Replies to the comments by Gärtner, Plunze and Zimmermann, Portner, Potts, Reis, and Zaefferer*

HUBERT TRUCKENBRODT

I would like to thank all commentators for commenting on my work in thoughtful contributions to the issues that occupy us all. In thinking about the comments, my ideas about these issues have considerably progressed. It seems to me fitting that I should include these improvements in this volume as well. I outline them in brief form below, sometimes alternating with my more direct responses to the comments.

Chris Potts: How much can pragmatics do?

I find it amazing how precisely the Gricean maxims can be formalized in such an appealing account! I had no idea. I endorse the view that a pragmatic system as outlined by Grice and formalized by Potts leads to inferences and to quality ratings of answers to questions.

At the same time, it is important for my purposes to take a close look at what pragmatics can and cannot do. I am still convinced that pragmatic maxims cannot explain the phenomena that I am attributing to silent matrix interpretations. In regard to interrogatives, the question I am interested in can be put as follows: How come an utterance comes to be a

question in the first place, i.e. how does an utterance turn into a request or demand for an answer? Consider the familiar cases in (1)–(3).

(1) a. Is it raining?   b. Regnet es?
(2) a. I wonder whether it is raining.   b. Ich frage mich, ob es regnet.
(3)   Ob es regnet?

In each case, part of the construction is an interrogative clause, embedded in (2a,b), unembedded in (1a,b) and (3). This interrogative clause is syntactically a clause type that we recognize, among other things, in the possibility of wh-movement. This interrogative has an interpretation about which we have a range of classical theories from Hamblin 1973 to Groenendijk & Stokhof 1982 and later work including Beck & Rullmann 1999 and Sharvit 2002. We would like to employ the same interpretation mechanism for all these clauses. This interpretation in one way or another amounts to a set of propositions, alternatively a partition, the elements of which are called possible answers because their internal propositional logic is the logic of possible answers to the question. We should be careful, however, not to be misled by this terminology into thinking that there is anything about the formal interrogative interpretations in the literature that would call for an answer or even express anybody's interest in an answer. They are just partitions of the possibilities, with or without a claim to being true attached, and with or without a formal property of exhaustivity. So, how do we get from there to something like a strong expectation for an answer in (1a,b) and an empirically weaker expectation for an answer in (2a,b) and (3)? Potts is brief about this in his comment. He endorses the perspective of Roberts 1996 where a context can have an *immediate question under discussion*, and where higher-level questions also exist. V-in-C questions like (1a,b) become immediate questions under discussion. Forms like (3) do not. "This follows directly if they have a non-interrogative semantics, i.e. if they have meanings that correspond (even if only approximately) to the declarative 'I wonder' paraphrase (…)." (Potts, last paragraph of section 4).

I accept the near-equivalence to the *I wonder* paraphrase, but I do not share the assessment of the expected strength of these forms. Since it is easy to overlook things that are right in front of ones eyes, let us take stock of what our formal theories give us for (1a) and (2a). (2a) is a declarative, but the matrix clause *I wonder* establishes quite explicitly that

the speaker is interested in the correct cell of the partition, i.e. in the correct answer to the embedded question. By comparison, (1a), on the existing interrogative interpretations, is but a partition of the space of possibilities, with no indication attached that the speaker or anyone is interested in selecting the correct cell of the partition. If anything, *whether it is raining* should become the immediate question under discussion following the utterances in (2a), while (1a) should express a vaguer desire for an answer on this view (and I don't see why it would express even that). Yet, the Cuban cigar scenario[1] distinguishes the English examples as well, and the empirical facts are the other way around.

In the terms adopted by Potts, I am interested in why the V-to-C forms (1) become the immediate questions under discussion, while (2) and (3) do not. If we look only at English, we may have some hope that this is connected to root status of an interrogative clause in some yet unknown way. However, the German sentence type in (3) seems to block that road, at least for German. We could develop a theory that relates V-to-C to Roberts's hierarchy of questions: V-to-C puts an interrogative into the cell of immediate question under discussion. This could give (1a,b) the observed stronger interpretation (if we add some way of keeping (2a,b) and (3) out of this spot). However, in German, there are also other sentence type contrasts in terms of V-to-C, and my theory seeks to capture these in more general terms that can be applied to non-interrogative clauses as well. The result in (1a,b) is that the speaker wants from the addressee common ground in regard to the true answer. This not only adds the information that there is epistemic interest in the selection of the correct cell, it furthermore *generates* the expectation for an answer. What it means to answer, in that perspective, is for the addressee to do what the speaker wants, completely or partly.

I think the interesting suggestions that Potts assembles about the formalization of the pragmatic end (not reviewed in the preceding discussion) are an important contribution to our search for how things work in this area. However, I think that pragmatic inferences, if they augment the standard interrogative interpretations in the literature, without silent

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[1] (28) in the target article; see Truckenbrodt 2004 for more examples and discussion.

matrix interpretations, cannot explain two things: For one thing, if (3) is semantically just a partition, how does it obtain illocutionary force by which it is interpreted as strongly as the explicit interest in an answer in (2)? For another, why are V-to-C interrogatives as in (1) interpreted with even stronger illocutionary force, as shown by the Cuban cigar examples?

Dietmar Zaefferer: A leaner system

I like the thoughtful discussion in the comment of Zaefferer. I also like the attempts to make the system leaner, and will follow suit with some suggestions of my own in this direction below. The largest difference between us seems to me to be that Zaefferer does not seek to account for V-to-C movement as part of his suggestions for assigning illocutionary potential to sentence types. Zaefferer envisages that illocutionary force potential and information structure together determine V-to-C, but leaves the details open.

In this connection, Zaefferer proposes the *Orphan theory of German verb-final clauses*, by which former matrix structures (though not deletion) account for V-final root clauses. I am skeptical of this approach because it localizes a solution in a new dimension, or area, that we cannot independently assess or test.[2] I am also skeptical because these assumed former matrix clauses show certain gaps that look, to me, systematic. For example, they would include *I wonder* but not *I ask you* (see Truckenbrodt 2004), and they would include the complex *I am amazed/surprised/amused at* but not the simple *I believe* or *I maintain*. It seems unlikely to me that these gaps could go back to historical frequency of occurrence (as one might maintain on Zaefferer's proposal). I therefore find it more promising to develop an account that assigns illocutionary force potential to all root clauses, with reduced force potential due to the absence of V-to-C in V-final root clauses. For example, you cannot have the interpretation

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2   To be sure, in some sense this is also true of the silent matrix interpretations we both pursue; however, Zaefferer's proposal here postulates yet a further such device. As for the silent matrix interpretations, I believe that the revised account below largely removes them from their somewhat obscure status.

I believe because in a root *dass*-clause no element in C licenses an epistemic interpretation.

Other than that, I see more agreement between Zaefferer and me than it might appear, apart perhaps from different perspectives sometimes on who of us adopts what from the other one. I agree, for example, with a flexible interpretation of ⟨Epist⟩ that allows the speaker's and addressee's beliefs in addition to the common ground. To me, this is a consequence of the analysis of embedded V-to-C in terms of ⟨Epist⟩, where one has to let go of the idea that ⟨Epist⟩ is tied to the common ground (or any fixed individual's beliefs).

I return to Zaefferer's suggestions in connection with embedded V-to-C in the final section of this reply.

Christian Plunze and Ede Zimmermann: A close look at some details

I like the discussion with attention to details in the comment of Plunze and Zimmermann. Let us say *Is it raining?* is interpreted like *I want x to know whether it is raining* with x = S&A (jointly), or (as I would now assume) with x flexibly ranging over the salient S, A, S&A. How could it be derived that the standard use of this form seeks increase in the knowledge of S? Plunze and Zimmermann show in some detail that a remark I made about this does not seem to work. I have thought about this point some more, but don't have a full answer. My suspicion is that we might find an answer in the observation that the alternatives that the system allows are all in some way inherently marked. The monological question employs a roundabout sequence *S: ... and who do you think she called? Peter!* instead of the more economical *She called Peter*, and is, in that sense, part of a marked discourse. The pedagogical question is a marked use of this sentence form in the sense that it isn't really that someone comes to know something that that person didn't know before, but only recalls something that they knew already. The same could be said about rhetorical questions when they serve the purpose of reminding someone of something. I think it is interesting that there is, as Plunze and Zimmermann show, a case to be made for Hintikka's original epistemic desideratum of speaker knowledge. Also the observation that *I would like to know from you ...* can be successfully employed in exam questions

seems to undermine my original case for the common ground as the hard-wired epistemic desideratum in Truckenbrodt 2004. Even in the current, more flexible approach I am offering, I am not sure whether there is any strong evidence any more for even *allowing* the common ground as the epistemic desideratum. Perhaps, instead, ⟨Epist⟩ looks for salient persons in the context (and for their beliefs etc.) and finds S and A as possibilities.

Concerning *from X* and *from A*: I still think what I wrote is sensible. To be more explicit: The context index controls an implicit subject in both imperatives and root infinitives, and the implicit subject in turn binds reflexives. Control and reflexive-binding requires non-conflicting specifications for [±S, ±A] in a theory in which [±S, ±A] specify person. In the imperative all these elements are second person in the morphosyntactic representation, i.e. [−S, +A]. [+A] in the context index needs to be checked. In directive root infinitives no specification of [+A] can be licensed by an overt element in C, and so these elements are underspecified as [−S] (or ø), which is also compatible with reference to the addressee, but triggers third person reflexives if we take these to be the default among the featurally compatible reflexives. The second person morphology on the imperative verb is checked against the subject of the imperative or only against the context index, or both, I am not sure (see Schwager 2005: 115ff for what we want to be the semantic effects of 2nd person in the interpretation of the imperative subject). I am not sure about the circularity that they sense. My point is perhaps more modest than was apparent. I am happy if there is a coherent reasonable picture, at least in outline, of the elements and interpretation of imperatives and directive root infinitives, in which we have some independent evidence (the reflexives) for a distinction (presence of [+A]) that correlates with the presence vs. absence of V-to-C in the account proposed.

It is very interesting to me that Plunze and Zimmermann, in their final section, find some plausible arguments for their intuition that V-to-C interrogatives and V-final root interrogatives (though differing in regard to assumed A-knowledge about the correct answer) have comparable deontic impact. This encourages me in the adjustment of the system below, which removes the different deontic impact from the account. (I also agree with them on the epistemic desideratum of V-final root questions.)

Marga Reis: A wider range of fascinating data

Reis's critical look at my account and the additional cases she confronts with my analysis were an important factor in my arriving at the revisions discussed below. As far as the critical look at my account, I present the improvements below and will not go back here to show that the old system was not all that bad.

Reis confronts my account with two most interesting classes of cases. I find her arguments convincing that these cases are not covered by my suggestions and raise principled questions. I briefly review the case of the unintegrated clauses here. Appositive relative clauses like (4) (Reis's (9a)/(11a)) have a declarative-like interpretation that is arguably independent of the illocutionary interpretation of the host clause. Similarly, adjunct clauses that are unintegrated in the sense of Reis 1997 as in (5) (Reis's (9b)) arguably have their own separate illocutionary interpretation.

(4) Tom, <u>der (ja) seit Jahren arbeitslos ist</u>, hat sich auch beworben
     'Tom, who (modal particle ≈ as we know, H.T.) has been out of the job for years, applied, too.'

(5) Tom hat sich auch beworben, <u>weshalb ich mich nicht bewerbe</u>.
     'Tom applied, too, for which reason I won't apply.'

Reis's arguments include the possibility of modal particles, adverbials and other elements that are otherwise restricted to declarative main clauses, in the seemingly subordinate clauses in question. (A further argument that Reis is correct is that the appositive relative in (4), for example, retains its declarative character even if the host clause is changed into an interrogative.) Clearly, these unintegrated dependent clauses are declarative-like and epistemic in the sense I am pursuing, as argued by Reis. The problem is: They don't have the finite verb in C.

The other class of cases Reis raises are conditional (and related) V-to-C clauses which are comparable to conditional (and related) V-final clauses in interpretation (her (15)–(18)). I will return to both classes below where I integrate them into the revised account.

Revisions prompted by the comments: What the context indices really are

In thinking about the preceding comments, I developed some revisions of my account that I present in this section. In the revised account, the

context indices are not ⟨Deont, from A⟩ and ⟨Epist⟩. Rather, they are the features [+WH] and [−WH] that are familiar in C. The net result of my search is that both [+WH] and [−WH] have illocutionary interpretations that were not previously known and that largely determine illocutionary force potential. I had attributed the effects of these interpretations to what I called context indices before.

I begin by giving the <u>syntactic core of the revised account</u>. German V-to-C is triggered by [−WH] due to (6). (Imperatives are put aside for the moment.)

(6)   <u>Trigger of V-to-C</u> (imperatives apart):
      [−WH] needs to be attached to an overt element at PF in German.

The complementary distribution of overt complementizers and V-to-C goes back to (6): If [−WH] in C can attach to an overt complementizer such as *dass*, *'that'*, (6) is satisfied. If, on the other hand, there is no overt complementizer, then [−WH] in C triggers V-to-C, so that [−WH] can satisfy (6) by attaching to the overt finite verb.

This would be similar in the V-to-C conditionals of Reis's comment. Let us say that the complementizer *wenn*[−WH], *'if'*, has a cousin, a lexical entry for C with similar meaning but no phonological content: ø[−WH]. Where this empty complementizer is used, the finite verb has to move to C for (6) to be satisfied for the feature [−WH] on this empty complementizer.

I turn to the core elements of the account of <u>illocutionary force potential</u>. I assume the general Root Rule in (7), which takes care of what I previously attributed to Deont$_S$ in the context indices.

(7)   <u>Root Rule</u>:
      Utterances (more generally: communicative acts) are interpreted as purposeful, i.e. expressing a volition on the part of the speaker: CG → CG + "Deont$_S$"(...). In the cases discussed here, the meaning of the utterance is interpreted in the scope of this volition, i.e. as part of "..." in the preceding formula.

For example, imperatives, root infinitives and directive root *dass*-clauses are directly interpreted by the Root Rule as volitional/deontic. (I ignore exclamatives here).

I claim that [+WH] and [−WH] both trigger what I call *epistemic inter-pretation*, i.e. they each invoke the interpretation sketched in (8). This was not previously assumed in the literature that I am aware of, and I see this as my core result. (The formal details are assumed to be identical to (53) in the target article, with $\langle$Epist$\rangle$ replaced by [±WH].)

(8) Epistemic interpretation of [±WH]
   A visible specification of [±WH] in C or SPEC,CP at LF triggers a presupposition that looks for an epistemic context. The proposition p is embedded in that epistemic context.

In the case of a declarative like (9a), the proposition (9b) is thus epistemi-cally embedded as sketched in (9c), due to the interpretation of [−WH] by (8).

(9) a. Es [−WH]regnet.   *'It is raining.'*
   b. λw rain(w)
   c. for some x, E in the context: *'S/A/ ... believes/knows/*
      λa E^a(x) $\subseteq$ λw rain(w)   *assumes ... that it is raining.'*

This epistemic embedding is interpreted relative to the general Root Rule, resulting in a deontic-epistemic interpretation: CG $\to$ CG $+$ λw$'$ Deont$_S^{w'}$ (λa E^a(x) $\subseteq$ λw rain(w)). This could be *S wants common ground that it is raining*. Nothing prevents the choice of a complex derived context, so that *S wants that A know that S believes that it is raining* is also allowed (closer to Searle's understanding of assertions).

[−WH] is introduced and attached in other ways in the unintegrated adjunct clauses of Reis ((4) and (5) above). First, the category D has a systematic [±WH]-contrast: *wer, wem*, etc. contrasts with *der, dem*, etc. The contrast is plausibly specified both ways for these elements, with d-pronouns being [−WH]. These are also the relative pronouns. We thus have [−WH], in SPEC,CP in appositive relatives like (4), in the form of the relative pronoun. It is attached to an overt element in line with (6). It triggers an epistemic interpretation by (8). I assume the unintegrated sta-tus of these elements corresponds to a separate invocation of the Root Rule, so that we obtain a declarative, deontic-epistemic reading for these appositives.

Second, the category C also has a systematic [±WH]-contrast: The complementizer *ob, 'whether'* contrasts with all kinds of non-interrogative

complementizers. This contrast is also plausibly specified both ways in C (though, I assume, not in imperatives). Plausibly, then, the complementizer of the <u>adjunct clause</u> in (5) is specified [−WH]. This is overtly attached and meets (6). A deontic-epistemic declarative interpretation is again assigned by the Root Rule and by (8). I return to integrated adjunct clauses below.

The revised account correctly derives epistemic interpretation for a wider range of cases. However, the <u>complementizer *dass*, *'that'*,</u> which is surely [−WH], is now the odd man out. *Dass*-clauses do not have an epistemic interpretation when used as root clauses ((22a) of the target article). They also do not have an epistemic interpretation in their unintegrated use ((34a) of the target article), where they are presupposed. How is *dass* different from the [−WH]-elements in C/SPEC,CP that trigger epistemic interpretation? The answer: While these other elements all have some independent semantic content, *dass* has no semantic content at all. I therefore postulate (10).

(10)   [−WH] is visible at LF only if it is attached to a meaningful element.

Thus, [−WH] is visible at LF on a relative pronoun as in (4), on a contentful complementizer as in (5), and on the finite verb as in (9). However, it is not visible at LF in *dass*-clauses like (22a) and (34a) of the target article. Notice that (8) is already formulated such that only visible instances of [±WH] trigger an epistemic interpretation. The minimal contrast between declaratives and root *dass*-clauses is then this: [−WH] in C is visible at LF in declaratives, where it is attached to the meaningful finite verb. It therefore triggers an epistemic interpretation there. On the other hand, [−WH] in C is not visible at LF in *dass*-clauses, where it is attached to the meaningless element *dass*. It therefore does not trigger an epistemic interpretation.

This contrast between V-to-C declaratives and root *dass*-clauses is then exactly parallel to the distinction between these two forms in <u>object position</u>. In object position the Root Rule does not apply. [−WH] is not visible at LF in an object *dass*-clause, which is thus compositionally interpreted as a standard proposition. Without *dass*, [−WH] triggers V-to-C because of (6) and thereby becomes visible at LF due to (10). [−WH] is then epistemically interpreted by (8). The other parts of the account of

V-to-C object clauses remain unaffected (two positions of the CP, double interpretation, Absorption).

I turn to <u>interrogatives</u>. Both V-final interrogatives and V-to-C interrogatives are specified as [+WH] in SPEC,CP. Importantly [+WH] triggers an epistemic interpretation just like [−WH] by (8). This is the standard epistemic interpretation of root interrogatives in the revised account. I explain this in more detail with (11). An interrogative like (11a), with a meaning like (11b), following Groenendijk and Stokhof, receives the epistemic embedding in (11c) due to the feature [+WH] by (8).

(11) a. [+WH]Regnet es?   *'Is it raining?'*
      b. $(\lambda a)\ \lambda w\ (rain(w) = rain(a))$
      c. for some x, E in the context: *'S/A/ . . . knows/ . . .*
          $\lambda a\ E^a(x) \subseteq \lambda w\ (rain(w) = rain(a))$ *whether it is raining.'*

This interpretation interacts with the Root Rule to derive a deontic-epistemic interpretation, for example along the lines of *S wants to know whether it is raining*.

<u>What distinguishes V-to-C interrogatives from V-final interrogatives?</u> My suggestion is shown in (12)–(14). For the V-final interrogatives in (12) we stay with the standard assumptions that C and SPEC,CP are simultaneously specified [+WH]. (14) makes sure that the agreeing specifications of [+WH] in C and SPEC,CP count as one for the purpose of triggering an epistemic embedding. Therefore (8) is applied once, but not twice here. For the V-in-C-interrogatives in (13), on the other hand, I follow (to some extent[3]) Brandt, Reis, Rosengren & Zimmermann 1992: 31f in an unexpected move: The V-to-C interrogative has [+WH] in SPEC,CP but [−WH] in C. Here, as with declaratives, it is [−WH] that triggers V-to-C by (6). (14) allows such wh-disagreement in the C-projection.

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[3] Brandt, Reis, Rosengren & Zimmermann 1992 exempt yes/no-questions from this and see the motivation for it in the similarity of declaratives and V-to-C wh-questions. The motivation here is similar: the correlation of the finite verb in C with [−WH], and the concomitant effects on illocutionary force potential in both declaratives and interrogatives. Brandt, Reis, Rosengren & Zimmermann 1992 also point out the wh-disagreement in doubly filled Comp cases in this connection, like in *Sag mir, wen dass du kennst*, *'Tell me who that you know'*.

(12)   SPEC,CP   C

   a.   [+WH]Wen   [+WH]   Maria wohl mag?   *'Whom Maria* PARTICLE *likes?'*

   b.   [+WH]   [+WH]Ob   Maria Peter mag?   *'Whether Maria likes Peter?'*

(13)   a.   [+WH]Wen   **[−WH]mag**   Maria?   *'Whom does Maria like?'*

   b.   [+WH]   **[−WH]Mag**   Maria Peter?   *'Does Maria like Peter?'*

(14)   Identical specifications of [+WH] or of [−WH] on X and SPEC,XP (and on X/XP and an adjunct to XP) are checked and interpreted as one feature for the purpose of (8).

The important consequence is now that (8) is invoked twice in (13): The V-to-C interrogative triggers two epistemic embeddings simultaneously, one due to [+WH] (shared with (12)), another one due to [−WH] (shared in principle with declaratives). The first of these (say, due to [+WH]) leads to satisfaction of the Root Rule in a deontic-epistemic interpretation like *S wants to know . . . .* The additional effect that we want from the second interpretation is attribution of knowledge/ . . . of the correct answer to the addressee (what came out of *from A* in the earlier account of interrogatives). This is straightforwardly represented. The content of the epistemic interpretation is the same for [−WH] as for [+WH]. This content is illustrated in (11c). If the epistemic interpretation of [−WH] now seeks out the addressee's knowledge as its domain (and does not do so in the scope of the Root Rule) it attributes knowledge of the correct answer to the addressee. In this revised account, this is no longer a presupposition. The attribution may now take forms like *the correct answer is part of A's assumptions* or *the correct answer is part of what S assumes that A assumes*. This is because it is formally coherent to embed the meaning of the interrogative in epistemic contexts like beliefs and assumptions, and because nothing in the account prevents the choice of a complex derived context. However, some epistemic embedding is required, and the effect cannot be reduced to zero. (15) schematically sums up the different interpretations:

(15) a. V-final interrogative: [+WH]: *'S wants to know (whom Maria likes)'*

  b. V-in-C interrogative: [+WH]: *'S wants to know (whom Maria likes)'*

  and [−WH]: *'A knows (whom Maria likes)'*

While it is straightforward to represent the desired reading of V-to-C interrogatives, it is more complicated to explain why the second epistemic interpretation chooses the context of the addressee's knowledge/beliefs/ ... rather than some other contexts one might imagine. I confine myself to a few remarks here. First, the formalism doesn't exclude that we get a second epistemic interpretation that is identical to the first, for example *S wants to know* .... We may be able to exclude this pragmatically: If S wanted to ask such a weaker question, he might have chosen a weaker form for conveying this (in German: a V-final question). Second, why would one epistemic interpretation end up in the scope of the Root Rule and the second not? Notice that there is no principled reason for why a presupposition (such as the one that looks for the epistemic context) would be interpreted in the scope of the Root Rule. The presupposition of *He arrived*, for example, looks for an antecedent of *he* outside of the scope of the Root Rule. I suggest the following perspective: If the first epistemic interpretation were to choose a simple context like the beliefs of S or A, the Root Rule would not be satisfied: There would be no de-fined intent of the utterance. If, instead, the first epistemic interpretation chooses a derived context like *what S wants to know* (or, in a declarative, *what S wants A to know*), and if this amounts to a coherent interpretation, then the Root Rule is satisfied by way of the choice of a deontic-epistemic derived context: The utterance can be interpreted in terms of what the speaker wants. With the Root Rule satisfied in this way, there is no need for a second epistemic interpretation to also choose a deontic-epistemic derived context. Rather, it can choose a simpler and more straightfor-ward (derived) context such as the beliefs of S or the beliefs of A. Finally, why would the beliefs of A be chosen over the beliefs of S? My answer for simple cases: If the first epistemic interpretation is information-seeking (*S wants to know the correct answer*), then it would not make sense to add to this the interpretation *S knows the correct answer*. On the other hand, choice of the addressee's knowledge/beliefs/ ... leads to a coherent

speech act: *S wants to know the correct answer* (first epistemic interpretation) and *(S assumes that) the correct answer is part of A's beliefs* (second epistemic interpretation).

   I now briefly address the question why <u>integrated adjunct clauses</u> (restrictive relative clauses, ordinary temporal or causal adjunct clauses, etc.) would not receive a separate epistemic interpretation by (8), even though they have [–WH] on a meaningful complementizer. These cases are the reason why I have added a bracketed extension in (14) for adjuncts. The idea is that integrated adjunct clauses 'check', or 'melt in' their [–WH] specification with a [–WH] specification of their host clause, so that no separate epistemic interpretation results for the adjunct clause. This is of course merely the indication of a direction where I would see an answer to this question. (16) shows how the intermediate status of embedded V-to-C clauses discovered by Reis 1997 would be represented under the current assumptions.

(16)

Integrated adjunct clauses (incl. restrictive relatives)	Object V-to-C clauses	Unintegrated adjunct clauses (incl. appositive relatives)
Root Rule does not apply separately		Root Rule applies separately
Interpretation includes compositional connection		No compositional connection
[–WH] interpretation shared with host clause	[–WH] interpretation separate from host clause = a non-compositional connection to the host clause	

The correlations in (16) suggest that the Root Rule is separately applied only if there is no compositional connection (in the standard sense) between an adjunct and the host clause. As before, the object V-to-C clauses have an element of compositional interpretation via the trace. It would seem that this is what prevents the Root Rule from applying to them. I also argued for an additional non-compositional element in the interpretation of object V-to-C clauses – the interpretation of ⟨Epist⟩, which is now the epistemic interpretation of [–WH]. This of course means that they do not 'check' or 'melt in' their [–WH]-specification with their host clause.

The imperative, with no epistemic interpretation, must then have a different trigger of V-to-C. This is not unreasonable, since there are languages in which the imperative arguably undergoes V-to-C while the indicative does not (Han 1998). In German the imperative is also special insofar imperative morphology surfaces only in C, while indicative surfaces in C and in V-final position. We might maintain that V-to-C in imperatives is triggered by the feature [A] in C, which leads to the presupposition of *from A* in the target article. The difference to root infinitives, with a similar interpretation but no specification of [A], would be retained.

The account outlined here clarifies an issue raised in the comments of Reis and Gärtner, namely how the (partly) complementary distribution of complementizers and V-to-C fits into a picture in which elements of the illocutionary force potential trigger V-to-C. Essentially, V-to-C is triggered by the PF-requirement (6) of [−WH] (and perhaps of [A] in imperatives). Concomitantly V-to-C then also makes [−WH] visible at LF by (10) and thus indirectly triggers an epistemic reading by (8). The presence of *dass* in C leads to satisfaction of (6) and thus preempts V-to-C. Since *dass* is meaningless, [−WH] with *dass* ends up not visible at LF and thus does not trigger an epistemic reading.

The account follows Zaefferer in getting rid of the *from A* parameter at least within the epistemic speech acts. In doing so, it also reduces the load carried by the earlier *from A* parameter, and I am happy to have less ride on this, because, as Plunze and Zimmermann's discussion brings out, the distinction between the V-to-C triggering *from A* and the not V-to-C triggering *from X* is a subtle one. The resulting system also takes into account the criticism of *from A* in interrogatives in the argumentation of Plunze and Zimmermann. We now have the picture they argue for: a distinction between V-to-C interrogatives and V-final interrogatives in terms of the attribution of the correct answer to A, but with identical deontic force (the latter now uniformly due to the Root Rule).

The gaps in the interpretation, which I could get a clearer sense of in the exchange with Potts, seem to me filled in a plausible way now, which does not move much beyond our standard assumptions about interpretative mechanisms.

Last not least, the account now integrates the previously problematic sentence types with which the comment of Reis confronts it.

Hans-Martin Gärtner: Cross-linguistic riddles

Gärtner's comment raises interesting questions about the cross-linguistic applications of a system that assigns illocutionary force potential: The comparison with English reminds us of the importance, across languages, of integrating the complementary distribution between complementizers and V-to-C into an account of V-to-C. The movement differences between English and German additionally make it important to connect the account with language-specific checking requirements. CP-recursion raises additional questions. The interesting facts from the Tromsø dialect of Norwegian provide a challenge to the account, as does the unexpected Frisian *en*+Imperative construction, as shown by Gärtner's discussion.

Here I pick up one of these issues, parameterization of checking. I briefly show with a comparison of German to English how we may begin to expand the account to other languages. The leading idea of this sketch is that LF-properties of grammatical elements are shared across languages, while PF-properties vary.

I assume that movement is preferably late, i.e. that movement occurs at LF if possible and occurs earlier if forced. In German, the PF-requirement (6) forces early movement. (6) is not generalized to English. I assume the additional restriction (17) for both German and English instead.

(17) [−WH] must be visible at PF (attached to an overt element) or at LF (attached to a meaningful element).

(17) does not force overt movement, since LF-attachment is sufficient. However, (17) does force LF-movement in declaratives like (18a) and subject questions like (19a). Without LF-movement in these cases, [−WH] in C, not attached to an overt element, would also not be attached to a meaningful element, and thus violate (17). I assume that the subject moves to SPEC,CP at LF for consistency with assumption (20) below. The LFs in (18b) and (19b) are similar to German V-to-C clauses. Importantly, the LF-visible [−WH], as well as the feature [+WH] then trigger the same illocutionary interpretations as in German.

(18)   illocutionary force

a. overt: [−WH]   [−WH]   [Mary likes Bill]$_{IP}$

b. LF: Mary$_{[-WH]}$ likes$_{[-WH]}$ t   t   Bill   [−WH]: epistemic by (8)

(19)

a.   overt: [+WH]   [−WH]   [who likes Bill]$_{IP}$

b.   LF: who$_{[+WH]}$ likes$_{[−WH]}$ t   t   Bill   [+WH]: epistemic by (8)

                                                        [−WH]: A knows

                                                        answer, (8)

As above, I seek to cover V-to-C and do not account for movement to SPEC,CP. I force subject-aux inversion (V-to-C) with the somewhat odd assumption in (20).

(20)   At LF, the finite verb may not move across a filled SPEC,IP.

Consider an object question. If, as in (21a), the finite auxiliary were to fail to move overtly, it would have to move across a filled SPEC,IP at LF. This is blocked by (20). Without movement [−WH] would be invisible at LF, in violation of (17). The only possible derivation then is for the finite auxiliary to move overtly, where it can move without violating (20) to avoid the crash. The result is (21b).

(21)   a.   who$_{[+WH]}$ **[−WH]** [Mary **has** seen t]$_{IP}$

        b.   who$_{[+WH]}$ **has**$_{[−WH]}$ [Mary **t**   seen t]$_{IP}$

Obviously, this would need to be embedded in more principled assumptions. The preceding sketch shows this: If we leave the assumptions about LF constant across languages, the present account requires V-to-C at LF for a clause type without overt V-to-C but with similar illocutionary force potential to a German V-to-C clause type. The fact that English has overt V-to-C in some cases (non-subject questions) lends some plausibility to the assumption that it has V-to-C at LF in other clause types with the same or similar illocutionary force potential (subject questions and declaratives).

Paul Portner: Parallels in Romance mood

I am very glad that Portner (in section 2) is introducing into this volume and into my knowledge this wealth of related literature about the semantics of Romance mood, and that he is reviewing some of the interesting details for us. There are very clearly many parallels in the questions that arise and in the kinds of hypotheses that are pursued. I hope that the current exchange is the beginning of mutual inspiration of research on Romance mood and on German V-to-C (and perhaps German mood).

I agree with Portner (section 3.1.) that my definitions of preference predicates require a different notion of *which objects the preferences compare* than the definitions of Heim 1992 and Villalta 2000. The way I see it, there is a surfacey intuition about preferences, in which they compare propositions: I prefer the sun shining tomorrow to the sun not shining tomorrow. Just like that. In Heim 1992 preferences are seen as comparisons among individual possible worlds. At the atomic level: I prefer this possible world to that one. Natural-language preferences are then modeled in terms of this atomic comparison. That is an appealing and intuitive formalization of preferences. My formulas nevertheless assume that we do not draw on this atomic notion and that we instead define preferences as relations between sets of worlds, pursuing the surfacey intuition about them. For example, in terms of belief-worlds: If we take all those of my belief-worlds in which the sun shines tomorrow and all those in which it doesn't, I prefer the former *as a set* to the latter. Intuitively: I prefer that which the former set shares (that the sun is shining tomorrow) to that which the latter set shares (that the sun is not shining tomorrow). Surfacey, but, I think, consistent. I am assuming that we don't cash this out in terms of something else, such as preferences among individual worlds, and that this preference among sets therefore does not mean that all elements of the former set are preferable to all elements of the latter set. This is what Portner's pay raise example would go against.

Portner (section 4) also wonders whether one can get out of the dual status that I attribute to embedded V-to-C clauses, by maintaining that they are root clauses entirely. Perhaps the following considerations are convincing. For one thing, embedded V-to-C clauses are regularly preceded by non-terminal intonation, as indicated in (22a). There is no greater sense of a pause or prosodic break preceding them than in the cases of an object *dass*-clause. For another, if separate sentences are forced by the intonation as in (22b), ungrammaticality results due to the selectional restriction of the first verb, which now doesn't have the required object in its clause.

(22)   a.   Peter vermutet [/], er hat etwas vergessen. [\]
       b.   *   Peter vermutet. [\] Er hat etwas vergessen. [\]
               'Peter suspects (.) H/he has forgotten something.'

Further, sentence-bound syntactic phenomena readily occur between matrix clause and embedded V-to-C clause. Thus, the wh-phrase in (23) can bind the underlined pronoun in the embedded clause in both (23a) and the embedded V-to-C clause (23b), but not across sentences in (24a). Another example is multiple wh. It is possible in (23b) like in (23a), but not across sentences in (24b).

(23) a.   *Wer* glaubt dass <u>er</u> *wen* gesehen hat?
      b.   *Wer* glaubt, <u>er</u> hat *wen* gesehen?
           '*Who believes (that) he has seen who?*'

(24) a.   *Wer* glaubt es: <u>Er</u> hat Maria gesehen.   (* if *wer* binds the
               '*Who believes it: He has seen Maria.*'   pronoun *er*)
      b.   *   *Wer* glaubt es: Ich habe *wen* gesehen.   (* unless *wen* is
               '*Who believes it: I have seen who?*'   interpreted as
                                                                indefinite pronoun)

Zaefferer and Portner and more on object V-to-C clauses

In section 3.2. of his comment, Zaefferer suggests an alternative restriction on embedded V-to-C: If the matrix predicate entails that the subject does not exclude p, embedded V-to-C is acceptable. For example, if x believes or hopes p, then x does not exclude p – here embedded V-to-C is acceptable. On the other hand, if x doubts p it does not follow that x does not exclude p – here embedded V-to-C is not acceptable. I present the examples in (25) as problematic for this alternative. If x considers p likely or possible, x does not exclude p. Yet these predicates do not embed V-to-C. I offer an explanation of these examples in my account below.

(25) a.   *   Hans findet es wahrscheinlich, es regnet.
               '*Hans considers it likely, it is raining.*'
      b.   *   Hans hält es für möglich, es regnet.
               '*Hans considers it possible, it is raining.*'

Portner issues a challenge that I would like to take up in the remainder of these pages: What, in more precise semantic terms, do the V-to-C embedding verbs like *believe*, *dream*, and *imagine* have in common? I will outline an answer that also sharpens the explanation of the cases in (25)

and leads to a better understanding of the restrictions with preference-predicates.

The starting point is the definition of Epist in (53) of the target article, which remains unaltered (though with the list of predicates – beliefs, acts of imagination, dreams – deleted). The formal consequences of this definition are developed in more detail here. I will call predicates that have the formal property in (53a), and that can therefore embed V-to-C, *s-predicates* (where *s* stands for *subset*), as in (26a). Importantly, it can be shown that the equivalence in (26b) generally holds for s-predicates.[4]

(26)   a.   Let *s-predicates* (*subset-predicates*) be those attitudes by x to-wards p that can be expressed as $E^w(x) \subseteq p$, with $E^w(x)$ a set of possible worlds.
       b.   For all s-predicates, the following equivalence holds:
            $E^w(x) \subseteq p \land E^w(x) \subseteq q \Leftrightarrow E^w(x) \subseteq (p \cap q)$.

For example *John believes that it is raining and he believes that it is cold* is equivalent to *John believes that it is raining and that it is cold* (modulo discourse effects). (For belief, the equivalence in (26) includes the standard assumption that belief is closed under conjunction.)

The predicate *etwas wahrscheinlich finden*, *'to consider something likely'* cannot embed V-to-C as we saw in (25a). The following case shows that this is not an s-predicate: Let us say John (in his windowless basement) ponders three possibilities: it is raining, it is snowing, or the sun is shining. Let us assume that he excludes the simultaneous occurrence of two of these, and that he finds all three equally likely. Then we can say that John finds it likely that there is precipitation (rain or snow). We can also say that John finds it likely that there is no snow (but rain or sun). From this, however, it does not follow that John finds likely the conjunction of these two propositions. The conjunction of (rain or snow) and (rain or sun) is rain. Yet from what was said it does not follow that John finds it likely that it is raining. Thus, *finding something likely* (whatever the exact formalization) is not an s-predicate, i.e. it is not a predicate that can

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[4]   Proof (I here write E for $E^{w'}(x)$): $E \subseteq p \land E \subseteq q \Leftrightarrow (\forall w \in E: w \in p) \land (\forall w \in E: w \in q) \Leftrightarrow \forall w \in E: (w \in p \land w \in q) \Leftrightarrow \forall w \in E: w \in (p \cap q) \Leftrightarrow E \subseteq (p \cap q)$.

embed V-to-C in accord with (53) in the target article. (Compare beliefs: If John believes, under the same circumstances, that there is precipitation and that there is no snow, then he believes that there is rain.)

If a predicate X is an s-predicate, then X(p) and X($\neg$p) are contradictory.[5] For example, you cannot believe p and believe $\neg$p at the same time. You also cannot suspect that it is raining and suspect that it is not raining at the same time: *vermuten*, *'suspect'*, is an s-predicate (see (22a) above). It is in the logic of this test that it can give false positive results: you cannot find p likely and at the same time find $\neg$p likely. This might at first suggest that finding something likely is an s-predicate. However, we have a false positive result: finding something likely is not an s-predicate as we saw earlier; instead, it has an independent property (the 50%-threshold) that leads to this contradiction. The contradiction does not here come out of it being an s-predicate. Therefore, the test-results for *believe* and *suspect* do not really prove that these are s-predicates, they are merely compatible with that. It is also in the logic of the test that this test cannot give false negatives. If X is an s-predicate, it must lead to a contradiction between X(p) and X($\neg$p). An example of a negative result can be seen with *etwas für möglich halten*, *'to consider something possible'*, which we saw in (25b) does not embed V-to-C. John, sitting in a windowless basement, may find it possible that it is raining, and at the same time he may find it possible that it is not raining. This simple test shows us directly that we are not dealing with an s-predicate, for otherwise it would lead to a contradiction here.[6]

Let us then turn to acts of imagination and dreams. It is easily possible to imagine, in one moment, that it will rain tomorrow, and to imagine in the next moment that it will not rain tomorrow. Similarly, John's beliefs may change from one moment to the next, upon his receiving some additional information. We must assess these issues at a particular point in time. Acts of imagination give us a positive test result: At a particular point in time, John cannot imagine that it is raining tomorrow and that

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[5] Proof (I write E for $E^w(x)$): $p \cap \neg p = \emptyset \Rightarrow E \subseteq (p \cap \neg p)$ is impossible for any $E \neq \emptyset \Leftrightarrow E \subseteq p \wedge E \subseteq \neg p$ is impossible for any $E \neq \emptyset$ [on account of (26b)].

[6] *'John finds it possible that it is raining'* can be represented as $\lambda w[B^w(j) \cap \lambda w'$ rain(w') $\neq \emptyset]$. It cannot be represented in the form $\lambda w[E^w(j) \subseteq \lambda w'$ rain(w')].

it is not raining tomorrow. I would argue that dreams lead to the same test result. To be sure, dreams can move away from assumptions of our actual lives, and it may rain grapes in John's dream. Still, at a particular time, I would argue, John will either dream that it is raining grapes, or that it is not raining grapes, but not both. It is plausible that these positive test results derive from acts of imagination and dreams being s-predicates, which is compatible with their embedding V-to-C.

With a better formal understanding of the predicates that embed V-to-C, let me return to the thorny issue of preference predicates. Recall that *want* does not embed V-to-C while *hope* does (see (56) and (57) of the target article). I maintain (without proof) that *want* is not an s-predicate: Its complex definition in terms of a comparison of p and ¬p cannot be transformed into such a simpler form. If we allow that for the time being, there is still this question: If I want p, do I not then imagine p? And if wanting should entail imagining, which embeds V-to-C, why couldn't *want* embed V-to-C by virtue of entailing *imagine*?

In the following, let *ponder'* stand for predicates in the general range of imagination or pondering a possibility. Assume, as before, that x wants p is a comparison by x between p and ¬p as in (27a). Assume furthermore that x wants p entails x ponders' p as in (27b). Then, by the same token, x wants p also entails x ponders' ¬p as in (27c). Crucially, now, (27b) and (27c) together exclude the possibility that *ponder'* is an s-predicate – if *ponder'* were an s-predicate, (27b) and (27c) would result in a contradiction. (Recall that there are no false negatives of this test). We derive, then, that a comparison between p and ¬p as in the verb *want*, cannot entail any epistemic relation or attitude that could serve as a context for embedding V-to-C.

(27) a.   x wants p = x prefers p to ¬p
      b.   a. → x ponders' p
      c.   a. → x ponders' ¬p

Notice that the preceding result also obtains under calculations of *want* relative to belief (as suggested by Stalnaker 1984), since it rests on the contradiction between p and ¬p, which would remain intact.

Matters are different with *hope*, if we stick with the analysis that *hope* compares p with the things as they are believed to be. In (28), let *assume'* stand for some element in the general range of imagining and assuming.

(28) a. x hopes p in w $=$ x prefers $B^w(x) + p$ to $B^w(x)$ in w
 b. a. $\rightarrow$ x assumes' $B^w(x) + p$ in w
 c. a. $\rightarrow$ x assumes' $B^w(x)$ in w

Since *hope* does not compare p with $\neg p$, an entailment of *hope* to an s-predicate like *assume'* is not blocked in the case at hand (this predicate may be weaker than *assume*). For one thing, no problem arises with our test for contradictions, since the two propositions that are assumed by x in (28b) and (28c) are not in contradiction. For another, it is coherent to assume $[q \cap p]$ and to simultaneously assume q. For example, John may assume that Mary will visit him and bring him a present; John is simultaneously assuming that Mary will visit him. At the same time he may have a preference for the more specific scenario in which he will also get a present from her.

 Thus, whether or not *hope* is itself an s-predicate (I am not sure), it can entail an s-predicate such as *assume*. The examples in (29) suggest, furthermore, that it does entail some predicate of this kind. (29c) shows that a preference for Peter's still coming does not amount to an explanation for the waiting. (29a) shows that an assumption of Peter's still coming does explain the waiting. (29b) suggests that hoping, next to expressing a preference, entails something like assuming, which amounts to an explanation for the waiting.

(29) Peter wollte vor einer Stunde schon hier sein. Warum wartest du immer noch?
 'Peter wanted to be here an hour ago. Why are you still waiting?'
 a. Weil ich annehme, dass er noch kommt.   (good reason)
   'Because I assume that he is still coming.'
 b. Weil ich hoffe, dass er noch kommt.   (good reason)
   'Because I hope that he is still coming.'
 c. # Weil ich will, dass er noch kommt.   (grammatical
   Lit.: 'Because I want that he is still coming'   but not a
       reason)

Such an entailment of an s-predicate would then allow for *hope* to embed V-to-C, by the assumptions about object V-to-C clauses in the target article.

 On the whole, it seems that a semantic criterion with formally developed consequences, as Portner urged and inspired in his comment, is within reach.

Thanks again to all the commentators for the great and inspiring comments and contributions!

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