futurate as in (35). If we assume the same lexical semantics as we did with infinitival complements, (34) should be well-formed because the futurate orientation would be specified already sufficiently by the lexical semantics of the predicate. For (35), we would expect that the futurate orientation would be specified twice, once by the lexical semantics and once by the complement. It is unsatisfying to have different temporal requirements for finite and infinitival complements.

Katz 2001 solves this problem by type-shifting the complements under futurate-oriented verbs. Infinitival complements are in principle tenseless. With predicates like *expect*, the infinitival complement takes over the futurate orientation specified by the lexical semantics of the matrix predicate.

(36) $\llbracket \text{expect} \rrbracket(w, t, x, P) = 1$ iff $\forall \langle w', t' \rangle \in \text{Dox}(w, t, x) \exists t'' [t'' > t' \ \& \ P(w', t'', t') = 1]$
 [=Katz 2001, (42)]

The crucial point is that complements of *expect* have to be abstracted over both perspective time (equivalent to evaluation time) and event time. With *believe*, only the perspective time has to be abstracted over. Attitudes like *believe* do not specify any temporal relation for their complement. With an infinitival complement, the event time will be the subjective present of the attitude holder. See in (39) how Katz works out the truth conditions for *expect* with infinitival complement:

(37) Fritz expects Arnim to laugh. [=Katz 2001, (48)]

(38) $\text{Fritz}_0 \text{ PRES}_1 \text{ expect } \lambda 2 [\text{Arnim to laugh}]$ [= (49)]

(39) $\forall \langle w', t' \rangle \in \text{Dox}(w_0, t_0, \text{Fritz}) \exists t'' [t'' > t' \ \& \ \text{laugh}(w', t'', \text{Arnim}) = 1]$ [= (50)]

In an tensed complement, we have to abstract twice in order to yield the right type.

(40) Fritz expect that Arnim will laugh. [=Katz 2001, (43a)]

(41) $\text{Fritz}_0 \text{ PRES}_1 \text{ expect } \lambda 1 \lambda 2 [\text{Arnim}_1 \text{ FUTR}_2 \text{ laugh}]$ [= (44)]

(42) $\forall \langle w', t' \rangle \in \text{Dox}(w_0, t_0, \text{Fritz}) \exists t'' [t'' > t' \ \& \ \text{laugh}(w', t'', \text{Arnim}) = 1]$ [= (45)]

The lexical semantics of *expect* specifies existential binding of t'' . The temporal relation between event time and perspective time is specified by the tense as well. Since there is no contradiction that would arise with a present tense in the complement, the

truth conditions come out well.

Let us have a look on the German counterparts of future-oriented predicates and see whether we can find a solution which accounts for the German data and which is transferable to mood in influence predicates. One difference to English is that in German, we can have either present tense complements or future tense complements under future-oriented predicates. (Note that there is an infinitive of *werden* in German.)

- (43) Peter erwartet, dass er morgen gewinnt.
Peter expects that he tomorrow wins.
- (44) Peter erwartet, dass er morgen gewinnen wird.
Peter expects that he tomorrow win will.
- (45) Peter erwartet morgen zu gewinnen.
Peter expects tomorrow to win.
'Peter expects to win tomorrow.'
- (46) ?? Peter erwartet, gewinnen zu werden.
Peter expects win-INF to will.

The surface difference between English and German lies in the fact that German *erwarten* can take a present tense complement. Among the different possible analyses for this I would like to propose two. First, one might assume that there is a covert future tense in (43). The analysis would then be equivalent to the one for (44). This claim is reasonable as unembedded present tense can have a futurate reading in German as well:

- (47) Peter fährt morgen in den Urlaub.
Peter goes tomorrow in the holiday.
'Peter will go on holiday tomorrow.'

Still, I would like to propose a second possible analysis. Let us assume that there are tenseless *dass*-clauses in German. Their tense ought to remain un-interpreted only when they carry an unmarked, 'default' tense, namely present tense which serves as a zero tense form in German. Their interpretation would then be equivalent to the one of tenseless infinitival clauses in (39). Both analyses, the covert future and the zero tense approach might account for the facts. I would like to argue that *expect* is a binder for tense (selects for properties of tenses) and specifies a futurate interpretation for the bound tense. In infinitival complements, there is zero tense in the sense of Kratzer 1998 as infinitives lack tense. Overt future morphology in infinitival complements as in (46) will lead to a double future which in this case is redundant. Finite complements do not have the right type because they carry tense – present tense can either be interpreted as zero tense or as covert future (having the same semantics as futurate complements).

If we interpreted tense as *de re* in this case then it would not be specified once again as futurate because it is not in the scope of the temporal binder. It binds zero tense if necessary. My proposal does not differ from Katz' analysis in the basic intuitions that the matrix predicate specifies the temporal relations and that the future tense is interpreted and contributes a temporal relation as well. In my approach, though, concerned with German data, we have to allow zero tense in finite complements. Among other differences, there is one I would like to mention. In Katz's analysis, the temporal relation specified by the matrix predicate holds between the local now (evaluation time) and the event time. I do not think this is right for German.

- (48) Peter erwartete gestern, dass er morgen gewinnen wird.
Peter expected yesterday that he tomorrow win will.
'Peter expected yesterday that he would win tomorrow.'

The question is whether (48) is well-formed: can the event time of the complement clause only be following the utterance time or can it be following the local now as well? I tend to say that it has the former reading only. This means that it is not interpreted with respect to the local now but indexical.

The same argument holds for German present-under-past with future-oriented predicates. Considering the *de se* reading in which the time of the winning follows the expecting time, we can see that German differs from English in this respect. In the German sentence, there is no past feature in the complement, thus no past feature transmission into the bound variable. The only analysis I can think of is a zero tense.

- (49) Peter erwartete gestern, dass er gewinnt.
Peter expected yesterday that he wins.
'Peter expected yesterday that would win.'

Things lie differently in cases like (50), of course:

- (50) Peter erwartete gestern, dass er morgen/heute krank sein würde.
Peter expected yesterday that he tomorrow/today sick be would.
'Peter expected yesterday the he would be sick tomorrow/today.'

Here the past tense is anaphoric to the matrix tense, tense is bound and the temporal relation hold between the local now and the event time. This is not an indexical tense here.

I will not go into this in detail because my concern is not temporal semantics here. In this section, I have presented an analysis of future-oriented predicates and tensed and tenseless complements. Predicates like *expect* select for properties of times which are bound and interpreted as futurate. Untensed complements do not contribute a temporal specification and therefore are interpreted futurate. In German, the analysis of *dass*-clauses either is interpreted *de se* or *de re*. Present tense complements might correspond to tenseless complements when we assume a zero tense for some present tense clauses.

3.2. Embedded modality

The pattern we faced in the case of future-embedding predicates is similar to the one we found with modal auxiliaries in complement clauses under influence predicates. Future-oriented predicates:

- (51) Peter erwartet, dass er gewinnt/gewinnen wird.
Peter expects that he wins/win will.
- (52) Peter erwartet zu gewinnen/*gewinnen zu werden.
Peter expects to win/win to will.

Influence predicates:

- (53) Peter befiehlt Paula, dass sie gewinnt/gewinnen soll.
Peter commands Paula that she wins/win ought.
- (54) Peter befiehlt Paula zu gewinnen/*gewinnen zu sollen.
Peter commands Paula to win/win to ought.

I propose that there is a phenomenon which I call ‘necessity/possibility-orientation’ of influence predicates. The claim is that influence predicates specify the modal orientation of their complement. The rest is all along the lines of my temporal analysis. The analogy between pronouns and tense on the one hand and mood on the other hand has been noticed and implemented before (cfr. Stone 1997, Stechow 2001, Speas 2004 and Schlenker 2006).

Influence predicates are analysed as causatives. Their interpretation includes an intensional factor CAUSE (cfr. Dowty 1979). The effect state is a proposition. Influence predicates, of course, are no causatives in the classical sense. I assume that they specify the modal space of the effect state just like future-oriented predicates specified the temporal relation between the evaluation time and the event time. The lexical semantics of an influence predicate involves an operator which shifts the modal domain. For instance, this has to be a deontic domain in *befehlen*. I ignore temporal and aspectual issues here.

- (55) Peter befiehlt Paula zu gewinnen.
Peter orders Paula to win.
- (56) Peter causes $\lambda w [\forall w' (w' \in H_{deon/circ}(w, Paula) \rightarrow (Paula \text{ wins in } w'))]$

The semantics of the influence predicate consists of two parts: First, the causation which has a proposition as its effect state. This proposition is itself a complex consisting of a modal with an appropriate modal base and an embedded proposition which covers the intension of the complement clause. The idea is that all influence predicates follow either pattern (a) or (b), depending on the modal force determined by the matrix.

- (a) $\lambda x \lambda p [x \text{ cause } \lambda w [\forall w' (w' \in H_{deon/circ}(w) \rightarrow p(w'))]]$
- (b) $\lambda x \lambda p [x \text{ cause } \lambda w [\forall w' (w' \in H_{deon/circ}(w) \wedge p(w'))]]$

3.3. Infinitives and dass-clauses again

Let us look at infinitival complements first. I assume that, analogous to tense, infinitives lack mood (I will concentrate on mood here although tense is a matter here as well). Consequently, they are propositions (not truth values) and have the right type to be complement of an influence predicate:

- (57) Peter befiehlt Paula einzukaufen.
Peter orders Paula to-go-shopping.
- (58) Peter cause $\lambda w [\forall w' (w' \in H_{deon}(w) \rightarrow \text{Paula goes shopping in } w')]$

I will adopt the idea of Kratzer 1998 here that there is zero tense and extend it to zero mood (cfr. Fabricius-Hansen and Sæbø 2004). Zero tense is a variable which has to be bound because it does not have an indexical meaning on its own.

For infinitival complements within modal auxiliary, recall that deontic *sollen* leads to ungrammaticality. In (59), we can see why.

- (59) *Peter befiehlt Paula, einkaufen zu sollen.
Peter orders Paula go-shopping to ought.
- (60) Peter cause $\lambda w [\forall w' (w' \in H_{deon}(w) \rightarrow \forall w'' (w'' \in H_{deon}(w') \rightarrow \text{Paula goes shopping in } w''))]$

We have to iterate the modal *sollen*. As I have argued above, this generally leads to ungrammaticality. The infinitival complement itself is grammatical as its mood has to be bound.

If we take finiteness seriously, finite complements do have mood features, i. e. indicative mood. In order to have the right type, we have to abstract over mood and bind it. I assume that it is the matrix predicate that binds the mood variable in finite complements, analogously to binding of world and tense variables under attitudes.

- (61) Peter befiehlt Paula, dass sie einkauft.
Peter commands Paula that she goes-shopping.
'Peter commands Paula to go shopping.'

Note that finite zero mood is fine under counterfactive mood as well:

- (62) Peter würde Paula dazu zwingen, dass sie einkauft.
Peter would Paula to-it force that she goes-shopping.
'Peter would force Paula to go shopping.'s

What about finite complements within modal auxiliary? If we assumed an analysis corresponding to finite complements without modal auxiliary, the same problem we had with modalised infinitival complements should arise. If we interpret the modal auxiliary in the complement, it should lead to disallowed iteration in combination with the modal specification in the lexical semantics of the control predicate.

To avoid this, I would like to propose that finite complements offer a second possibility which is interpretation *de re*, along the lines of temporal *de re* in Abusch 1997, Kratzer 1998 and Ogihara 1989. In Abusch's analysis, certain tenses are interpreted *de re*, i. e. parallel to tenses in extensional contexts. This has to be the case in present-under-past sentences in English because the embedded present tense has no present tense antecedent and thus must be interpreted *de re*. Though Kratzer 1998 follows Ogihara in interpreting *de re* with respect to eventualities, I will leave it at tenses and transfer this to mood. As we interpret the indicative mood in sentences like (63), mood is not bound but is interpreted *de re*:

- (63) Peter zwingt Paula dazu, dass sie einkaufen muss.
Peter forces Paula to-it that she go-shopping must.
'Peter forces Paula to go shopping.'

The indexical and modalised mood is then coindexed with the matrix mood. A counterfactive counterpart with anaphoric mood is possible as well:

- (64) Peter würde Paula dazu zwingen, dass sie einkaufen müsste.
Peter would Paula to-it force, that she go-shopping would-must.
'Peter would force Paula to go shopping.'

De re expressions can be given paraphrases. Temporal *de re* in attitude contexts can be paraphrased as illustrated in (65).

- (65) As for *t'*, Peter believes that Paula is sick at *t'*.

What would be an adequate paraphrase for *de re* mood in influence predicates? Influence predicates include the intensional operator *cause*.

- (66) As for her obligations, Peter causes that it is that she goes shopping.

This certainly is not simple mood selection but a more complex modal requirement. The basic intuition is captured: the influence predicates gives us the modal domain where the embedded proposition is interpreted. But we can express mood independently and 'emulate' the modal domain *de re*. The reason why the *de re* interpretation is possible only for finite complements is that infinitives lack mood and thus cannot have an indexical reading but always have to be bound by the matrix predicate. The main difference between English and German in this respect is that German allows zero mood (and tense) without any morphological reflexes. It seems as if German zero mood and tense 'came into life' (cfr. Kratzer 1998) as zero forms while English allows abstraction over tense and mood while the features are present at PF.

The question is how do we know that the obligations in (66) are the one Peter causes? That is, are there only anaphoric *de re* readings or can they have different indexes as well? There might be *de re* readings with a different source of obligation. Imagine Peter forces Paula to ride a rollercoaster where she is forced to put on her seat belt. The reading with different modal bases for necessity is not the salient one but possible in (67):

- (67) Peter zwingt Paula dazu, dass sie sich anschnallen muss.
Peter forces Paula to-it that she REFL put-on-seat-beld must.

De re interpretation of mood variables offers the same range of interpretation as *de re* tense does.

4. Conclusion

Let us have a look at the starting point. We examined two approaches capturing the basic ideas about modal auxiliaries in complement clauses embedded under influence predicates. In the modal transmission approach, we have to assume a covert modal in every complement clause if there is no overt modal auxiliary. In this approach, we had difficulties when facing infinitival complement with overt deontic *sollen*. It is not possible to make the covert modal overt. In my proposal, mood is bound by the matrix. The lexical semantics of the control predicate ensures that the embedded proposition is interpreted modally. With *sollen* in infinitival complements, this leads to iterated modality which is redundant with circumstantial modality but is ill-formed with deontic *sollen*. I do not assume a covert modal in the complement but the modality has its origin in the lexical semantics of the control predicate.

The second approach was a modal concord approach. Modal auxiliaries in complements were analysed as an agreement phenomenon. Difficulties arise again with infinitival complements with overt deontic *sollen*. We have to stipulate that it is not possible to have agreement in infinitival complements in cases of deontic obligational modality. The difference between infinitival and finite complements can be explained in my approach by the absence and presence of indexical mood. With indexical mood, which is present only in non-zero finite clauses, the complement clause is interpreted *de re*.

I have presented a proposal which accounts for whole range of the data without stipulations and within ideas from the treatment of tense. Basing on Kratzer 1998, I assumed that there is zero tense and mood. Infinitival mood is always zero mood and has to be bound. In finite complements, mood can be interpreted indexically or bound. I have shown that finite complements thus have a *de re* reading which is not possible in infinitival complements. The difference between infinitival and finite complements follows from the absence of mood in all infinitival complements and does not have to be stipulated. Mood in *de re* complements is not bound by the control predicate. Therefore, the complement ‘bypasses’ the modal operator and modality is not iterated in *de re* complements.

It is not the case that some modal auxiliaries are interpreted while some are not. In my proposal, all modal auxiliaries are interpreted when present. The crucial point is that mood is not always interpreted. Infinitival complements lack mood. In finite complements, we get a *de re* reading and the modality which is contributed by the lexical semantics of the control predicate with zero mood complements is ‘emulated’ in the *de re* expression when mood is interpreted. In finite *de se* complements,

mood is not interpreted which allows an interpretation analogous to infinitival complements.

Bibliography

- Abusch, D.: 1997, Sequence of tense and temporal de re, *Linguistics and philosophy* 20, 1–50
- Abusch, D.: 2004, On the temporal composition of infinitives, in J. Guron and J. Lecarme (eds.), *The syntax of time*, p. 293, Cambridge
- Castañeda, H.: 1970, On the semantics of the ought-to-do, *Synthese* 21, 449–469
- Dowty, D.: 1979, *Word meaning and Montague grammar*, Dordrecht
- Fabricius-Hansen, C. and Sæbø, K. J.: 2004, in a mediative mood: The semantics of the ferman reportive subjunctive, *Natural language semantics* 12, 213–257
- Fabricius-Hansen, C. and Stechow, A. v.: 1982, Explikative und implikative nominalerweiterungen im deutschen, *Zeitschrift für Sprachwissenschaft* 8(2), 173–205
- Fintel, K. v. and Iatridou, S.: 2008, How to say *Ought* in foreign: the composition of weak necessity modals, in J. Guron and J. Lecarme (eds.), *Time and Modality*, pp 115–141, Cambridge
- Geurts, B. and Huitink, K.: 2006, Modal concord, in P. Dekker and H. Zeijlstra (eds.), *Proceedings of the ESSLI Workshop Concord Phenomena at the Syntax-Semantics Interface*, pp 15–20, Málaga
- Katz, G.: 2001, (a)temporal complements, in C. Fery and W. Sternefeld (eds.), *Audiator Vox Sapientiae*, pp 240–258, Berlin
- Kratzer, A.: 1998, More structural analogies between pronouns and tenses, in D. Strolovitch and A. Lawson (eds.), *Proceedings of SALT VIII*, Ithaca
- Ogihara, T.: 1989, *Temporal reference in English and Japanese*, Univ. of Texas at Austin
- Sag, I. & Pollard, C.: 1991, An integrated theory of complement control, *Language* 67.1, 63–113
- Schlenker, P.: 2006, Ontological symmetry in language: A brief manifest, *Mind & Language* 21.4, 504–539
- Speas, M.: 2004, Evidentiality, logophoricity and the syntactic representation of pragmatic features, *Lingua* 114, 255–276
- Stechow, A. v.: 2001, Feature deletion under semantic binding. tense, person and mood under verbal quantifiers, in M. Kadowaki and S. Kawahara (eds.), *NELS* 33, pp 397–403, Amherst
- Stone, M.: 1997, *The Anaphoric Parallel between Modality and Tense. IRCS Report 97-06*, University of Pennsylvania