

On the semantic motivation of syntactic verb movement to C in German*

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Introduction

Like Bierwisch 1980, Altmann 1987, Grewendorf and Zaefferer 1991, Wechsler 1991, Brandt, Reis, Rosengren and Zimmermann 1992, Lohnstein 2000, Gunlogson 2001, Zaefferer 2001 and much related work, the present paper contributes to sorting out the relation of syntactic properties of clauses (syntactic sentence types) to the ways in which the clauses can be used (illocutionary force, speech acts). The focus of this paper is on the role of movement of the finite verb to C (*V-to-C*).

A range of earlier syntactic hypotheses for the trigger of V-to-C have been argued to be untenable in Weerman 1989. More recently, the perspective has been proposed that V-to-C is connected to the illocutionary force of a clause (Wechsler 1991, Lohnstein 2000: 145ff, Gärtner 2002: 40f, Bayer 2004: 78ff, Brandner 2004: 107ff, Lohnstein and Bredel 2004). It has also been commented that predicates that embed V-to-C in an object clause show some resemblance to assertions (Oppenrieder 1991: 234f, Fabricius-Hansen 1992: 473, Reis 1997: 122, Römberg 1999: 6ff). This also points in the direction of a connection of V-to-C to illocutionary force.

This paper develops a specific suggestion about these connections. Section 1 provides background to the account of unembedded V-to-C in the

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context of illocutionary force. Section 2 presents the account of unembedded V-to-C. Section 3 introduces background to the account of embedded V-to-C. Section 4 develops the account of embedded V-to-C. The relation between unembedded and embedded V-to-C is reviewed in section 5.

1. Background to unembedded V-to-C

1.1. *Propositions and* [\pm WH]

Starting points of the discussion are the semantic notion of a *proposition* and the semantic distinction between [$-$ WH] and [$+$ WH] clauses. Standard propositions as in (1a) characterize the content of both embedded *that*-clauses as in (1b) and declarative root clauses as in (1c). I take this to be the meaning of clauses (CPs) syntactically marked [$-$ WH]. On the other hand, more complex semantic constructs like (2a) represent the meaning of embedded interrogatives as in (2b) and root interrogatives as in (2c). I here adopt a version of the suggestions of Groenendijk and Stokhof 1982 in which this proposition is the true answer to the question.¹ I take this to be the meaning of clauses syntactically marked [$+$ WH].

- (1) a. λw (it is raining in w)
 b. John said [$-$ WH] *that it is raining*
 c. [$-$ WH] *It is raining*
- (2) a. λw (it is raining in $w =$ it is raining in @) (@: actual world)
 b. John asked [$+$ WH] *whether it is raining*
 c. [$+$ WH] *Is it raining*

1.2. *Hard restrictions in connection with sentence types and their use*

Beyond that, the relation between sentence types and illocutionary force may seem flexible, as though falling in the domain of general pragmatic

¹ See Hamblin 1973, Karttunen 1977, Hintikka 1974 for earlier suggestions and Bäuerle and Zimmermann 1991, Groenendijk and Stokhof 1997 for discussion.

inferences. Declaratives ([–WH] V-to-C root clauses in German), for example, though typically used as statements (*It is raining.*) can also be used as questions (*It is raining?*) and orders (*You will go home now!*). However, there are also hard restrictions to be observed in this domain.

My first example of a hard restriction is an obvious one: imperatives can be interpreted deontically (as orders, requests, wishes, invitations etc.; see Davies 1986, Donhauser 1986, Hamblin 1987, Rosengren 1992b) as in *Go home!*, but they can never be interpreted as assertions, committing the speaker to the truth of a proposition, or asking the addressee to accept that truth. Thus, by saying *Have eaten at 12.30!* I cannot convey to you that you have finished eating at 12.30 (rather than, as you mistakenly believe, at 12.45). Here the imperative morphology has a clear effect on the possibilities and limits of use.

My second example of a hard restriction concerns declarative questions (declaratives used as questions with question intonation). Gunlogson 2001 shows convincingly that these obey a systematic restriction not shared by [+WH] yes/no-questions: A declarative question [p?] requires that (there is an inference in the common ground that) *the addressee A believes p*. This restriction is satisfied in (3), but not in (4).

(3) [A: The king of France is bald.] (*makes clear: A believes that F. is a monarchy*)

S: France is a monarchy? (*requires: (...) that A believes that F. is a m.*)

(4) [In a guessing game.]

It's bigger than a breadbox? (*requires: (...) that A believes that it is bigger than a breadbox.*)

cf: Is it bigger than a breadbox? (*no such requirement*)

The restriction Gunlogson discovered and explored in detail is far from trivial. Why can't a declarative with question intonation convey that the speaker is wondering whether the proposition is true, and thus be felicitous in (4)? Where does the strong restriction come from that the addressee must be assumed to have a particular belief about this?

Thus, first impressions are deceiving: The variation we observe in the connection between syntactic sentence types and their possibilities of use, while showing some flexibility, is not arbitrary or unrestricted. Narrow restrictions on this relation exist, which cannot plausibly stem from

general pragmatic mechanisms. I am here interested in a theory that models where these restrictions come from.

1.3. *Introduction to the relevant German sentence types*

My suggestion about V-to-C is embedded in a theory that accounts for the illocutionary potential of different sentence types and represents restrictions like the ones just discussed; more precisely, the suggestion about V-to-C is a centerpiece of that theory.

The material for the theory of V-to-C in unembedded position are the German sentence types that allow unembedded use. Some of these sentence types are V-in-C, others are V-final. The aim of the theory is to assign all of them their correct illocutionary potential. The contrast between the illocutionary potential of V-in-C sentence types and that of V-final sentence types allows me to substantiate the elements of the theory that concern to V-to-C.

The relevant sentence types are introduced in this section (see Reis 2003 on wh-infinitives; see Brandt et al. 1992 on the other German sentence types).

Standard German root clauses have the finite verb in C, as in (5), (6), and (7). Their names used here and their classification in terms of [\pm WH] and verbal mood is shown on the right. Indicative stands for a class of finite verbal moods discussed later on.

- | | | |
|-----|--|--|
| (5) | Strengt Peter sich an?
'Is Peter making an effort?' | <i>V-in-C Interrogative</i>
[+WH, indicative] |
| (6) | Peter strengt sich an.
'Peter is making an effort.' | <i>Declarative (V-in-C)</i>
[−WH, indicative] |
| (7) | Steh bitte auf!
'Please get up!' | <i>Imperative (V-in-C)</i>
[−WH, imperative] |

The standard V-in-C sentence types seem to share the conditions of use of English declaratives, root interrogatives, and imperatives.

The German V-final sentence types (without correlates in English, I believe) have the syntactic form of embedded clauses, but allow unembedded use. By way of preparation, note first that both English and

German allow embedded sentences in elliptical contexts (8), in parallel to other constituents in contexts that license deletion under recoverability (*Who did John see? ~~John saw~~ Peter*).

- (8) Was hat Peter gesagt? ~~Peter hat gesagt~~ dass Maria noch nicht
angekommen ist
What did Peter say? ~~Peter said~~ that Mary hasn't arrived yet

However, the German V-final sentence types freely occur in contexts that would not allow for an analysis in terms of deletion of a higher clause under recoverability. This is illustrated in (9)–(12).² The names of the sentence types are given on the right, along with [+WH] and verbal mood.

- (9) [X: Peter hasn't written in a long time. *V-final interrogative*
Y: That's true.]
X: **Ob** es ihm gut **geht**? [+WH, indicative]
whether it him well goes
'I wonder whether he is doing well.'
- (10) [X: We arrived and we were lost.] *wh-infinitive*
X: **Wo** etwas zu Essen **aufreiben**? [+WH, infinitive]
where something to eat find.INF
'Where were we supposed to get something to eat?'
Wo eine Bleibe **finden**?
where a place-to-stay find.INF
'Where were we supposed to find a place to stay?'
- (11) [Peter, do you have everything? OK, bye, then, *root*
and ...] *dass-clause*
dass du nicht wieder dein ganzes Geld **aus gibst!** [–WH,
that you not again your entire money spend indicative]
'Don't spend all your money again!'
- (12) [Announcement. X: The train from Munich is *root*
arriving on track 3.] *infinitive*
X: **Bitte** von der Bahnsteigkante **zurücktreten**. [–WH,
Please from the edge.of.the.track step.back.INF infinitive]
'Please step back from the edge of the track!'

² For further arguments against a deletion analysis of V-final sentence types, see Doherty 1979, Weuster 1983, Meibauer 1989, Oppenrieder 1989, and Brandt et al. 1992.

Some of these constitute minimal pairs with the V-in-C sentence types. For example, a declarative (6) and a root *dass*-clause (11) are both [-WH] and can both be marked with indicative. Their difference is in the position of the finite verb. With the finite verb in C, the declarative can be used to make assertions and declarative questions. The root *dass*-clause (11) has neither of these two interpretations, though it has other uses, discussed below.

Such discrepancies are important in two ways. For one thing, they strengthen the argument made in the preceding section. (6) and its *dass*-clause counterpart are represented by the exact same proposition λw (*Peter is making an effort in w*); see (1). If pragmatic inferences on propositions determined speech acts, then declarative and root *dass*-clause should allow for identical uses. Yet we see very different possibilities of use, depending on whether the finite verb is in C or not. So, again, there seems to be a system that assigns illocutionary force beyond the propositions in (1), (2). The second way in which these discrepancies are important is that they show that V-to-C has an effect on the illocutionary force assigned in that system.³

1.4. *Philosophical and semantic background to the account*

My account builds on the notion of context of Stalnaker 1978, which has also been influential in much related work, see for example Heim 1982, 1992, Roberts 1989, Bartels 1997, and Gunlogson 2001. Contexts are relevant where linguistic expressions depend on them, and the core instance of this are presuppositions: they must be satisfied in the context. According to Stalnaker, a context of an utterance by a speaker S to an addressee A may be thought of as the common knowledge, or common ground, of S and A. This is knowledge or belief of which they believe of each other that they have it, and believe of each other that they believe this etc. This

³ There are also other minimal pairs of V-in-C vs. V-final sentence types, not discussed here for reasons of space. These are the clauses specifying reason, with *denn*, 'since' introducing V-to-C clauses, and *weil*, 'because' normally introducing V-final clauses; see Pasch 1982, Rosengren 1987. Further, while standard relative clauses are V-final in German, there is also a V-in-C relative clause, investigated by Gärtner 2000, 2002. Finally, *wenn*-*if*-clauses in conditionals can alternate with V-in-C clauses; see Brandt et al. 1992: 17.

will often include knowledge of previous conversations between S and A, knowledge they share with a larger community (who is the president of their country, . . .), knowledge obvious to them in the circumstances (that they are sitting on a porch in the sun, . . .), as well as knowledge from the immediately preceding conversation, the more narrowly linguistic context. S and A each have their separate beliefs as well, of course. Their assumptions about the common ground, the shared knowledge, may be right and wrong. If they are wrong, that may be discovered or not, may be discussed, or silently fixed by the person with the wrong assumptions.

Stalnaker formalizes the common ground as a set of possible worlds, the *context set* (here: $CS_{S,A}$). These are the possibilities compatible with the shared beliefs of speaker and addressee. A proposition p is possible from the point of view of this $CS_{S,A}$ if it is true in at least one world of $CS_{S,A}$: it is not then excluded in $CS_{S,A}$. A proposition p is true in $CS_{S,A}$ if it is true in all worlds of $CS_{S,A}$. The negation of p is then excluded by $CS_{S,A}$.

An assertion, according to Stalnaker 1978, will normally have the effect that the asserted proposition is added to the common ground, unless the addressee objects. If I say to you '*I have a sister*', this will, in the simplest case, become common knowledge between you and me after having been said. It will thus become part of the context in which later utterances are evaluated. Formally, adding a proposition p to the context means intersecting $CS_{S,A}$ with p , i.e. taking out all possible worlds from $CS_{S,A}$ that are not compatible with p .

Presuppositions, then, must be satisfied in the common ground. In our example, if I continue with the utterance '*She lives in Augsburg*', then the use of the pronoun leads to the presupposition of the existence of a unique female individual in the context. This presupposition is satisfied by the previous introduction of my sister. The pronoun then takes on the reference of that individual in the context, to my sister, and the proposition that my sister lives in Augsburg may also be added to the common ground.

2. Account of unembedded V-to-C

2.1. The V-in-C sentence types and context indices

As a starting point, I adopt the suggestion of Zaefferer 2001 that all sentential speech acts (with the exception of some pure exclamations) are

volitional on the part of the speaker ('deontic' in the following): S wants something, wishes for something, invites A to do something etc. I paraphrase this '*S wants (from A) ...*'. In an imperative, as in (13), S wants A to do something in the real world. In declaratives and interrogatives, as in (14) and (15), S wants to change the world by changing the epistemic states of S or A: by conveying knowledge to A in an assertion, or by wanting to know something from A in a question; these are the epistemic speech acts, a natural class in the proposals of Brandt et al. 1992, Lohnstein 2000 and Zaefferer 2001.⁴

Also as a starting point, I assume that the interpretation that is inherent to declaratives and interrogatives always has the common ground as the epistemic desideratum, as shown in (14) and (15) (see Truckenbrodt 2004a, b). In declaratives, falling intonation (see below) adds to this that *S believes p*, so that the call for common ground in (14) amounts to a call for A to accept *p*. If A accepts *p*, common ground is established, as in the suggestion of Stalnaker. Interrogatives like (15) involve the same call for common ground. Here the embedded proposition is different due to its being [+WH]: the call is for common ground *in regard to the true answer to the question*. Since S does not supply the true answer with such an interrogative, the call for common ground can normally only be followed by A by supplying the information in question.⁵

- (13) Imperative (Imperative morphology in C)

Öffne das Fenster! 'Open the window!'
'S wants from A that A open the window.'

- (14) Declarative ([−WH] and indicative/Konjunktiv II morphology in C)

Der Peter hat das gemacht. 'Peter has done this.'
'S wants from A that it is common ground that Peter has done this.'

⁴ For interrogatives, a deontic-epistemic interpretation of the question speech act was first proposed by Åqvist 1965 and Hintikka 1975, and is also a part of the suggestions of Zaefferer 2001.

⁵ I argue in Truckenbrodt 2004a that rhetorical questions, pedagogical questions, monological questions and exam questions support the interpretation as a call for common ground, and represent other ways in which A is expected to follow this call.

- (15) Interrogative ([+WH] and indicative/Konjunktiv II morphology in C)

Hat der Peter das gemacht? 'Has Peter done this?'

'S wants from A that it is common ground whether Peter has done this.'

A central claim here is then that grammatical elements in C ([+WH] and features of the finite verb in C) interact with the kind of interpretation paraphrased here as 'S wants (from A) (that it is common ground) p'. I formalize this interaction in terms of a mediating syntactic annotation on C that I call a *context index*. Possible context indices for unembedded use are defined in (16).

- (16) Context indices on C in unembedded use have the form

$\langle \text{Deont}_S(x)_1, \langle \text{Epist} \rangle_2 \rangle$.

A paraphrase is 'S wants (from x)₁ (that it is common ground)₂ that/whether ...'.

Context indices determine the interpretation of the propositions in (1) and (2) in the context of S and A. Two important open parameters are (*from x*) and (*that it is common ground*). (17) shows how I claim that the grammatical elements in C affect these open parameters, and thus the resulting interpretation:

- (17) In a context index $\langle \text{Deont}_S(x), \langle \text{Epist} \rangle \rangle$ in C

- a. **Epist** is present iff (i)⁶ C contains a finite verb with indicative or Konjunktiv II or (ii) C/CP is marked [+WH].
- b. **x = A**(ddressee) iff C contains a finite verb with person inflection.

I argue that (17a) and (17b) trigger V-to-C. (17) also carries a lot of the work of assigning illocutionary force to different sentence types. The defense of (17) is thus central to this paper. In the next section 2.2, I further discuss (17a) for unembedded V-to-C. In section 2.3, I further discuss (17b), also for unembedded V-to-C. In section 4, I defend the application of (17a) to embedded V-to-C.

⁶ Following Lohnstein 2000; see below.

For now, consider the context indices in (18) for the V-in-C sentence types in (13)–(15). The context indices for declarative and interrogative are identical.

- (18) Imperative: $\langle \text{Deont}_S, A \rangle$ ‘*S wants from A ...*’
 Declarative: $\langle \text{Deont}_S, A, \langle \text{Epist} \rangle \rangle$ ‘*S wants from A that it is
 common ground ...*’
 Interrogative: $\langle \text{Deont}_S, A, \langle \text{Epist} \rangle \rangle$ ‘*S wants from A that it is
 common ground ...*’

These come about by (17) as follows: The imperative does not have $\langle \text{Epist} \rangle$ by (17a), since it is not [+WH] and does not have indicative or Konjunktiv II morphology in C. By (17b), the imperative contains ‘(from) A’; thus, the context index is $\langle \text{Deont}_S, A \rangle$. Declarative and V-in-C interrogative also contain ‘(from) A’ by (17b). In addition, they have $\langle \text{Epist} \rangle$ in the context index by (17a), due to the presence of indicative or Konjunktiv II morphology in C. (The interrogative would also have $\langle \text{Epist} \rangle$ on account of being [+WH]). Thus, the V-in-C declarative and interrogative context indices are $\langle \text{Deont}_S, A, \langle \text{Epist} \rangle \rangle$.

The effects postulated in (17) are claimed to be effects of local feature checking of grammatical elements in C with features in the context index in C. They are not effects of semantic composition. I suggest that the need to check Epist by (17a) as well as the need to check A by (17b) drives V-to-C in German. For example, in all three sentence types in (18), ‘A’ in the context index $\langle \text{Deont}, A (\dots) \rangle$ in C requires feature checking. This drives movement of the finite verb to C. The person features on the finite verb, $[\pm[S], \pm[A]]$, carry the information [A] in them, and can check the specification of A.

Lohnstein 2000: 145ff suggests that the unembedded CP (for him a projection of sentence mood) connects the clause to the context in which it is uttered. The following conception of the semantic nature of context indices in C is in the same spirit. Take a CP_{CI} with the propositional meaning *p* and a context index CI. I maintain that the context index induces a presupposition that looks for an environment in which *p* is then interpreted. This will be seen to work well for V-in-C object clauses in section 4. It also gives the right results for root clauses, where the ‘environment’ in which the proposition is interpreted amounts to the illocutionary force of the proposition, along the lines of the paraphrases in (18).

I implement this conception employing the notion of a *sequence*. A sequence $[\alpha, \beta]$ consists of a context α and a constituent β that is interpreted relative to the context α (sometimes notated as $\alpha + \beta$ by others). (19) is a first implementation of the conception of context indices for unembedded use. The initial distinction between (i) and (ii) defines p' , the proposition that is to be deontically interpreted, as either p (for a non-epistemic context index) or as common ground in regard to p (for an epistemic context index). By (19a), then, the context index induces a presupposition that looks in the common ground for a deontic relation D . If such a relation is found, (19b) adds to the common ground that this relation D holds between speaker S , (optionally '*from*' x) and p' . (In (19) and its revisions later on I omit the satisfaction of other presuppositions of CP.)

(19) In $\xi = [CS_{S,A}^@, CP_{\langle Deont_S(x), \langle Epist \rangle \rangle}]$, let p be the meaning of CP, and let (i) $p' = p$, if the context index is $\langle Deont_S(x) \rangle$, and (ii) $p' = \lambda w (CS_{S,A}^w \subseteq p)$, if the context index is $\langle Deont_S(x), \langle Epist \rangle \rangle$. Then

- a. ξ is defined if there is a deontic relation D in $CS_{S,A}$
- b. if defined, the context change due to ξ is $CS_{S,A-NEW}^@ = CS_{S,A-OLD}^@ \cap \lambda w D^w(S, (x), p')$.

For example, the imperative CP in (20a) has the proposition *that A digs a hole here* and the context index $\langle Deont_S, A \rangle$. (19a) looks for an appropriate deontic relation in the context, and finds a relation like ordering in the context (due to the sergeant-soldier scenario and the absence of other information). (19b) then interprets the proposition in this environment by adding to the common ground *that S orders A to dig a hole here*, the desired result. In (20b), (19a) finds a different deontic relation in the context, perhaps inviting, due to the scenario given. (19b) then embeds the proposition p in this environment by adding to the common ground *that S invites A to have another piece of cake*.

- (20) a. [Sergeant to soldier:]
Dig a hole here!
- b. [Friends at the coffee table:]
Have another piece of cake!

The examples also give some motivation for such a mechanism. In the context in (20a), the imperative sentence is an order and cannot be an invitation. In the context in (20b), the imperative sentence is an invitation

and cannot be an order. The imperative, though flexible in its meaning (Davies 1986, Hamblin 1987, Rosengren 1992b), is not simply ambiguous within its range. Rather, it seems to find the contextually most salient deontic illocutionary force and to make that illocutionary force its own. This is here captured in the interpretation of context indices as looking for an environment in which *p* is then interpreted.

2.2. *Epistemic and deontic speech acts*

This section discusses the motivation for (17a). (17a.i) is due to the discussion of V-in-C clauses in Lohnstein 2000. For these, Lohnstein observes that indicative and Konjunktiv II allow epistemic interpretation as assertion and question, while imperative and Konjunktiv I do not.⁷ (17a), adapted from Truckenbrodt 2004a, adds a postulated role for [+WH] that plays out in V-final root clauses. In these, we get epistemic readings so long as the clauses are [+WH], as in the V-final interrogative in (21a) and in the wh-infinitive in (21b); in other V-final root clauses, we get deontic readings, as in the root *dass*-clauses in (22a) and in the root infinitives in (22b). I here ignore exclamative readings, to which I return.

- (21) a. [+WH], no verbal mood in C
Ob der Peter das gemacht hat?
whether DET *Peter* *that* *done* *has*
 ‘I wonder whether Peter has done that.’
 <Deonts, <Epist>> ‘S wants it to be common ground whether Peter has done this.’
- b. [+WH], no verbal mood in C
Wo eine Bleibe finden?
where *a* *place.to.stay* *find*
 ‘Where were we supposed to find a place to stay?’
 <Deonts, <Epist>> ‘S wants it to be common ground where to find a place to stay.’

⁷ Lohnstein’s observation that Konjunktiv I is incompatible with [+WH] in V-in-C unembedded use does not follow from (17a). An independent explanation has to be added to the present account.

- (22) a. [-WH], no verbal mood in C
- (i) Dass du (ja) das Fenster öffnest!
that you (PRT) the window open
 ‘(Don’t forget to) open the window!’ (directive)
 ⟨Deont_S, (X)⟩ ‘S wants (from X(≈you)) that you open
 the window.’
 - (ii) Dass ich noch einmal Venedig sehen könnte!
that I still once Venice see could
 ‘I would like to see Venice once more.’ (desiderative)
 ⟨Deont_S⟩ ‘S wants to see Venice once more.’
- b. [-WH], no verbal mood in C
- (i) Das Fenster öffnen!
the window open.INF
 ‘Open the window!’ (directive)
 ⟨Deont_S, X⟩ ‘S wants from X(≈you) that you open
 the window.’
 - (ii) Noch einmal Venedig sehen!
Still once Venice see.INF
 ‘I would like to see Venice once more.’ (desiderative)
 ⟨Deont_S⟩ ‘S wants to see Venice once again.’

These cases show that [+WH] plays an important role in allowing ⟨Epist⟩ in C, as formulated in (17a.ii). Notice that [+WH] is in C/CP, so that the licensing, or checking relation between [+WH] and ⟨Epist⟩ is local. (I make the standard assumption that C and CP share all features, so that it does not matter whether we attach a feature to C or to CP.)

The crucial interaction of ⟨Epist⟩ with V-to-C in (17a.i) can then be assessed in the sentence types in which [+WH] does not independently allow ⟨Epist⟩. The strongest argument for this interaction of ⟨Epist⟩ with V-to-C comes from the minimal pair of the declarative sentence type on the one hand and the root *dass*-clauses on the other. Both are [-WH] and denote a proposition as in (1). Both can have indicative morphology. However, it is only when the indicative morphology is in C, as in a (V-in-C) declarative that it checks ⟨Epist⟩ and thus leads to readings of the proposition as assertion (and declarative question). The minimal difference in the root *dass*-clause is that the indicative morphology is

here not in C. The consequence is dramatic: the root *dass*-clause has the deontic readings in (22a) (as well as an exclamative reading to which I return), but no epistemic reading whatsoever. For one thing, it cannot be an assertion (Meibauer 1989). For example, *Dass es regnet*, ‘that it is raining’, cannot be used to assert that it is raining. For another, the root *dass*-clause has no epistemic reading as a declarative question. Thus, the judgments in (3) and (4) carry over to German V-in-C declaratives; however, a corresponding root *dass*-clause *Dass Frankreich eine Monarchie ist?* is not felicitous in the context in (3).

This distinction between declaratives and root *dass*-clauses is evidence for the interaction of V-in-C with $\langle \text{Epist} \rangle$ postulated in (17a). (17a) correctly predicts that root *dass*-clauses, quite different from declaratives, are reduced in their illocutionary potential to purely deontic (or purely exclamative) readings, like other sentence types with no indicative/Konj.II in C: the imperative in (13) and the root infinitive in (22b).

2.3. *Wanting from X*

The account makes a crucial distinction between $\langle \text{Deont}_S (\langle \text{Epist} \rangle) \rangle$ ‘*S wants ...*’ and $\langle \text{Deont}_S, x (\langle \text{Epist} \rangle) \rangle$, ‘*S wants from x ...*’. The semantic consequence of the presence of *x* is handled informally here; other semantic contributions are likely to be connected to it, but its most palpable effect seems to be the one in (23).

- (23) $\langle \text{Deont}_S, x (\langle \text{Epist} \rangle) \rangle$ presupposes that *x* controls whether *p'* is true (where *p'* is the desideratum of the deontic interpretation).

By (17b), V-in-C correlates with the presence of *A* in this position, i.e. with the context index $\langle \text{Deont}_S, A (\langle \text{Epist} \rangle) \rangle$, ‘*S wants from A ...*’. In this section, I discuss the motivation for (17b). I first show the effect of (23) in V-in-C sentence types, where this position is present and identified with *A*, according to (17b). I then turn to V-final sentence types to demonstrate the absence of this interpretation or of *A* in this position, as predicted by (17b).

2.3.1. *Imperatives.* The context index of imperatives⁸ is $\langle \text{Deont}_s, \mathbf{A} \rangle$, ‘*S* wants **from A** that *p*’ (see (13), (18)). By (23), ‘*from A*’ induces a presupposition to the effect that *A* controls whether *p* occurs. The imperative in (13) has this component and thus an interpretation paraphrased ‘*S* wants from A that *A* opens the window’. In this case, the presupposition of ‘*from A*’ is that *A* controls whether *A* opens the window.

The evidence for this presupposition in imperatives comes from contrasts such as ‘*Be careful!*’ vs. #‘*Be tall!*’; ‘*Be cooperative!*’ vs. #‘*Be randomly attacked!*’ The contrasts correctly follow from such a presupposition, since it cannot be taken for granted that *A* controls whether *A* is tall and that *A* controls whether *A* is randomly attacked (while *A* controls whether *A* is careful and whether *A* is cooperative). When sufficient context is added, the judgment may change, as expected on the presuppositional analysis. For example, assume that an actor is supposed to play being randomly attacked, but doesn’t want to play that scene. His director may tell him not to be so touchy: *Come on, go on the set! Be randomly attacked!* Here *A* controls whether *A* is randomly attacked, by way of *A*’s decision to play the scene (see also Schmerling 1982, Han 1998).

2.3.2. *Declaratives.* For declaratives⁹ like (24), the intonation disambiguates between a reading as an assertion (intonation [V]) and as a declarative question (intonation [/?]). Both use the same context index by (17) and both are briefly accounted for here. Gunlogson’s observation in connection with declarative questions constitutes the crucial evidence for the presupposition of ‘*from A*’.

- (24) Es regnet $\langle \text{Deont}_s, \mathbf{A}, \langle \text{Epist} \rangle \rangle$
 ‘*It is raining*’ ‘*S* wants from A that it is common ground that it is raining’

⁸ See Donhauser 1986, Rosengren 1992b, Wratil 2000 on the imperative in German, Hamblin 1987, Potsdam 1998 on English imperatives; see Platzack and Rosengren 1994, Han 1998 for cross-linguistic discussion.

⁹ See Brandt et al. 1992, Rehbock 1992 on German declaratives; see Ross 1970, Gunlogson 2001 for an early and a recent proposal on an inherent illocutionary interpretation of declaratives as adopted here; see Searle 1975, Stalnaker 1978, Zaefferer 2001 on assertions.

I assume an interpretation of the intonation [\\] as committing S to p and the intonation [/] as the negation or absence of this with an implication that S does not believe p (Bartels 1997, Truckenbrodt 2004b). The presupposition of 'from A' in (24) due to (23) is given in (25).

(25) A controls whether p (that it is raining) becomes common ground.

Consider then first the use of an assertion. With the contribution of [\\] that S believes p, the call for common ground in (24) can be followed by A if A accepts p. In this case the presupposition (25) is satisfied since A is in control of whether A accepts p or not.

Second, the analysis of declarative questions: In the absence of committing intonation, the question intonation [/] implicates that S does not believe p. Here A cannot follow the call for common ground in (24) by accepting p – if A did, p would still not be common ground, since S does not believe p. This leaves only one other way for A to create the desired common ground: If A believes p, then A can create common ground in regard to p by convincing S of p. On this understanding, then, the presupposition in (25) must be satisfied: it must already be given that A controls whether p becomes common ground. However, this is given only if it is at least given that A believes p. Otherwise, A has no way of making p common ground by convincing S. This amounts to the strong requirement of declarative questions discovered by Gunlogson 2001: that (there is an inference in the common ground that) *A believes p*. (I argue in Truckenbrodt 2004b that the aspect of Gunlogson's observation that A's believing p must be an *inference that holds in the common ground* goes back to a general property of presuppositions.) Put differently, Gunlogson's observation provides strong evidence for the presupposition of 'from A' in declaratives. See Truckenbrodt 2004b for more detailed discussion.

This account differs formally from Gunlogson's but develops a suggestion of Gunlogson that I consider very important: that declaratives are not just propositions pragmatically interpreted, but have a narrowly defined illocutionary impact, and that this impact involves either transfer of knowledge from S to A or from A to S.

2.3.3. *V-in-C Interrogatives.* For the V-in-C interrogative¹⁰ in (26), the embedded [+WH]-proposition denotes the true answer to whether it is raining (see (2)). The presupposition due to ‘*from A*’ by (23) is spelled out in (27).

(26) Regnet es? <Deonts, A, <Epist>>
 ‘Is it raining?’ ‘*S wants from A that it is common ground whether it is raining*’

(27) A controls whether p (the true answer to whether it is raining) becomes common ground.

I here consider the typical use of the interrogative as a question (it is assumed that S does not know the true answer). Much as in declarative questions, then, the normal way for A to create the desired common ground is by answering the question, i.e. by making a statement that creates this common ground.

The presupposition (27) is similar to the one in (25): If it must be given that A controls whether p becomes common ground by answering, then it must be given that A believes (or knows) p. In the case at hand, however, p is not a state of affairs as in (25), but (being [+WH]), the truth in an as yet open issue, i.e. the true answer to the question. Thus, by (27), it is presupposed that A knows whether it is raining. More generally, V-in-C interrogatives are here predicted to presuppose that A knows the true answer to the question.

This is not easy to test in many cases: If I ask you something that you may or may not know, using a V-in-C interrogative, this presupposition can normally be accommodated, and if in fact you don’t know the answer, you can say so and thus contradict my presupposition. To test it properly, we need to turn to cases in which accommodation is impossible. These are contexts like (28) where it is clear to both participants that A does not know the answer. Here the presupposition is not satisfied and cannot be accommodated. In such contexts, a V-in-C interrogative is in fact not felicitous, as shown in (28).

¹⁰ See Zaefferer 1984, Reis 1991 on German V-in-C interrogatives; see Åqvist 1965, Hintikka 1975, Zaefferer 2001 for a deontic-epistemic interpretation adopted here with minor modifications; see Lyons 1977, Brandt et al. 1992 for criticism of that, and Truckenbrodt 2004a for a defense of a modified version against the criticism.

- (28) Stefan: Ich hab seit Jahren nichts mehr von Peter gehört.
'I haven't heard from Peter in years.'
 Heiner: Ich auch nicht.
'Me neither.'
 Stefan: # Mag er immer noch kubanische Zigarren?
'Does he still like Cuban cigars?'

This is evidence for (27), and thus ultimately for (23). Heiner, in (28), does not control whether it becomes common ground whether Peter still likes Cuban cigars. The example is from Truckenbrodt 2004a, where I defend the presupposition (27) at greater length against the contention of Lyons 1977 that root interrogatives have a more flexible interpretation.

I submit, then, that there is good evidence for the presupposition of '*from A*' in (23) in the three V-in-C sentence types imperative, declarative, and interrogative. (17b) predicts the presence of this element for V-in-C clauses, but its absence in V-final root clauses. I now turn to the latter to demonstrate this absence.

2.3.4. *V-final interrogatives.* The sentence type of V-in-C interrogatives constitutes a minimal pair with German V-final interrogatives in unembedded use¹¹, introduced in (9). In contexts of mutual ignorance like (28), where V-in-C interrogatives are not possible, V-final interrogatives are unproblematic:

- (29) Stefan: Ich hab seit Jahren nichts mehr von Peter gehört.
'I haven't heard from Peter in years.'
 Heiner: Ich auch nicht.
'Me neither.'
 Stefan: √ Ob er immer noch kubanische Zigarren mag?
whether he always still Cuban cigars likes
'I wonder whether he still likes Cuban cigars?'

In the present analysis, the V-final interrogative minimally differs from the V-in-C interrogative (<Deont_S, A, <Epist>>) in the presence of '*from A*':

¹¹ See Winkler 1979, Weuster 1983, Meibauer 1989, Oppenrieder 1989, Thurmair 1989 on this sentence type.

- (30) Ob es regnet? <Deont_S, <Epist>>
whether it rains 'I want it to be common ground whether it is raining.'
 (By the revisions in section 3.5, also possible:
 'I want to know whether it is raining.')

The context index is derived by (17): Due to (17a), the presence of [+WH] in C/CP here allows <Epist>, and thus allows an epistemic question reading. However, by (17b), the absence of the finite verb in C leads to the absence of the element '*from A*' in the context index. It is thus correctly predicted that V-final interrogatives are felicitous in contexts like in (29). This minimally contrasts with (28), where V-to-C in the interrogative requires A in the context index and thus leads to the presupposition that prohibits use in this context.

V-final interrogatives are sometimes called *deliberative questions*. Thurmair 1989 observes that a V-in-C question (directed at A) expects an answer from A, while a V-final question (directed at A) does not. This is here captured in that V-final questions express a desire for an answer, but do not direct the force of an imperative, including '*from A*', at the addressee to produce an answer. See Truckenbrodt 2004a for further arguments for this distinction between V-in-C clauses and V-final clauses.

2.3.5. *Root infinitives.* German infinitives in unembedded use ('*root infinitives*') have no epistemic readings. This follows from (17a): they lack a finite verb in C and they lack the specification [+WH] in C. By (17a) they therefore cannot have <Epist> in their context index. Since they lack a finite verb in C, (17b) also does not allow '*from A*' in their context index.

Root infinitives allow for a desiderative reading (Reis 2003), as in (22b.ii), which is plausibly analyzed in terms of the minimal context index <Deont_S>: *S_i wants [PRO_i to do something]*. Here, at the bottom of the illocutionary potential, with no elements in C, we find deontic use.

Interestingly, root infinitives also have a directive reading (Reis 2003), as in (22b.i), likewise deontic in nature, and at first glance comparable to imperatives in impact. Let us begin conservatively and analyze this with the same context index, but without control of PRO: '*S wants [PRO_{≠S} to open the window]*'. In the interpretation of utterances like (22b.i), PRO is here at least interpreted in the general direction of the addressee.

However, can PRO gratuitously refer to A, i.e. be second person? Reis 1995 observes that their subject seems to be morphologically third person, which can be tested by reflexives. Thus, in directive use, '*Sich noch heute versichern!*', lit.: '*To insure oneself still today!*' takes a third person reflexive, while second person reflexives are highly marked in directive use. As Reis notes, this is of course the inverse of imperatives, where a silent subject (which I likewise take to be PRO, following Han 1998) is second person, as in '*Versichere dich/*sich!*' '*Insure yourself/*himself/*herself!*'. While this does not (so far) directly bear on the context index, it allows me to make a point about (17b): The intuition behind (17b) is that reference to A is not gratuitous, i.e. a silent interpretation as captured in the context index cannot freely introduce such reference to A. We now see a similar phenomenon in the directive root infinitive: empty PRO here cannot simply assume the value A, or 2nd person, out of thin air. The parallel thus supports the notion that reference to A is not gratuitous on empty elements.

We can go further, however, and draw some tentative inferences about the context index of directive root infinitives. Directive root infinitives obey the presupposition that was seen for imperatives. Thus, directive *Still sein!*, '*Be.INF quiet*' contrasts with directive *#Groß sein!* '*Be.INF tall!*', the latter not under the control of the subject referent. In the present account, this shows that they have a context index with '*from X*' and the corresponding presupposition (23). I write, for now, $\langle \text{Deonts}, X \rangle$: '*S wants from X_i [PRO_i is quiet]*'.¹² Now we can make inferences about the context index. If X, in this context index, were A (2nd person), then surely PRO would be 2nd person as well, in parallel to '*You_i want [PRO_i to insure yourself]*'. Thus, since PRO is not 2nd person, it appears that the controller in the context index is not A/2nd person either.

We have evidence, then, for the presence of a position '*from X*' in the interpretation of directive root infinitives, but we also have evidence for a morphological difference of X to A/2nd person. This is interesting, since

¹² We can enforce this representation by following Bhatt and Izvorski 1998, who argue that PRO is always controlled, and that apparently arbitrary PRO is controlled by an implicit argument. In the cases at hand, then, PRO is controlled by the implicit arguments in the context index, which must, in a directive reading, be the '*from X*' argument of a context index.

it points in the direction that the correlation with V-to-C is not a correlation of the interpretative position 'from X' as such, but of the typical value of X, namely A.

2.3.6. *Root dass-clauses.* Root *dass*-clauses are at the bottom of the pile in terms of illocutionary potential, together with the root infinitives: They have neither [+WH] nor a finite verb in C, and so, by (17), are reduced to deontic interpretation in terms of $\langle \text{Deont}_s (\text{,X}) \rangle$. Corresponding directive and desiderative use are shown in (22a).

Root *dass*-clauses have one further use, namely as exclamatives. An example is *Dass die immer nur Turnschuhe anzieht!*, lit.: 'That she.DEM is always just wearing sneakers!' (Rosengren 1992a). I briefly comment this use here. I take exclamation to be an aspect of illocutionary interpretation that is outside of the deontic(epistemic) system of interpretations. I suggest to view exclamation as an aspect that may be added over and above the interpretations generated by the deontic-epistemic system. This would explain why sentence types of all kinds ([+WH] like [-WH], V-in-C like V-final) can be used exclamationally, as shown by Rosengren 1992a. Exclamative root *dass*-clauses, then, are most plausibly seen as the extreme case of utterances with no context index at all: Lacking any other illocutionary interpretation, they must revert to this 'extra-systemic' aspect of interpretation so as to have any point of being uttered at all. This follows in part the analysis in Zaefferer 2001: 211, 223 of expressives such as 'What a mess!' as lacking, in present terms, deontic or deontic-epistemic interpretation.

2.4. *Summary: Unembedded V-to-C*

I suggest that CPs may carry context indices in C that look for an environment in which the proposition p is embedded. V-to-C in this account is triggered by the presence of A or $\langle \text{Epist} \rangle$ in the context index. The consequence of the presence of A is a presupposition to the effect that A is in control of p', where p' is either p or the epistemic embedding of p. The account made crucial use of the results of Gunlogson 2001 on declarative questions. The consequence of the presence of $\langle \text{Epist} \rangle$ is an epistemic

reading: assertion or question. Here the account made crucial use of the results of Lohnstein 2000. Both A and <Epist> interact with V-to-C: Sentence types with V-to-C show evidence for the presence of A, while V-final sentence types show evidence for the absence of A in the context index. [+WH] sentence-types apart – sentence types with indicative or Konjunktiv II in C show epistemic readings, while no epistemic reading is possible for sentence-types with this morphology in V-final position or for sentence types with different morphology in C. This interaction and its semantic consequences are the motivation for postulating that the elements A and <Epist> in the context index trigger V-to-C in root clauses.

3. Background to embedded V-to-C

3.1. *Introduction*

V-in-C clauses occur in object position, with semantic restrictions not shared by object *dass*-clauses (Helbig and Kempter 1974, Butulusi 1991, Oppenrieder 1991, Reis 1997, Eisenberg 1999: 309, Romberg 1999, Meiningner 2004). For example, possibility and belief allow *dass*-clause complements, as in (31). Possibility does not allow a corresponding object V-in-C clause, while belief does, as shown in (32).

(31) Es ist möglich/Maria glaubt, dass Peter nach Hause geht.
 ‘*It is possible/Maria believes that Peter is going home.*’

(32) a. * Es ist möglich, Peter geht nach Hause.
 ‘*It is possible Peter is going home.*’
 b. Maria glaubt, Peter geht nach Hause.
 ‘*Maria believes Peter is going home.*’

In section 4 below, I develop an account of object V-in-C clauses that seeks to explain semantic restrictions like the one illustrated in (32). The current section 3 introduces background to the account.

In the following, I will not present the corresponding V-final clauses like (31). All examples of embedded V-to-C that are discussed have grammatical V-final counterparts. The restrictions that are discussed are all introduced by V-to-C movement.

3.2. *On the unexpected syntax of object V-in-C clauses*

Reis 1997 compares object V-in-C clauses with two kinds of *dass*-clauses: (a) object *dass*-clauses, which are superficially similar and express the same meaning as object V-in-C clauses, and (b) free *dass*-clauses which do not occupy an argument slot of the main verb. Reis argues that, surprisingly, object V-to-C clauses are, in their syntactic behavior, different from (a) and similar to (b). For example, object *dass*-clauses as in (31) can be topicalized as in (33). Free *dass*-clauses as in (34a) cannot be topicalized, as shown in (34b).

(33) [Dass Peter nach Hause geht] glaubt Maria.

'That Peter is going home, Maria believes.'

(34) a. Fritz muss verrückt sein [dass er kommt].

'Fritz must be crazy that he is coming.'

b. * [Dass er kommt] muss Fritz verrückt sein.

Object V-in-C clauses as in (35a) cannot be topicalized either, as shown in (35b), and thus surprisingly pattern with free *dass*-clauses. (This is shown in (35) in a context that puts narrow focus on the matrix subject, so as to exclude a reading of the matrix clause as a parenthetical in (35b). This practice follows Brandt et al. 1992: 11. As they show, such narrow focus does not otherwise prevent topicalization. Thus, (33) is grammatical with narrow focus on the matrix subject.)

(35) [Who believes that Peter is going home?]

a. MARIA glaubt [Peter geht nach Hause].

'MARIA believes, Peter is going home.'

b. * [Peter geht nach Hause] glaubt MARIA.

Reis 1997 also suggests that object V-in-C clauses do not attach to the thematic object slot, to which object *dass*-clauses attach. I will pick up this suggestion below insofar I argue there that embedded V-in-C clauses do have an attachment that is not with the thematic object slot. I will argue, however, that this is a second attachment, in addition to their attachment to the thematic object slot. I here add an argument in support of Reis' position that there are attachment differences. It is highly marked to coordinate an embedded V-in-C clause with an embedded V-final clause, as in the examples in (36).

- (36) a. Peter glaubt, **dass** es morgen regnet oder **dass** es morgen schneit.
 ‘Peter believes that it will rain tomorrow or that it will snow tomorrow.’
- b. Peter glaubt, es regnet morgen oder es schneit morgen.
- c. ?? Peter glaubt, es regnet morgen oder **dass** es morgen schneit.
- d. ?? Peter glaubt, **dass** es morgen regnet oder es schneit morgen.

Coordinated constituents obey restrictions on parallelism of attachment, which are also violated in *‘Peter has cut the lemon and with a knife.’ as well as similar examples in German. If the mechanisms of attachment are different for object *dass*-clauses and object V-in-C clauses, then there is a basis for an explanation of why the two cannot be coordinated in (36).

Reis argues that arguments, including object *dass*-clauses, and typical adjuncts share properties that lead her to call them *integrated*. By contrast, free *dass*-clauses and embedded V-in-C clauses are *relatively unintegrated*. (There is also a third class of dependent clauses that are *absolutely unintegrated*.) I suggest the following way of making this more concrete. Let us distinguish *semantic composition* by lambda conversion from a different kind of semantic connection that we may call *discourse rules*. Then integrated elements are those that participate in semantic composition with no crucial involvement of discourse rules. Free *dass*-clauses and embedded V-in-C clauses, on the other hand, are related to the main clause by discourse rules. For example, the free *dass*-clause in (34a) is related to the main clause by causal connections, which seem to be identical to the causal connections one would construe of the two separate clauses in (37). These causal connections seem to be discourse rules.

- (37) Fritz muss verrückt sein. Er kommt.
 ‘Fritz must be crazy. He is coming.’

In section 4 I provide an account that builds on Reis’ results, and in which the discourse rule of embedding context indices plays a role in the attachment of embedded V-in-C clauses, in addition to their attachment in object position.

In sum, there is plausible syntactic evidence that object V-in-C clauses differ in their syntactic behavior and attachment from object *dass*-clauses, even though the two add up to identical meanings.

3.3. *Context indices as assertional proto-force*

As mentioned in the introduction of this paper, the range of verbs that embed V-to-C shows similarities with assertions. Gärtner 2002: 40f suggests a plausible perspective on this parallel: V-to-C is connected to *assertional proto-force*, which becomes *assertional force (potential)* in unembedded use and can be *absorbed* under appropriate embedding. The process of absorption is to account for the restrictions on embedded V-to-C. This perspective is pursued here. Assertional proto-force here takes the form of a context index with A or <Epist> in C, which will trigger V-to-C in connection with (17). In unembedded use the context index leads to deontic/epistemic illocutionary force, as discussed above. In embedded V-to-C, the context index accounts for the thematic restrictions on embedded V-to-C in connection with a restriction on absorption to be formulated below.

In developing this perspective, I maintain that embedded V-to-C is limited to the context index <Epist>. In other words, <Deont_s (,X) ...> is limited to unembedded use, where it expands the common ground by the speaker's wishes (from A/X) in the utterance context. <Epist>, on the other hand, is fruitfully employed in two ways in the present account: (a) embedded in the deontic interpretation in unembedded use, and (b) on its own in embedded use.

3.4. *Semantics of epistemic embedding*

I employ standard semantic assumptions about belief reports. The meaning of (38a) is represented as in (38b). Here $B^w(j)$ are John's beliefs in w , characterized by the set of possible worlds that are compatible with John's beliefs. These may exclude worlds in which his name is not John, and worlds in which he is not married to Mary (his wife, let us say). If John also believes (in w) that it is raining, then $B^w(j)$ also excludes worlds in which it is not raining. In that case $B^w(j)$ is a subset of all worlds in which it is raining, i.e. a subset of the meaning of 'that it is raining', as in (38b).

- (38) a. John believes that it is raining.
 b. $\lambda w [B^w(j) \subseteq \lambda w' (\text{it is raining in } w')]$

Notice that the extension of the common ground by an assertion and the truth-conditions of belief share certain elements: Both cases concern the inclusion of a proposition in people's beliefs – in the former case the asserted proposition is included in the common ground (shared beliefs of S and A), in the latter case the embedded proposition must be included in the beliefs of the matrix subject referent. Informally speaking, the parallel seems to extend to the satisfaction of presuppositions. Before the assertion is added to the common ground, its presuppositions must be satisfied in the common ground. In *I have a sister. She lives in Augsburg*, for example, the pronoun presupposes the presence of a unique female referent. This is satisfied by the previous introduction of such a referent into the common ground. The situation is similar with the presuppositions of the pronoun in (39b). This presupposition can be satisfied relative to John's beliefs, as characterized in (39a).

- (39) a. John believes that I have a sister.
 b. John believes that she lives in Stuttgart.

The generalization, informally, is that if a clause ends up interpreted relative to X's beliefs, then the presuppositions of the clause can be satisfied in X's beliefs. Stalnaker 1988 introduces the concept of a derived context. In (39), John's beliefs would be the derived context, while the main context generally is the common ground. Heim 1983, 1992 (building on Heim 1982) develops a formal context change semantics in which the presupposition projection properties of elements like belief follow from their lexical meanings in terms of context change. In DRT (Kamp 1981), van der Sandt 1992 develops generalizations about presupposition projection that make reference to the embedding of DRsEs. I will treat this issue informally in the following. I will also keep employing Stalnaker's notion of a derived context.

I return to the context indices. I separate the epistemic interpretation from the deontic interpretation. (40) replaces (19.ii), so that (19) no longer subsumes epistemic interpretation. Epistemic interpretation is separately defined in (41): Given $CP_{\langle \text{Epist} \rangle}$ in a larger context α^w , (41a) looks for a belief-context $B^{w'}(y)$ in the larger context α^w and (41b,c) embed the meaning of CP with $\langle \text{Epist} \rangle$ in $B^{w'}(y)$, in terms of context change and truth conditions.

(40) (ii) $p' = [CS_{S,A}^@, CP_{\langle \text{Epist} \rangle}]$ if the context index is $\langle \text{Deont}_S(x), \langle \text{Epist} \rangle \rangle$,

(41) In $\xi = [\alpha^w, CP_{\langle \text{Epist} \rangle}]$, where α^w is a context, let p be the meaning of CP.

Then the meaning of ξ

- a. is defined if α^w entails the presence of a further context $B^{w'}(y)$, a set of possible worlds that characterize the beliefs (or knowledge) of some individual y in w' ;
- b. if defined, the context change of ξ is:

$$B^{w'}(y)_{\text{NEW}} = B^{w'}(y)_{\text{OLD}} \cap p$$
- c. if defined, $\xi \Leftrightarrow B^w(y) \subseteq p$

I discuss consequences of the revised definition for unembedded use first, then the application to embedded use.

3.5. Additional epistemic interpretations in unembedded V-to-C

A deontic-epistemic context index in unembedded use has its 'epistemic part' written $[CS_{S,A}^@, CP_{\langle \text{Epist} \rangle}]$ in (40), which is interpreted by (41). This gives the result that the epistemic part of a deontic-epistemic context index looks for a belief-context in the common ground ($CS_{S,A}^@$). In a typical case, the belief-context found in the common ground is the common ground itself. This leads to the interpretations in (14), (15), (21) and other examples above in which *S wants (from A) that it is common ground . . .* However, the more flexible interpretation in (41) also allows $\langle \text{Epist} \rangle$ to find other belief-contexts in the common ground, and to expand these. Relevant in particular is the dependent context $B(S)$, the beliefs of S (as perceived from the common ground). For example, in V-in-C interrogatives like (15) the epistemic desideratum of the deontic-epistemic interpretation may be an expansion of the beliefs of S (rather than of the common ground) in accord with the suggestions by Åqvist 1965 and Hintikka 1975 about root interrogatives. In the V-final interrogatives in (21) $B(S)$ is perhaps even a particularly likely context, due to the non-invocation of A in the deontic interpretation. These revisions then allow us to sharpen the distinction between (28) ('*S wants from A that S/S&A know whether . . .*')

and (29), which can be as weak as ‘*S wants to know whether ...*’, as suggested in Truckenbrodt 2004a.

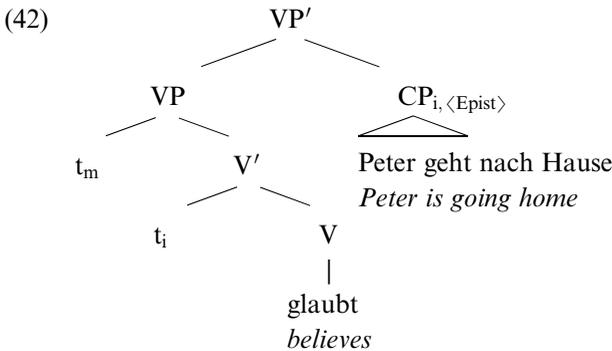
(41) adds yet other possibilities in unembedded position. Thus, context indices of root clauses no longer need to be deontic-epistemic. They can be epistemic only, i.e. the entire clause can be just $[CS_{S,A}^@, CP_{\langle \text{Epist} \rangle}]$. This is plausible in particular in declaratives where $\langle \text{Epist} \rangle$ can find the embedded context of S’s beliefs B(S) in the common ground. An embedding of p in this derived context represents the conception of assertions of Searle 1975: public commitment by S to the proposition. The aspect of *public commitment* is represented since a derived context, in the conception of Stalnaker 1988, is not what that person really believes, but only what information there is in the common ground about what that person believes. Adding p to the derived context B(S) thus amounts to adding p to the shared beliefs in regard to what S believes, and thus amounts to public commitment by S to p. Searle 2001: 288 commented the proposal of Zaefferer 2001: 218 that assertions are trying to get the addressee to assume p. Searle’s argument against it is that the speaker need not actually care whether the addressee assumes p, and can make this explicit without contradiction: ‘*I don’t care whether you assume that it is raining, all the same it’s raining*’. For this and other cases, we can now additionally permit a reading of declaratives, using $\langle \text{Epist} \rangle$, in which they do no more than publicly commit the speaker to the proposition. Other uses of bare $\langle \text{Epist} \rangle$ in unembedded use will be seen below. The option of a deontic-epistemic interpretation of declaratives, in line with the suggestions of Zaefferer 2001, is retained. It is here crucial in the derivation of declarative questions, and I find it plausible in many other cases.

4. Application to embedded V-to-C

4.1. *A first application under belief*

I turn to the account of embedded V-to-C. For (32b), I envisage a structure like (42). VP’ is a node of adjunction to VP, with a prime added for ease of reference. t_m is the trace of the subject, Maria. The CP binds a trace t_i in object position, and this relation is also semantically

interpreted: the CP is interpreted as the object clause. At the same time, the embedded CP carries a context index $\langle \text{Epist} \rangle$ with the presupposition in (41a). The presupposition, I assume, needs to be satisfied in *preceding* context. This would not be possible in the position of the trace (whether on the left, as drawn here, or on the right), since, as I will proceed to show, the context relevant for the context index is the meaning of VP (without prime).



The meaning of VP (interpreting CP in the position of the trace) is, in the example, $\lambda w (\mathbf{B}^w(m) \subseteq \lambda w' (\text{Peter is going home in } w'))$. This invokes the element $\mathbf{B}^w(m)$, Maria's beliefs. In the case at hand, Maria's beliefs will be found by (41a) in the interpretation of $\langle \text{Epist} \rangle$ and satisfy this presupposition, for $y = \text{Maria}$. By (41b,c), the content of the CP will then be construed as an extension of Maria's beliefs: $\lambda w (\mathbf{B}^w(m) \subseteq \lambda w' (\text{Peter is going home in } w'))$. This interpretation by $\langle \text{Epist} \rangle$ leads to a *second* interpretation of the CP, in addition to the interpretation via the trace. For embedding under *belief* as in (42), the second interpretation is identical to the first: Even if we interpreted the CP in (42) only through its context index and not through the trace, it would be correctly construed as what is said about, or added to, Maria's beliefs. (Dual interpretation of embedded V-to-C clauses, in trace position and in a higher position, though with a different idea about the interpretation in the higher position, was proposed earlier by Meinunger 2004: 333ff).

It will be seen to be well-motivated to add a condition on the relation of the two interpretations. The condition in (43) implements the idea of absorption of Gärtner 2002.

- (43) *Absorption*: Where $[\alpha^w, CP_{\langle \text{Epist} \rangle}]$ is syntactically embedded, the meaning of α^w (including the interpretation of CP via its trace) must entail the meaning of $[\alpha^w, CP_{\langle \text{Epist} \rangle}]$.

Informally, this means that the interpretation of CP via its trace must entail the interpretation of CP via its context index $\langle \text{Epist} \rangle$. In (42), α^w is the meaning of VP. Absorption demands that the interpretation of VP in (42), including the interpretation of the CP in the position of its trace, entails the meaning of $[\alpha^w, CP_{\langle \text{Epist} \rangle}]$ (tentatively: the meaning of VP') with the contribution of the context index. In (42), Absorption is satisfied: As was seen, the meaning addition due to $\langle \text{Epist} \rangle$ is identical to the addition due to interpretation in the position of the trace; hence the latter is absorbed (entailed) by the former.

Let us think of Absorption as follows. On the one hand, (41) is a discourse-rule. In particular, it applies in unembedded use in the sequence $[CS_{S,A}^{\textcircled{a}}, CP_{\langle \text{Epist} \rangle}]$. As a discourse-rule, it may apply in addition to the primary rules of semantic composition. For a related example, consider *Mary called John, and John turned around*. Compositionally, we have a conjunction, but on the discourse level, the situation described in the first conjunct is also understood as the cause of the situation described in the second conjunct. On the other hand, we may tentatively assume that (41) could also compose the meaning of a constituent from its parts: it could compute a meaning of VP' in (42) from the meaning of VP and the meaning of $CP_{\langle \text{Epist} \rangle}$. If it did, it would interfere with the compositional process. It is such interference that seems to be prohibited. (43) can be seen as an insistence that the meaning of VP' is the same as the meaning of VP, i.e. that the discourse rule doesn't add any meaning in its embedded application: Whatever is computed at the level of VP' by putting together VP and CP must already be given (i.e. entailed) by the meaning of VP.¹³

¹³ Potts 2005 develops a multi-dimensional logic in which he captures the properties of *supplements* such as (nominal) appositives, *as*-parentheticals, and expressives like *damn* in *I have to mow the damn lawn*. There seem to be some surface similarities of appositives to the kind of connection discussed here, such as adjacency and right-adjunction. At the level of composition, however, the case at hand seems to be distinct from the supplements. Potts shows that a consistent feature of the supplements is their logical and compositional independence of the *at-issue content*, while in the case at hand, we observe interaction.

In the present account, then, object V-to-C clauses will be felicitous if (i) the presupposition of $\langle \text{Epist} \rangle$ in (41a) is satisfied, and if (ii) the resulting interpretation (41b,c) is absorbed by the meaning of the original VP. Both these are entailment requirements on the sequence [α^w , $\text{CP}_{\langle \text{Epist} \rangle}$]. The presupposition of $\langle \text{Epist} \rangle$ in (41a) requires that α^w entails an epistemic context. Absorption requires that α^w entails the expansion of this context by p (where the expansion is due to (41b,c)).

In this account, the non-object-like status of object V-in-C clauses noticed by Reis 1997 (section 3.2.) is related to the second interpretation, the one forced by $\langle \text{Epist} \rangle$. The position of this interpretation, outside of VP as in (42), shares with the position of free *dass*-clauses the weak connection to the preceding constituent by a discourse-rule. A plausible conjecture is that syntactic traces are allowed for integrated positions (where the trace is compositionally interpreted) but not for positions showing only the weak connection of a discourse rule to the remaining structure. This would correctly rule out (34b) and (35b). In (35b), in particular, interpretation of the requirement of $\langle \text{Epist} \rangle$ is then impossible in initial position (no preceding context), it is ruled out by reconstruction into the position of the V' -internal trace (also no preceding context, instead higher context), and it is ruled out by reconstruction into the position of the VP-adjoined trace (disallowed for the reasons just suggested).

Coordination of unlikes as in (36c,d) would require that one conjunct, but not the other, is related to the matrix clause by the second interpretation due to $\langle \text{Epist} \rangle$, which seems to go against the parallelism requirements of coordination.

4.2. *V-to-C under verbs of saying, and some impossible cases*

For verbs similar to *believe* that embed V-to-C, see Helbig and Kempster 1974: 80, Reis 1997: 123, Meinunger 2004: 315. Verbs of saying also embed V-to-C (Helbig and Kempster 1974: 79, Reis 1997: 123, Meinunger 2004: 315). Such verbs that embed V-to-C include *sagen*, 'say', as in (44), verbs like *behaupten*, 'claim', *erzählen*, 'narrate', *berichten*, 'report', as well as manner of speech verbs like *flüstern*, 'whisper' and *schreien*, 'yell'.

- (44) Maria sagt, Peter geht nach Hause.
'Maria says, Peter is going home.'

Since they are members of the class of assertives of Searle 1975, they entail committing to a belief of *p*. (41a) will find the embedded epistemic context of Maria's beliefs in this entailment and expand *p* in it, leading to (45b). Absorption requires the entailment in (45), which is valid.

- (45) a. Maria says that Peter is going home. (interpretation by trace)
 b. → Maria commits to her believing that Peter is going home. (interpretation by <Epist>)

Consider then some cases in which embedded V-to-C is ruled out. It is ruled out with predicates of likelihood and possibility as in (46). These fail because likelihood and possibility do not entail an epistemic context of someone's beliefs.

- (46) a. * Es ist (un)wahrscheinlich, Peter geht nach Hause.
 'It is (un)likely, Peter is going home.'
 b. * Es ist (un)möglich, Peter geht nach Hause.
 'It is (im)possible, Peter is going home.'

Verbs of causation also do not allow embedding of V-to-C, as noted by Romberg 1999: 25 with the examples (47); (see also Meinunger 2004: 317).

- (47) * Hans hat verursacht/bewirkt, Peter geht nach Hause.
 'Maria has caused/brought about, Peter is going home.'

Causation also does not entail an epistemic relation, so that (41a) fails because <Epist> does not find an antecedent.

V-to-C shows serious restrictions in regard to embedding under deontic predicates. In the examples in (48), the deontic imperative-like predicates do not allow embedding of V-to-C.

- (48) a. * Maria befiehlt Peter, er geht nach Hause.
 'Maria orders Peter, he is going home.'
 b. * Maria bittet Peter, er geht nach Hause.
 'Maria asks Peter, he is going home.'

This is first evidence that we must not allow a deontic context index such as <Deont^{“Maria”, “Peter”}> for embedded clauses.

So far, then, embedding under possibility, likelihood, causation and deontic relations provide evidence for an epistemic requirement like (41a) on the context of embedded V-to-C.

Let us then turn to some evidence for Absorption. Contrast (48) with (49). While imperative-like embedding is not possible in (48), such imperative-like embedding becomes grammatical when accompanied by a modal in the embedded clause as in (49). This observation is made in Helbig and Kempter 1974: 80 (see also Romberg 1999: 20f).

- (49) a. Maria befiehlt Peter, er *muss* nach Hause gehen.
 ‘*Maria orders Peter, he must go home.*’
 b. Maria bittet Peter, er *soll* nach Hause gehen.
 ‘*Maria asks Peter, he should go home.*’

Let us employ the context index $\langle \text{Epist} \rangle$. Ordering and asking entail saying. Thus, if x orders y to do p , this entails by saying something to that effect, x seeks to put y under an obligation to bring about p . Saying in turn entails a context in terms of believing, as we saw, and $\langle \text{Epist} \rangle$ can find this epistemic element and expand the embedded clause in it. When we make this expansion explicit, we obtain (50c) for (48b) and (51c) for (49b). For ease of processing, I minimally simplify (50c) to (50b) and (51c) to (51b). Absorption now demands (the minimal simplification apart) that the respective (a)-sentences entail the respective (b)-sentences. It is plain that this entailment holds in (51), but not in (50). Thus, with the use of $\langle \text{Epist} \rangle$, Absorption correctly distinguishes the two cases, and predicts the impossibility of embedded V-to-C in (48) and the possibility of embedded V-to-C in (49).

- (50) a. Maria asks Peter that he goes home.
 b. \leftrightarrow Maria says that Peter goes home.
 c. \approx Maria commits to her believing that Peter goes home.
 (51) a. Maria asks Peter that he *should* go home.
 b. \rightarrow Maria says that Peter *should* go home.
 c. \approx Maria commits to her believing that Peter should go home.

I sum up where we are. The context α^w in (41) must entail an epistemic context by (41a) (regardless of what’s in this epistemic context). We have seen that failure of this leads to ungrammaticality of V-to-C under likelihood, possibility, causation, and purely deontic embedding. By (41b,c) $\langle \text{Epist} \rangle$ then embeds p in that epistemic context. The matrix clause context α^w must then also entail this embedding of p in that context, by Absorption. We have seen that failure of this leads to ungrammaticality of

embedded V-to-C with $\langle \text{Epist} \rangle$ in (48), in contrast to (49). Verbs of belief and of saying pass these entailment requirements.

4.3. *Hypothetical scenarios*

There are also verbs in which the degree of commitment to p is noticeably weaker than belief, such as *andeuten* ‘indicate’ (Helbig and Kempter 1974: 79), *annehmen*, ‘suppose’ (Helbig and Kempter 1974: 80) and *vermuten* ‘suspect’. These, too, embed V-to-C. (Preference-predicates like *hoffen*, ‘hope’, *fürchten*, ‘fear’ also appear to involve a weaker commitment to p than belief. I discuss these in the next section.) At the extreme end of this, we find verbs like *sich vorstellen*, ‘imagine’ and *träumen*, ‘dream’ that embed V-to-C without any commitment to p by the subject:

- (52) a. Hans stellt sich vor, er ist der König von Bayern.
 ‘Hans imagines he is the king of Bavaria.’
 b. Maria träumt, sie kauft sich ein neues Auto.
 ‘Maria dreams she is buying herself a new car’

I therefore relax (41) as in (53), allowing other attitudes of an individual next to belief.

- (53) In $\xi = [\alpha^w, \text{CP}_{\langle \text{Epist} \rangle}]$, where α^w is a context, let p be the meaning of CP. Then the meaning and context change of ξ
- are defined if α^w entails a further context $E^{w'}(y)$, a set of possible worlds that characterize the content of an attitude on the part of y in w' such as y 's beliefs, an act or imagination or a dream;
 - if defined, the context change of ξ is:

$$E^{w'}(y)_{\text{NEW}} = E^{w'}(y)_{\text{OLD}} \cap p$$
 - if defined, $\xi \Leftrightarrow E^{w'}(y) \subseteq p$

In (52a), then, the matrix VP entails $E^w(h)$ (what Hans imagines in w), which (53a) finds and uses for embedding p in it. Here, as in the case of embedding under *belief* in (42), Absorption is trivially satisfied.

In support of the relaxed definition, I point out that we find similar options for $\langle \text{Epist} \rangle$ in unembedded use. By way of background, consider first (54).

- (54) a. Es ist möglich, dass Maria morgen ankommt.
'It is possible that Maria arrives tomorrow.'
- b. # Sie bringt einen Kuchen mit, und . . .
'She brings a cake, and . . .'
- c. ✓ Sie würde einen Kuchen mitbringen, und . . .
'She would bring a cake, and . . .'

(54c) is a case of *modal subordination*. In the analysis of Roberts 1989, the interpretation of (54c) would be augmented as in *'If Maria comes tomorrow, she would bring a cake . . .'*. Such an accommodation of an antecedent, according to Roberts, seems to turn on the presence of elements that induce, directly or indirectly, a modal interpretation. In (54c) this element is the modal *würde*, 'would'. The indicative clause in (54b) does not include such an element, so modal subordination by accommodation of an antecedent *'If she comes . . .'* is not possible for this indicative clause. Given this, the examples in (55) are now of interest.

- (55) a. Ich vermute, dass Maria morgen kommt. Sie bringt einen Kuchen mit, und . . .
'I suspect that Maria comes tomorrow. She brings a cake, and . . .'
- b. Ich fürchte, dass meine Schwiegermutter morgen kommt. Sie bringt einen Kuchen mit, und . . .
'I am afraid that my mother-in-law comes tomorrow. She brings a cake, and . . .'

If the continuation clause (which is identical in (54b) and (55a,b)) does not allow the mechanism of accommodation of an antecedent, how are the continuations of these examples to be derived? I suggest that they are derived by a context index <Epist>, with a relaxed interpretation of Epist. In (55b), for example, a context index <Epist> in the continuation will now find the derived context of the speaker's fear in the first sentence. The continuation can be interpreted as an expansion of that fear, which seems appropriate.

I suggest that speakers negotiate knowledge and belief by default. <Epist> normally takes on that value in unembedded use. Where another relation is explicitly given in the context, as in the examples in (55), <Epist> can take on such a different value. Similarly for declarative sentences in a fairytale, in a joke, or in another fictional narrative. In

embedded use of <Epist> as in (52), the linguistic context, the VP of the matrix clause, explicitly supplies such an antecedent (different from belief) for the interpretation of <Epist>.

4.4. *Preferences*

A range of predicates expressing preferences allow embedded V-to-C with indicative in p, see (56); (see Helbig and Kempter 1974: 79, Oppenrieder 1991: 184ff, 245ff, Reis 1997: 123, Meinunger 2004: 325ff). A preference is also expressed by the verb *wollen*, 'want'. For this, however, embedded V-in-C is impossible with indicative, see (57). I take this to be further evidence for the impossibility of a purely deontic embedded context index. However, assuming <Epist> in all cases, why do some preferences embed V-to-C while others don't?

(56) Es ist besser/Es ist ihr lieber/Maria hofft, sie ist in diesem Fall in Berlin.

'It is better/it is 'dearer' to her/Maria hopes, she is in Berlin in that case.'

(57) * Maria will, sie ist in diesem Fall in Berlin.

'Maria wants, she is in Berlin in that case.'

I believe the distinction between the two kinds of predicates is this: Assume that x prefers p in some sense. The question is: x prefers p to what? Either (a) x prefers p to the way things are (in the view of x) or (b) x prefers p to not-p. I pursue the idea that (a) embeds V-to-C while (b) does not.

The predicates in (56) are of the (a)-kind, while those in (57) are of the (b)-kind. The difference can be seen in the contrast in (58).

(58) Es regnet und ich #hoffe/√will, dass es regnet.

'It is raining and I hope/want that it's raining.'

Hope compares the preferred p-scenario with the dispreferred state of things as x believes they are; the two must be distinct, which they are not in (58). *Want* compares the better p-scenarios with dispreferred non-p-scenarios and thus also allows the preferred p-scenario to coincide with the state of things according to x. The comparative predicates *es ist*

besser, 'it is better' and *es is X lieber*, 'it is dearer to X' in (56) have the additional option of an overt specification of what the preference is relative to (*besser/lieber ... als ...*, 'better/dearer ... than ...'). For the purpose at hand it is sufficient to allow that this element of the interpretation, if not overtly realized, *can* take on the value of things as they are according to *x*, i.e. that these *can* have a meaning similar to *hope*.

My suggestions about preference predicates do not amount to a complete analysis, but I think they are on the way towards such an analysis. My formalization of *want* in (59) builds on the suggestion of Stalnaker 1984: 89 that *x wants p* involves a preference by *x* for *p*-worlds in comparison to non-*p*-worlds, both calculated relative to belief-worlds of *x* (the reader is referred to Stalnaker 1984: 89 and Heim 1992: 193ff for arguments for the doxastic basis of this calculation). My formalization of *x hopes p* in (60) is similar, but with the comparison of *p* to things as they are according to *x*, as argued above.¹⁴

- (59) 'x wants p' is true in *w*
 iff $B^w(x)$ entails that $[B^w(x), p]$ is more desirable than $[B^w(x), \neg p]$.
 [where 'q₁ is more desirable than q₂' is defined if q₁ and q₂ are non-empty sets of possible worlds and q₁ ≠ q₂]
- (60) 'x hopes p' is true in *w*
 iff $B^w(x)$ entails that $[B^w(x), p]$ is more desirable than $B^w(x)$.

Let me begin by addressing (57) for *want*. There are three epistemic contexts in (59), corresponding to the three occurrences of 'B' in (59). To be explicit, let me write these as entailments of *x wants p in w*, and let me write them by abstracting over the possible position of expansion by *p*

¹⁴ My implementation of this idea differs a bit from that in Heim 1992: 193ff. Heim calculates a *p*/non-*p* preference among worlds for each doxastic world of *x*; the formalization in (59) calculates a *p*/non-*p* preference among propositions relative to the entirety of the beliefs of *x*. Similarly in the preference for *hope* in (60). My thinking, in regard to *hope*: If I hope that Peter comes home at 6, there are belief-worlds of mine (i.e. possibilities) in which Peter gets beaten up and should be taken care of in the hospital. For these worlds, a world-by-world preference would require that I prefer that Peter comes home at 6 (rather than being taken care of in the hospital over night) even in that scenario. I think this is not the desired result. In (59) and (60), the preference is between a belief-state that entails Peter's coming home at 6 and one that doesn't (or that entails the negation). This preference holds also if Peter's getting beaten up and not coming home at 6 is less desirable to me than his coming home at 6.

due to $\langle \text{Epist} \rangle$, so as to indicate which set of possible worlds in (59) would serve as the anchor point of extension in the different cases. I use the variable q for this purpose, though it is ultimately p itself that is converted into this position. With this, I write the three contexts as follows:

- (a) $\lambda q B^w(x) \subseteq q$,
- (b) $\lambda q (B^w(x) \text{ entails a comparison of } ([B^w(x), p] \subseteq q))$, and
- (c) $\lambda q (B^w(x) \text{ entails a comparison of } ([B^w(x), \neg p] \subseteq q))$.

If the presupposition of $\langle \text{Epist} \rangle$ finds (a), the resulting expansion could not be absorbed (*wanting p* does not entail *believing p*). In context (b), the expansion of $[B^w(x), p]$ by p , giving $[B^w(x), p] \subseteq p$ would be trivial; the local computation of the meaning of $\langle \text{Epist} \rangle$ would not add anything to the chosen context. This we would like to exclude. Context (c) can be ruled out for a similar reason: the extension of $[B^w(x), \neg p]$ by p , giving $[B^w(x), \neg p] \subseteq p$ would result in the empty set. We would like to exclude these two cases by adding a requirement to the presupposition of $\langle \text{Epist} \rangle$ in (53a), to the effect that $E(y)$ must not entail p and must not entail $\neg p$. That would allow us to exclude (57). There is a formal issue, however, and this is why the analysis is not complete: We cannot easily exclude contexts that already entail p , since entailment of p in the context is at the same time required by Absorption. My hope is that a distinction can be drawn between contexts independent of the interpretation by trace (must not entail p) and contexts that include the interpretation by trace (must entail p by Absorption), but I am not sure if this can be made to work formally. Still, I develop this suggestion here on the assumption that either it can be made to work or that it otherwise brings us on the right track.

The meaning of *x hopes p in w* , by (60), also entails three epistemic contexts, namely the contexts (a) and (b) above as well as (c'):

- (c') $\lambda p (B^w(x) \text{ entails a comparison of } (B^w(x) \subseteq p))$.

Contexts (a) and (b) would be ruled out as above (in the case at hand, context (a) fails Absorption because *hoping p* does not entail *believing p*). Context (c') leads to a successful derivation, shown in (61).

- (61) a. $B^w(x)$ entails that $[B^w(x), p]$ is more desirable than $B^w(x)$ (*' x hopes p '*)
- b. $\rightarrow B^w(x)$ entails a comparison of $(B^w(x) \subseteq p)$ (*' x compares p '*)

The success of absorption is as follows: In (61a), $B^w(x)$ entails a comparison between (i) $[B^w(x), p]$ and (ii) $B^w(x)$. Of (i) and (ii), only (ii) (as part of context (c')) allows for a non-trivial expansion by the presupposition of $\langle \text{Epist} \rangle$; when (ii) is thus successfully expanded, the expansion is identical to (i). This 'coincidence' allows Absorption in (61): in hoping, a comparison is made not only in regard to $B^w(x)$, the comparison of which serves as the context for $\langle \text{Epist} \rangle$, but also in regard to $[B^w(x), p]$, the result of the expansion, which can therefore be absorbed.

4.5. *Interaction with negation and the locality of presupposition satisfaction*

To some extent, negation¹⁵ blocks embedded V-to-C, as the example (62) from Romberg 1999: 5 shows.

- (62) * Hans glaubt nicht, Peter geht nach Hause.
'Hans doesn't believe Peter is going home.'

This interaction is sometimes taken to be a more general phenomenon, though inroads have been observed in connection with the use of Konjunktiv in the embedded clause (Butulussi 1991: 112ff and references there; see also Meinunger 2004: 317ff).

I will argue that the effect of negation is limited where non-factive predicates are concerned, and that, where it occurs, it follows from Absorption.

Let me back up a bit. Presuppositions can of course be satisfied in a domain smaller than the root clause (Karttunen 1973, Heim 1992). In (63b), the presupposition of the pronoun is satisfied in X (by the derived context of John's beliefs), regardless of the fact that this is in turn in the scope of negation.

- (63) a. John believes that there is a squirrel in the garden.
b. However, it is not the case that [_X John believes that it is harmful].

¹⁵ See Penka and von Stechow 2001 on the interpretation of negation in German.

Similarly, the presupposition of $\langle \text{Epist} \rangle$ in (64) is satisfied within X, regardless of the fact that this is in the scope of negation.

- (64) Es ist nicht der Fall [_X dass Hans glaubt [_{CP} $\langle \text{Epist} \rangle$ Peter geht nach Hause.]]

'It is not the case that Peter believes Maria has arrived yesterday.'

The constituent X in which the presupposition is satisfied need not be a clause. In (65), the presupposition of $\langle \text{Epist} \rangle$ is satisfied below a negated and a questioned subject. Here we need to assume that presupposition satisfaction happens in VP, including the subject trace (but not its antecedent) in the calculation, as indicated in (65c). I assume that the domain in which the presupposition of $\langle \text{Epist} \rangle$ are normally satisfied is the VP. The representation in (42) is tailored to that assumption.

- (65) a. Wer glaubt, Peter geht nach Hause?
'Who believes Peter is going home.'
 b. NIEMAND glaubt, Peter geht nach Hause.
'NOBODY believes Peter is going home.'
 c. [_X tsu believes [_{CP} $\langle \text{Epist} \rangle$ Peter is going home]]

It is no surprise, then, that we find sentences in which we may say that negation scopes out of VP, so that satisfaction of the presupposition of $\langle \text{Epist} \rangle$ is possible below it. I offer (66a) and (67a), with the scope relations in (66b), (67b).

- (66) a. Glaub bloss nicht, ich helfe dir.
believe PRT not I help you
'Just don't assume I would help you.'
 b. S wants from A: Not [_X A believes [_{CP} $\langle \text{Epist} \rangle$ S helps A]
- (67) a. (?) Hans glaubt NICHT, Peter hat GEWONNEN, (er glaubt NUR, dass Peter gut ABGESCHNITTEN hat).
'Hans does NOT believe Peter has WON, he ONLY believes that Peter has done WELL.'
 b. Not [_X Hans believes [_{CP} $\langle \text{Epist} \rangle$ Peter has won]]

I suggest that the problem with (62) is that embedded V-to-C is blocked on the normal reading of such negative belief (and similar attitude) reports, in which they report not (or not only) the negation of the belief, but the belief of not p (*'NEG-raising'*). For concreteness, assume that the

scope relations are in fact [_{VP} *t_h believes [not [p]]*] here. Then <Epist> finds the belief-context in VP and expands *p* in it, giving (68b). The meaning of the VP is as in (68a). Absorption fails.

- (68) a. Hans believes that it is not the case that Peter is going home.
b. \rightarrow Hans believes that Peter is going home.

(66) and (67) plausibly do not run into this problem, because the grammatical additions (sentence mood, modal particle, contrastive context) promote the untypical interpretation with wide scope of negation, as specified.

Inherently negated verbs block embedded V-to-C. From Romberg 1999: 5:

- (69) * Hans bezweifelt, Peter geht nach Hause.
'Hans doubts Peter is going home.'

The meaning of *to doubt p* seems to be along the lines of *to suspect/believe that not p*. <Epist> can find the epistemic part of this and expand *p* in it, giving again (68b). The meaning of the matrix VP is again as in (68a). Absorption fails again. In addition, the negation is here part of the meaning of the verb, and so, it would seem, cannot raise out of VP.

4.6. The half-statement reading ('Doppelpunktlesart')

There is a reading of some embedded V-to-C clauses (sometimes rendered with a colon) in which the embedded clause is almost, but also not really, a separate statement. I call this the *half-statement reading*. Predicates of certainty as in (70) have this reading (Reis 1997: 123), including predicates of the truth of the matter as in (71) (or *entschieden sein*, 'to be decided'). All grammatical examples of embedded V-to-C discussed above have non-half-statement readings.

- (70) Da stand für mich fest: Max lügt.
'It was then 'fixed' for me: Max is lying.'

- (71) Es ist wahr: Peter geht nach Hause.
'It is true: Peter is going home.'

Notice that the half-statement reading is not possible under negation, regardless of grammatical additions. Thus, (67) may be contrasted with (72).

- (72) * Es ist NICHT wahr: Peter hat GEWONNEN
 (er ist NUR wahr, dass Peter gut ABGESCHNITTEN hat).
 ‘It is *NOT* true, Peter has *WON* (it is *ONLY* true that Peter has done *WELL*).’

I turn to an account of the half-statement reading. There is no epistemic matrix predicate in (71), so clearly something new is going on. My suggestion for the half-statement reading: $\langle \text{Epist} \rangle$ here has its presupposition satisfied by matrix clause *plus contextual embedding of the matrix clause*. Thus, the context is not the VP as in (42), but the matrix CP with its own context index and context, as shown in the sequence in (73).

- (73) [*S asserts*’ that it_i is true t_i, [_{CP-i- $\langle \text{Epist} \rangle$} Peter is going home]]
 _____ context _____ embedded V-in-C clause _____

In this larger context, $\langle \text{Epist} \rangle$ finds an epistemic relation, S’s beliefs as part of the matrix assertion, present due to the *matrix* context index $\langle \text{Epist} \rangle$. The proposition p is embedded in that, giving (74b). As shown in (74), Absorption is satisfied.

- (74) a. ‘*S asserts*’ that it is true that Peter is going home.
 b. \rightarrow S commits to a belief that Peter is going home.

This explains the general impossibility of negation: Negation cannot scope out of the speech act.¹⁶ Trapped in the speech act, it leads to failure of Absorption, as shown in (75), for (72).

- (75) a. ‘*S asserts*’ that it is not true that Peter has won.
 b. \nrightarrow S commits to a belief that Peter has won.

¹⁶ Krifka 2001 argues that quantifiers can scope out of a speech act. This analysis of the pair-list reading of examples like ‘*Which dish did every guest make?*’, combined with Krifka’s point that speech acts can be conjoined but not disjoined, explains why other quantifiers do not lead to pair-list readings, for example in ‘*Which dish did most guests make?*’. For the purpose at hand – there is no comparable case to be made that negation can also scope out of the speech act. The analysis of negation in imperatives in Han 1998 has the crucial element that negation must not take scope over the imperative speech act, a restriction that Han extends to other sentence types. As Han notes, the illocutionary force of matrix clauses cannot be negated by overt negation.

The suggestion presented here for the half-statement reading is very close to saying that the second clause is in fact a separate statement: A new and separate statement would likewise expand the context of the preceding clause. Only the assumed presence of the trace, and the assumption that the trace calls absorption on the plan via (43) are different.

4.7. *Factive predicates*

Factive predicates do not allow embedded V-to-C, except sometimes in the half-statement reading. An example is V-to-C under the verb *wissen*, 'to know' (see Eisenberg 1999: 309), which allows the half-statement reading as in (76). Meinunger 2004: 318 suggests that semi-factives such as *wissen*, 'to know', do not allow embedding under negation. (77) demonstrates this here, in minimal contrast to (67).

(76) Hans weiß: Peter geht nach Hause.

'Hans knows: Peter is going home.'

(77) * Hans weiß NICHT, Peter hat GEWONNEN

(er weiß NUR, dass Peter gut ABGESCHNITTEN hat).

'Hans does NOT know Peter has WON,

(he ONLY knows that Peter has done WELL).'

Other factive predicates that do not allow 'normal' embedding of V-to-C include *ignorieren*, 'to ignore', *bedauern*, 'to regret', *sich wundern*, 'to be amazed', and *es überrascht x*, 'it surprises x'. See also Romberg 1999: 41ff in this connection.

Factive predicates generally do not satisfy presuppositions of elements that they embed: they are *holes* in the sense of Karttunen 1973. For example, the continuation of (78a) in (78b) does not allow the presupposition of the pronoun *it* in the complement of *know* to be interpreted relative to the context of John's belief. In this regard, (78b) contrasts with the continuation (78c) of (78a).

(78) a. Contrary to fact, John believes that there is a squirrel in the garden.

b. # John knows that it is brown.

c. John believes that it is brown.

We correctly expect this property of factive verbs to extend to the presupposition of context indices. In (76), the factive matrix clause then cannot on its own satisfy the presupposition of an embedded context index $\langle \text{Epist} \rangle$, and the ‘normal’ reading cannot be generated.

The half-statement reading of $\langle \text{Epist} \rangle$ is possible relative to the matrix clause plus its contextual embedding, as shown in (79).

- (79) [*S asserts*’ that Hans knows t_i , [$\text{CP-i-}\langle \text{Epist} \rangle$ Peter is going home]]
 _____ context _____ embedded V-in-C clause _____

Here the beliefs in *S*’s assertion can satisfy the presupposition of $\langle \text{Epist} \rangle$. A parallel example using the presupposition of a pronoun is given in (80).

- (80) a. Contrary to fact, John and Mary both believe that there is a squirrel in the garden.
 b. Mary believes that John knows that it is brown.

A higher context can satisfy the presuppositions that are ‘passed upwards’ by a lower factive predicate. In (80), this higher context is supplied by Mary’s beliefs, in (79), analogously, by *S*’s beliefs in the assertion. Given this, $\text{CP}_{\langle \text{Epist} \rangle}$ in (79) looks for an epistemic context in its context to the left. It finds two (I think): *S*’s commitment to belief and Hans’ beliefs/knowledge (as part of *S*’s commitment to belief). Embedding *p* in one or the other leads to (81b) or (81c). Either one of these could be absorbed, as shown.

- (81) a. ‘*S asserts*’ that Hans knows that Peter is going home.
 b. a. → *S* commits to a belief that Peter is going home.
 c. a. → *S* commits to a belief that Hans believes/knows that Peter is going home.

The incompatibility of V-in-C under negated factives follows as derived for other half-statement readings in the preceding section.

4.8. *Summary: Embedded V-to-C*

The suggestion on embedded V-to-C develops the syntactic findings of Reis 1997: object V-to-C clauses are different from object *dass*-clauses

insofar as they differ in syntactic attachment and its consequences. I argued that embedded V-to-C clauses have an additional attachment to the matrix clause, due to the interpretation of their context index $\langle \text{Epist} \rangle$, the trigger of V-to-C. This attachment is also relevant to the implementation of the perspective of assertional proto-force and absorption in Gärtner 2002. The contribution of the epistemic context index that is seen in epistemic readings in unembedded use is absorbed in embedded use.

Specifically, the attachment comes about in that $\langle \text{Epist} \rangle$ presupposes that the relevant larger context that precedes $\langle \text{Epist} \rangle$ (typically the meaning of the higher VP) entail a (possibly smaller) epistemic context, in which p is then embedded. This interacts with Absorption, which requires that the embedding of p due to the context index is entailed by the meaning of the larger context.

Details apart, I submit that this account leads to a reasonably detailed understanding of the restrictions on embedded V-to-C. It correctly separates saying, believing and imagining from embeddings under possibility, likelihood and causation. It leads to an understanding of why V-to-C under imperative-like verbs require an embedded modal. It also seems to lead to reasonable perspectives on the role of negation, on the locality of licensing of embedded V-to-C, on the half-statement reading, and on factive predicates.

5. Summary: Common elements and differences between unembedded and embedded V-to-C

In the account that I defended, V-to-C is triggered by context indices containing the elements A or $\langle \text{Epist} \rangle$ in unembedded and embedded position. The syntactic consequences (movement) and interpretation (presuppositions) of these elements are identical in unembedded and embedded position. In unembedded position, they lead to illocutionary force of the appropriate kind. In embedded position, they lead to the semantic restrictions on embedded V-to-C in the context of the matrix clause.

I argued that the deontic element (including A) that was seen to play a large role in unembedded V-to-C is limited to unembedded use and to expanding the common ground by desires on the part of S . The common element between unembedded and embedded use is therefore $\langle \text{Epist} \rangle$. In

unembedded use, it is found embedded under Deont or, in assertions, on its own. In embedded use, it is the only trigger of V-to-C.

In unembedded use, we could get away with maintaining that A is the only trigger of V-to-C. Even then, we would have to acknowledge the non-trivial interaction (17a) of V-to-C with <Epist> in unembedded position: Indicative and Konjunktiv II license epistemic readings only if they are in C. Since [+WH] also licenses <Epist>, this interaction can be observed only for sentence types that are not [+WH]. The most telling comparison is the one between a declarative and a root *dass*-clause. Both are [-WH]. The declarative, with indicative/Konj.II in C, allows epistemic interpretations as an assertion or a declarative question. The root *dass*-clause, however, has no such epistemic illocutionary potential, even though it will typically carry indicative/Konj.II morphology on its finite verb. However, this morphology is not in C, and so does not license the context index <Epist> there. Therefore root *dass*-clauses share with root infinitives and imperatives an illocutionary potential limited to deontic interpretation (and exclamatives). On the whole, we obtain a coherent picture if both A and Epist trigger V-to-C. A V-to-C-triggering effect of <Epist> is unavoidable in embedded V-to-C and we have independent evidence of an interaction of <Epist> with V-to-C in unembedded use.

Details apart, I submit, then, that there is a way of spelling out the suggestion of Wechsler 1991, Lohnstein 2000, Gärtner 2002, Bayer 2004, Brandner 2004, Lohnstein and Bredel 2004 to the effect that movement of the finite verb to C in German has its reason in its interaction with the assignment of illocutionary force.

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