

The Dimensions of Verum

Daniel Gutzmann & Elena Castroviejo Miró*

Abstract

In this paper we study the semantics of so-called *verum focus* from the point of view of a multi-dimensional semantic model. As coined by Höhle (1992), *verum focus* is non-contrastive focus on the verb or a complementizer located in C in German, and it is a way of realizing the corresponding operator VERUM. In the small amount of previous literature, VERUM has been treated as a pure semantic operator. In contrast, we show that those one-dimensional treatments make the wrong predictions about the truth-conditions of an utterance involving *verum focus* as well as about its discourse contribution. Equipped with a multidimensional semantic framework, we treat VERUM as an expressive function that operates in the use-conditional dimension. It takes as argument a proposition p and expresses the interpretational instruction to downgrade the corresponding question $?p$ from the question under discussion. We show that this approach to VERUM can account for the distribution of *verum focus*, and its discourse contribution.

1 Introduction

This paper examines the semantics of the operator that has been dubbed VERUM by Höhle (1992), who carried out the first study of what he has called *verum focus*. *Verum focus* – which is supposed to realize a corresponding operator VERUM – is the non-contrastive focus on the verb or the complementizer, both located in C in German. According to Höhle (1992, 114), this VERUM operator somehow puts emphasis on the truth of the proposition it takes scope over. For instance, in a dialog like (1) in which the current status of Carl's book project is brought under discussion by A's question, B can use focal stress on the auxiliary *hat* ('has') to realize VERUM and thereby highlight the truth of the proposition that Carl has finished his book.

- (1) A: I wonder whether Carl has finished his book.
B: Karl HAT sein Buch beendet.
Carl has.VF his book finished
"Carl HAS finished his book"

*We would like to thank the audience of the Colloque de Syntaxe et Sémantique à Paris 2009, as well as the audience of the GK-Kolloquium at the Universität Frankfurt and of the colloquium at the Universität Potsdam for their contribution to the improvement of this paper, and an anonymous reviewer for his/her remarks. We ARE responsible for any remaining mistakes.

The working paraphrase that Höhle (1992, 112) uses as the meaning of the *verum* operator in his paper is simply that of a matrix sentence that states that the embedded proposition is true:

- (2) $[[\text{VERUM}(p)]] \approx \text{“It is the case/true that } p\text{”}$

VERUM is not restricted to German. Cross-linguistically, it can be realized in many different ways. As we have seen, VERUM is realized by *verum focus* (henceforth VF) in German. In contrast, both in English and in Spanish, we find special kinds of lexical insertions to instantiate the *verum* operator.¹

- (3) A: I wonder whether Carl has finished his book.
 B1: Karl **HAT** sein Buch beendet. (German \Rightarrow VF in C)
 B2: Carl **did** finish his book. (English \Rightarrow *do* insertion)
 B3: Carlos **sí** acabó su libro. (Spanish \Rightarrow *sí* insertion)

Our main goals in this paper are the following: First, we want to elaborate on this description of the contribution of VERUM. Second, we will show how many of the special features of the linguistic means that instantiate VERUM as well as the discourse conditions that license their presence can be derived from our semantics of VERUM. These aims raise a set of subquestions we address in the course of this paper. (a) What is the general semantics of VERUM? (b) How does VERUM interact with different sentence types and what is the compositional semantics for this interaction? (c) How can the discourse conditions that license VERUM be accounted for?

Our claims are that (i) VERUM is a multidimensional operator that takes truth-conditional content as input and returns use-conditional content as output. (ii) It is not a force operator; in fact, it has narrow scope with respect to any force operators. (iii) It takes as input a proposition *p* and conveys that *?p* should be downdated from the Question Under Discussion.

This paper is organized as follows: We first present the properties of VF. We show in what way it differs from other kinds of focus and highlight its idiosyncratic distribution. Section 3 is devoted to the analysis of the previous accounts to VERUM. Section 4 spells out our multidimensional analysis, while section 5 elaborates the analysis by integrating the discourse semantics of VERUM. The paper concludes with a section on the remaining issues that need to be addressed in future research.

¹Lenoetti and Escandell-Vidal (2009) analyze examples like (i) and (ii), which involve fronting in Spanish, in terms of VF. An exhaustive cross-linguistic study of the realization of VERUM is out of the scope of this article. We thus remain silent about the compatibility of our proposal with the phenomenon illustrated in (i) and (ii).

- (i) Algo debe saber.
something must.PRS.3SG know
 “S/he must know something”
- (ii) Lo mismo digo (yo)
the same say.PRS.1SG (I)
 “I say the same”

2 Verum focus in German

In his 1992 paper, Höhle carried out the first detailed investigation of a special kind of focal stress in German that seems to somehow emphasize the truth of the proposition expressed by the sentence. Because of this truth-related function, Höhle (1992, 114) coined the term *verum focus* for this kind of focus and proposed that it is connected with the presence of the verum operator VERUM, which is located in the syntactic C position in German (Höhle, 1992, 130).

In the following discussion, we will establish some properties of VF. First, as we will show in §2.2, it is neither the meaning of the stressed expression nor its form that matters for licensing VF but the meaning of the entire proposition, since it is always the syntactic C position that carries VF, regardless of what expression fills that position. Secondly, VF has no influence on the truth-conditions of the sentence in which it occurs. Furthermore, VF can occur across a wide range of sentence types. These properties will then provide the basis for the semantic analysis of the verum operator that we will carry out in the later parts of this paper.

2.1 What is and what is not verum focus

Stress on phrases has a variety of interpretations. German has at least the following types:

(4) **Information Focus:**

A: What did Carl write?

B: Carl wrote a BOOK.

(5) **Contrastive Focus:**

A: Did Carl finished his paper?

B: He finished his BOOK.

(6) **Exclamative Focus:**

How TALL Bill is!

Höhle (1992) shows in his paper that VF cannot be reduced to any of the other kinds of focus and therefore constitutes a genuine object of study. That VF has nothing to do with exclamative focus is obvious from their difference in meaning and position. In the following subsection, we will try to show that VF cannot be reduced to neither information nor contrastive focus.

2.2 Verum applies to the proposition

Beside its special semantics, VF has many particular properties that make it a very interesting phenomenon. The most prominent feature is what gets stressed by VF. In contrast to all the other kinds of focus, the meaning of the stressed element does not matter in the case of VF. Instead, it is rather the position that determines the expression that receives VF. Take for instance the following dialog in which A raises the question of Carl writing a screenplay (Höhle, 1992, 112). In her answer, B can put VF on the finite verb *schreibt* (writes) to emphasize that Carl is indeed writing a screenplay.

- (7) A: Hanna claims that Carl is writing a screenplay.
 B: Karl SCHREIBT ein Drehbuch.
Carl writes.VF a screenplay
 “Carl IS writing a screenplay.”

That it is not the meaning of *schreibt* that is focused by VF can be seen if the topic of the discussion is set into perfect tense. In German, perfect tense is expressed by a finite form of an auxiliary – either *haben* (to have) or *sein* (to be) – and the past participle of the predicate. Since the auxiliary is finite, it has to undergo head movement and ends up in C in the case of a declarative, while the participle remains at the right edge of the sentence (presumably inside the VP). Crucially, in such a case, it is the auxiliary that carries VF, and not the participle, which bears the lexical content of the complex predicate.

- (8) A: Hanna claims that Carl has written a screenplay.
 B: Karl HAT ein Drehbuch geschrieben.
Carl has.VF a screenplay written
 “Carl HAS written a screenplay.”

Except for the tense of the discussed proposition, the dialogs in (7) and (8) are the same. In both scenarios, A (implicitly) raises the question of whether *p*, and B positively answers *p* and uses VF to emphasize the truth of *p*. However, in (7) it is *schreibt* (writes) that is stressed, while in (8), the auxiliary *hat* (has) receives VF. This indicates that it is not the meaning of the stressed expression that gets highlighted by VF. This represents a sharp contrast to other kinds of semantic focus, where it is clearly the content of the stressed expression that gets focused. Take for instance information focus. If we change tense (cf. (9)) such that we shift from a simple predicate to a complex one, it is still the content-carrying participle that has to be stressed, not the auxiliary.

- (9) A: What did Carl do to the book?
 B: He BURNED it.
- (10) A: What will Carl do to the book?
 B: He will BURN it.
 B': #He WILL burn it.
- (11) A: What is Carl doing to the book?
 B: He is BURNING it.
 B': #He IS burning it.

Höhle (1992) brings up particle verbs and idioms as further evidence for the fact that it is not the meaning of the stressed expression that is focused. In particle verbs like *aufhören* (to stop), it is the particle that carries stress if the semantic content of the entire verb should be stressed. This can be seen for instance in the case of contrastive focus.

- (12) A: I am afraid that Peter will keep on smoking forever.
 B: Nein, er hört damit AUF.
no he stops with it PART.CF
 “No, he is going to STOP it.”

In contrast to this stress pattern, it is the finite part of the particle verb (*hört*) that receives main stress if VF is used.

- (13) A: Will Peter stop smoking?
 B: Peter HÖRT mit dem Rauchen auf.
Peter stops.VF with the smoking PART
 “Peter WILL stop smoking.”

Similar considerations apply to idioms. If you want to emphasize the meaning of the idiomatic verb phrase *jemanden den Garaus machen* (to kill, lit. “to cook someone’s goose”), the idiomatic object *Garaus* inside the VP carries the focal stress as shown by the following example of information focus.

- (14) a. What will she do to him?
 B: Sie macht ihm den GARAUS
she makes him the “Garaus”
 “She will cook his GOOSE.”

Again, if VF is used in such a sentence, it is the expression that resides in C, regardless of what that expression means or whether it is full predicate like in (15) or an auxiliary as in (16):

- (15) A: I cannot imagine that she will kill him.
 B: Sie MACHT ihm den Garaus.
she makes him the “Garaus”
 “She WILL cook his goose.”
- (16) A: I cannot imagine that she had killed him.
 B: Sie HAT ihm den Garaus gemacht.
she has him the “Garaus” made
 “She HAD cooked his goose.”

Another case that clearly distinguishes VF from other semantic kinds of focus is that of so-called *C-verum focus* (Höhle, 1992). In all the examples we have discussed so far, VF is on the *finite verb* residing in C. These are instances of what Höhle calls *F-verum focus*. In contrast to this, it is not the finite verb that is stressed in the case of C-verum focus, but the *complementizer* which is also located in C.

- (17) A: Peter talks as if he were a philosopher.
 B: Ich denke, DASS er ein Philosoph ist.
I think that he a philosopher is
 “I think that he IS a philosopher.”

The same distinction between VF on the one hand and the content-related kinds of focus on the other holds in the cases of embeddings, too. New information inside an embedded proposition can be highlighted by information focus in the same way as in matrix contexts.

- (18) A: What do you think about Peter?

- B: Ich denke, dass er ein PHILOSOPH ist.
I think that he a philosopher is
 “I think that he is a PHILOSOPHER.”

Like in the other cases of content related focus, it is the word that contributes the content to be highlighted that gets assigned main stress, namely the meaningful part of the the complex predicate *ein Philosoph sein* (to be a philosopher).

Crucially, a complementizer like *dass* (that) is often said to contribute no semantic meaning at all (cf. e.g. Truckenbrodt, 2006, 396). Hence, in case of embedded VF, the distinction between VF and information focus is even sharper, as it is far from clear what content could be emphasized by stressing the complementizer.²

All these examples show that it is always the expression in C that carries VF, regardless of the meaning of the stressed expression. Therefore, Höhle (1992) concludes that VF is not related to the meaning of the expression by which it is carried. Instead, it correlates with the presence of a semantic operator VERUM that is located in the C position. This operator in turn takes the entire proposition expressed by the sentence as its argument.

2.3 No effect on truth-conditions

Information or contrastive focus at least can have an effect on truth conditions. This is especially obvious in the presence of focus sensitive particles like *only*. Information focus is commonly analyzed as eliciting a set of contextually given alternatives to the focused constituent (e.g. Rooth, 1992). Focus-sensitive particles are then said to operate on this layer of alternative meaning. For instance, *only* states that for all alternatives to the focused expression, if an alternative is true, it is identical to the focused expression (cf. e.g. Beaver and Clark, 2008).³

- (19) Peter only KICKS the dog.
 ~> “Peter kicked the dog and for all alternative activities he could do to the dog: if Peter does an alternative, it is kicking the dog.”
- (20) Peter only kicks the DOG.
 ~> “Peter kicked the dog and for all alternative targets of his kicking: if Peter kicked an alternative object, it is the dog.”

Obviously, (19) and (20) have different truth-conditions. (19) is true if Peter does not do anything else to the dog besides kicking the poor animal (even if he kicks other animals as well). (20) requires that Peter does not kick any other animal, even if this is compatible with him doing something different to the dog in addition. Hence, different positions of the information focus lead to different truth-conditions. However, this is only the case if there are focus-sensitive expressions present. But even if there are no

²Of course, you can focus *dass* (that) to contrast it with another complementizer like *ob* (whether). Needless to say, you can stress *dass* if it is the target of a metalinguistic negation (Geurts, 1998; Horn, 1989).

³We simply included the preajcent that Peter kicked the dog into the paraphrase. This, however, is only for convenience since we do not want to delve into the discussion of whether it is entailed, asserted, implied, or presupposed. For discussion, cf. amongst many others Horn (1996); Beaver and Clark (2008).

such expressions, information focus on different expressions leads to a difference in the overall meaning of a sentence insofar as a different set of alternatives is evoked.

This, again, contrasts with VF, which has neither influence on truth-conditions nor does VF on a different expression lead to differences in other dimensions of meaning. However, minimal pairs of sentences that differ only with respect to which expression carries VF are hard to find, since VF is always located at the C position, as we have seen in the last subsection. An almost minimal pair can be construed if we compare a pair of sentences in the past perfect and the simple past, since the meaning of these tenses do not differ substantially in German and we end up with different expressions in C.

- (21) A: Back in the days, Peter always talked as if he had been a philosopher.
 B: Er IST ein Philosoph gewesen.
he is.VF a philosopher been
 “Peter WAS a philosopher.”
- (22) A: Back in the days, Peter always talked as if he had been a philosopher.
 B: Er WAR ein Philosoph.
he is.VF a philosopher been
 “Peter WAS a philosopher.”

Crucially, there is no situation in which (21) is true while (22) is not, or *vice versa*. This is so, because VF does not have any influence on the truth-conditions of either sentence in the first place, and therefore, different positions cannot cause any differences, given that both sentences without VF have the same truth-conditions, to begin with. This can be seen by comparing a sentence with VF to the same sentence without VF.

- (23) a. Peter hat den Hund getreten.
 “Peter kicked the dog.”
 b. Peter HAT den Hund getreten.
 “Peter did kick the dog.”

(23a) and (23b) are true in exactly the same situations, namely in those in which Peter kicked the dog. The presence of VF does not make any difference in this respect. Of course, VF does have meaning, but it has nothing to do with truth-conditions. As we will see in § 5, VERUM raises specific requirements on the discourse context in which VF is used. However, even if the licensing conditions do not apply, using VF nevertheless can never render an otherwise true sentence false, but it can make an utterance infelicitous. In this respect, we can think of the meaning of VERUM and VF as being *use-conditional* (Recanati, 2004, 447) instead of being truth-conditional. This idea will provide the basis for our multidimensional analysis in § 4.

2.4 Verum focus in non-declarative sentence types

To conclude our short overview of the empirical facts about VF in German, let us illustrate the fact that VF can occur in many sentence types other than assertions. We will restrict ourselves to three further sentence types.⁴ First of all, VF can also be used in *yes/no*-questions (“*yn*-questions” henceforth).

⁴Note that for instance, F-verum focus is also possible in finite V2-optatives and V1-conditionals.

(24) **F-verum focus in *yn*-questions** (Höhle, 1992, 112)

A: I have heard that Carl kicked the dog.

B: HAT er den Hund denn getreten?

has he the dog MP kicked?

"HAS he kicked the dog?"

This is important since *yn*-questions, especially negative ones, are what Romero and Han (2004) deal with when they develop a formal semantics for VERUM. In addition to that, VF is also possible in *wh*-interrogatives:

(25) **F-verum focus in *wh*-questions** (Höhle, 1992, 112)

A: I haven't kicked the dog.

B: Wer HAT den Hund denn getreten?

who has.VF the dog MP kicked

"Who HAS kicked the dog?"

Besides declarative and interrogative sentence types, VF is also allowed to occur in imperative sentences. This is interesting, because while assertions and questions deal with the knowledge of the discourse participants, this is not so obvious for imperatives.

(26) **F-verum focus in imperatives** (Höhle, 1992, 119)

A: [hesitating to sit down]

B: NIMM dir endlich den Stuhl!

take.IMP.VF you finally the chair

"Do take the chair!"

Beside these cases of VERUM being realized in matrix contexts, it can also be located inside embedded sentences. Subordinated clauses introduced by the complementizer *dass* (*that*) can also carry VF. As we have seen, VF is then assigned to the complementizer itself, which also resides in C.

(27) **C-verum in embedded *dass*-clauses**

A: David smells like a zombie.

B: Ich denke, DASS er ein zombie ist.

I think that he a zombie is

"I think that he is (indeed) a zombie."

The complementizer *dass* is a [-*wh*]-marked expression like its English counterpart *that*. In contrast, the complementizer *ob* (whether) is [+*wh*]-marked, so it yields embedded questions. Still it can carry focal stress to realize VERUM.

(28) **C-verum in embedded *ob*-clauses**

A: David smells like a zombie.

B: Ich frage mich, OB er ein zombie ist.

I ask myself whether he a zombie is

"I ask myself whether he is (indeed) a zombie."

Verum focus thus seems to be pretty much independent of the kind of sentence in which it occurs, which suggests that it does not depend on the presence of a particu-

lar kind of sentence mood operator licensing it. However, we will see that there is an interaction between such operators and VERUM, which is what is responsible for the different discourse contributions VF seems to make in different sentence types.

3 Previous approaches to VERUM

In this section, we will discuss two previous approaches to the semantics of VERUM: the first sketch by Höhle (1992) and the more elaborated account by Romero and Han (2004). By pointing out the virtues and problems of the previous literature, we lay out the grounds for our own suggestion in section § 4.

3.1 A first approach to verum focus

Höhle (1992) describes the meaning of VERUM as an emphasis on the truth of the propositional content of the sentence. For different sentence types, he provides the following paraphrases:

- (29) **Paraphrases for VERUM** (cf. Höhle, 1992)
- a. David **IST** ein zombie.
 \rightsquigarrow **It is true**, that David is a zombie.
 - b. **IST** David ein zombie?
 \rightsquigarrow **Is it true** that David is a zombie?
 - c. **NIMM** den Stuhl!
 \rightsquigarrow **Make it true** that you take the chair!

In each case, VERUM refers to the truth of propositions it scopes over. Given these paraphrases, the semantics for VERUM could be formulated as follows:

- (30) $\llbracket \text{VERUM}(p) \rrbracket \approx$ “It is the case/true that p ”

The differences in the paraphrases in (29) can then be traced back to the different sentence mood operators that take scope over VERUM.

This approach to the semantics of VERUM is however not adequate because, we will see, it is far too simple to capture its complex semantics. Höhle (1992, 118), whose aim was not to account for the semantics of VERUM, thinks that the main problem of his paraphrase is that there is not a crucial semantic difference between asserting p and asserting *it is true that p*. Therefore, this approach cannot make real predictions about the conditions under which the presence of VERUM- and therefore VF- are licensed, since asserting *It is true that p* will be felicitous in almost the same contexts as asserting p .

3.2 VERUM as a conversational operator

Romero and Han (2004) (“R&H ” henceforth) present a more sophisticated account for VERUM. They argue that VERUM can also be realized by certain morphemes (e.g. *really*) or by word order variation like negation preposing in English. They concentrate on the role of VERUM in negated *yn*-questions.

- (31) **VERUM expressed by negation preposing**
- a. Does John not drink?
Neutral yn-question
 - b. Doesn't John drink?
Positive epistemic implicature: The speaker believes or at least expects that John drinks.
- (32) **VERUM expressed by really**
- a. Does John drink?
No epistemic implicature necessary
 - b. Does John really drink?
Negative epistemic implicature: The speaker believed or at least expected that John does not drink.

R&H provide a formal definition of VERUM as a *conversational epistemic operator* that is “used not to assert that the speaker is entirely certain about the truth of p , but to assert that the speaker is certain that p should be added to the Common Ground (CG).” (Romero and Han, 2004, 627).

- (33)
$$\llbracket \text{VERUM}_i \rrbracket^{g^x/i} = \lambda p_{(s,t)} \lambda w. \forall w' \in \text{Epi}_x(w) [\forall w'' \in \text{Conv}_x(w') [p \in \text{CG}_{w''}]]$$

$$= \text{FOR-SURE-CG}_x$$

$$\rightsquigarrow \text{“I am sure that we should add the proposition } p \text{ to the common ground.”}$$

This operator takes the propositional content of an utterance as its argument. In the case of a declarative we then end up with a new proposition, e.g. that the speaker is sure that the propositional argument of VERUM should be added to the common ground.

- (34) **VERUM in declaratives**
Peter does write a book. $\rightsquigarrow \text{VERUM}(p)$
 \rightsquigarrow “I am sure that we should add the proposition that Peter writes a book to the common ground.”

In *yn*-questions in which negation preposing introduces VERUM, there is also the question morpheme “?” which takes scope over the entire verum-proposition to yield a set of propositions as the denotation of the entire interrogative.

- (35) **VERUM in yn-questions**
Doesn't Peter write a book? $\rightsquigarrow ?(\text{VERUM}(p))$
= {“I am sure that we should add the proposition that Peter writes a book to the common ground.”, “I am not sure that we should add the proposition that Peter writes a book to the common ground.”}

We believe that this approach is a big step towards a better understanding of VERUM. Especially, linking VERUM to the discourse structure by including a notion like the CG seems correct. And thanks to the fact that Romero and Han's approach is elaborated, it can be tested against data to check its plausibility. In the next subsection we address some problems which an approach along the lines of (33) faces.

3.3 Problems

Romero and Han's (2004) one-dimensional approach predicts that what is denoted by a verum-declarative is the proposition that $\text{VERUM}(p)$, while the meaning of a polar verum-interogative is the set containing $\text{VERUM}(p)$ and $\neg\text{VERUM}(p)$. Moving from denotations to the discourse layer, this predicts – provided that no further stipulations be made – that what is asserted by a verum-declarative is that $\text{VERUM}(p)$ and what is asked by a polar verum-interogative is whether $\text{VERUM}(p)$.

This, however, does not seem to be the case. If we deny the verum-assertion that p , we only deny p , just as if we deny the plain assertion that p . Hence, the denials in (36B) and (37B) below both negate the ordinary truth-conditional content of the previous utterance regardless of the presence of VF . That is, they both reject the proposition that Carl writes a book.

(36) **Denial of the assertion that p**

A: Karl schreibt ein Buch.
“Carl is writing a book.”

B: No, that's not true. (Carl is not writing a book)

(37) **Denial of the verum-assertion that p**

A: Karl SCHREIBT ein Buch.
“Carl IS writing a book.”

B: No, that's not true. (Carl is not writing a book)

Furthermore, it is infelicitous to deny the entire proposition $\text{VERUM}(p)$ if we tried to make it explicit.

(38) A: Karl SCHREIBT ein Buch.

“Carl IS writing a book.”

B: No, that's not true. #You are not sure that he is writing a book.

Note that the infelicity of trying to deny the content of VERUM does not stem from the paraphrase R&H have provided. Any other paraphrase would lead to an infelicitous utterance.⁵

The fact that we can deny the a propositional subpart p of $\text{VERUM}(p)$ in (37) is not a problem for R&H, since it is also possible in the case of other embedded propositions. Take for instance propositions embedded under attitude predicates:

(39) **Inner and outer denial**

A: I believe that John is rich enough to buy a house.

B1: No, that's not true. He can't afford it.

⇒ Denial of the embedded proposition that John is rich enough to buy a house.

B2: No, that's not true. I know that you don't believe that.

⇒ Denial of the outmost proposition that A believes that John is rich enough to buy a house.

⁵Maybe except for a simple one along the lines of (30) that gives a paraphrase like “It is true” to VERUM , since *No that's not true. It is not true that he is writing a book* is felicitous.

In contrast, in the case of VERUM, we can never deny the entire proposition VERUM(p).

(40) **No outer denial in the case of VERUM**

A: Karl SCHREIBT ein Buch.

B1: No, that's not true. He writes a personal diary.

⇒ Denial of the inner proposition that Karl writes a book.

B2:#No, that's not true. You are not sure about that.

#⇒ Denial of VERUM(p).

The impossibility to deny the proposition that VERUM(p) is a major problem for R&H's approach, as it does not follow from their account that it should be impossible to deny the verum-proposition. On the contrary, since VERUM is part of the semantic objects denoted by verum-utterances, their approach predicts that it should be straightforward to deny it just as it is for other semantic operators like, e.g. modals or, as we have seen in (39), propositional attitude predicates.

A parallel problem for R&H's approach applies to VERUM in interrogatives. Recall that, according to their account, what is denoted by a verum-*yn*-question like *Doesn't Peter write a book?* is the set of possible answers to that question, i.e., the set consisting of VERUM(p) and \neg VERUM(p). Accordingly, what is asked by a verum-*yn*-question is whether VERUM(p), that is, whether the addressee is sure that it should be added to the common ground that Peter writes a book. Therefore, an answer to the verum-interrogative should be about VERUM(p), too. But contrary to these predictions, in spite of the presence of the verum operator, a verum-interrogative is nevertheless a question about the propositional content p instead of VERUM(p), and an answer to such a question still concerns p .

- (41) A: Isn't Carl writing a book?
 B: No, he is not writing a book.
 B': #No, I am not sure.

That R&H's approach makes the wrong predictions regarding the way verum-questions work in dialog, is also shown by the fact that it predicts different truth or sincerity conditions for answers to verum-questions. This can be illustrated by setting up a context in which being sure that a certain proposition should become common ground can be true while the proposition itself is not.

- (42) CONTEXT: A wants to know whether Lisa was at the party, and B knows that Lisa was at the party. However, B has a special interest in making A believe that Lisa was not at the party.
 A: WAR Lisa auf der Party?
 "WAS Lisa at the party?"
 B: No.
 B': #No, I am not sure whether Lisa was at the party.

According to R&H's proposal, however, B's answer in (42B) would count as sincere as she is sure that the proposition that Lisa was not at the party should be added to the common ground. However, it is obvious that B is lying and not saying the truth because A used VF in her question. Nevertheless, B's denial in (42B) does not even have the

predicted interpretation, since it must be interpreted as negating that Lisa was at the party. This is also shown by the fact that you cannot give an explicit answer to the entire verum-question while using *no* at the same time. Of course, B can felicitously express uncertainty, but this has nothing to do with the presence of VF as this is also possible in plain questions, and is only possible if she does not use a negating element like *no* simultaneously.

- (43) A: WAR Lisa auf der Party?
 "WAS Lisa at the party?"
 B: (#No,) I am not sure whether Lisa was at the party.
- (44) A: War Lisa auf der Party?
 "Was Lisa at the party?"
 B: (#No,) I am not sure whether Lisa was at the party.

That R&H's proposal does not get the discourse behavior of verum-questions right is already noted by Romero (2005, 358f.) herself, who in turn attributes this observation to Lance Nathan. Drawing parallels to expressive items and referring to work by Potts (2002) and Kratzer (1999), Romero suggests that "the answer pattern can be explained if we assume that *really*/VERUM behaves like an expressive item in *yes*- and *no*-answers." (Romero, 2005, 360.) This is, except for some slight modifications, what we will formalize in the next section. Note that Romero (2005) only seems to be willing to allow VERUM to behave like an expressive item in questions and answers. However, as we have shown in (37)–(40), VERUM is not part of the truth-conditional content in an assertion, either. Therefore, we will treat VERUM in general as an expressive or, as we prefer to call it, a *use-conditional item*.

4 A multidimensional analysis of VERUM

By examining the behavior of VF and pointing out the main problems of R&H's approach to the semantics of the verum operator, we have arrived at the thesis that VERUM is best treated as a use-conditional expression that does not have any influence on the truth-conditional content of the utterance it occurs in. For sure, VERUM still expresses conventional semantic content. Its meaning is rather fixed and not up to the diversity that characterizes pragmatic meaning like conversational implicatures. In the following, we will develop a semantic apparatus to give a compositional semantics for VERUM.

4.1 Theoretical claims

As we have already said, we side with Romero (2005) and claim that VERUM is a use-conditional expression. To formalize this idea, we make use of the multidimensional semantics developed in Gutzmann (2008, 2009). These basically constitute modifications and extensions of the influential research carried out by Potts (2005) on the logic of conventional implicatures (LCI). The first major difference between these two semantics is that the additional dimension of meaning is reinterpreted as being use-conditional (with use-values being the denotation of propositional content at this di-

mension), while in Potts' system, the second dimension, though being separated, still receives a truth-conditional interpretation.

The second distinction between LCI and the semantics from Gutzmann (2008) can be found in the type system as laid out in the next subsection. In contrast to LCI, our system allows for expressions that map use-conditional content to use-conditional content. This allows for more interaction between different use-conditional items like e.g. modal particles and sentence mood operators.

Within this multidimensional semantic framework, we analyze VERUM as an operator that takes ordinary truth-conditional content as input and yields a use-conditional proposition as output. The argument of VERUM is a proposition p corresponding to the truth-conditional propositional content of the sentence in which VERUM occurs. The returned use-conditional proposition expresses use-conditions on the utterance of the sentence, leading to infelicity of that utterance if not fulfilled but never being able to render an otherwise true utterance false.

4.2 Use-conditional proposal

The type system of the formal semantics we employ to analyze VERUM is given by the following recursive rules:

- (45) **Use-conditional types**
- a. e , t , s and u are basic types.
 - b. e and t are truth-conditional types.
 - c. u is a use-conditional type.
 - d. s is a world type.
 - e. If σ and τ are truth-conditional types, then $\langle\sigma, \tau\rangle$ and $\langle s, \tau\rangle$ are truth-conditional types.
 - f. If σ is a truth-conditional type and τ is a hybrid or pure use-conditional type, then $\langle\sigma, \tau\rangle$ and $\langle s, \tau\rangle$ are hybrid use-conditional types.
 - g. If σ and τ are hybrid or pure use-conditional types, then $\langle\sigma, \tau\rangle$ $\langle s, \tau\rangle$ are pure use-conditional types.
 - h. The set of types is the union of the basic, truth-conditional and all use-conditional types.

We analyze VERUM as a hybrid use-conditional function from a truth-conditional propositional argument to propositional use-conditional content.⁶

$$(46) \quad \text{VF} \rightsquigarrow \lambda p_{\langle s, t \rangle}. \text{VERUM}(p) : \langle \langle s, t \rangle, u \rangle$$

The use-conditional proposition should be independent from the ordinary truth-conditional content.

- (47) **The T-C TIER and the U-C TIER**
- a. Karl SCHREIBT ein Buch.
 - b. T-C TIER: **write(book)(carl)** : $\langle s, t \rangle$

⁶To avoid world-type overload, we omit the s from all use-conditional types, keeping in mind that u is supposed to stand for propositional use-conditional content and not just use-values.

c. U-C TIER: VERUM(**write(book)(carl)**) : u

This is achieved by the special hybrid use-conditional application which mirrors Potts' (2005) CI-application. The superscribed "U" indicates that the type must be a (hybrid or pure) use-conditional type.

(48) **Hybrid use-conditional application**

$$\begin{array}{c} \beta : \sigma \\ \bullet \\ \alpha(\beta) : \tau^U \\ \wedge \\ \alpha : \langle \sigma, \tau^U \rangle \quad \beta : \sigma \end{array}$$

The rule (48) for hybrid use-conditional application ensures that use-conditional content is isolated from the semantic parsetree after it has been applied to its argument, which in turn is passed up the tree unmodified as if there were no use-conditional content at all. Hence, the semantic parsetree for a verum-declarative looks like the this:

(49) Karl SCHREIBT ein Buch

$$\begin{array}{c} \mathbf{write(book)(carl)} : \langle s, t \rangle \\ \bullet \\ \mathbf{VERUM(write(book)(carl))} : u \\ \wedge \\ \lambda p. \mathbf{VERUM} : \langle \langle s, t \rangle, u \rangle \quad \mathbf{write(book)(carl)} : \langle s, t \rangle \end{array}$$

The outcome of the semantic derivation in (49) is the truth-conditional proposition that Carl is writing a book. However, we still need a way to interpret the use-conditional content $\mathbf{VERUM(write(book)(carl))} : u$, that has been isolated by the rule of hybrid use-conditional application. Like Potts (2005), we interpret the entire parsetree in order to achieve this. We do not repeat the formal definition here, as the basic idea is very simple. We split the interpretation of a sentence into two dimensions. The first dimension, corresponds to the descriptive, truth-conditional content of the sentence. Let us call it $TC(S)$. The second dimension hosts the expressive, use-conditional content of the sentence, called $UC(S)$. As usual, we identify the truth-conditional content of a sentence with the root node of the semantic parsetree for that sentence. We get the use-conditional content of a sentence by collecting all the use-conditional expressions that have been isolated during the derivation. The entire interpretation of a sentence is then given by the tuple consisting of the interpretation of its truth-conditional content and the interpretation of its use-conditional content. Schematically, this can be formulated as follows:

(50) $\llbracket S \rrbracket = \langle \llbracket TC(S) \rrbracket, \llbracket UC(S) \rrbracket \rangle$

For our example (49), we thus end up with the tuple consisting of the proposition that Carl is writing a book in the truth-conditional dimension, and the interpretation of the use-conditional expression $\mathbf{VERUM(write(book)(carl))} : u$ in the second dimension.

(51) $\llbracket (49) \rrbracket = \langle \llbracket \mathbf{write(book)(carl)} \rrbracket, \llbracket \mathbf{VERUM(write(book)(carl))} \rrbracket \rangle$

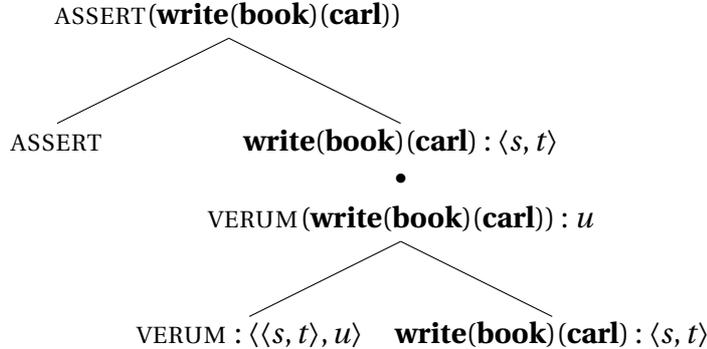
Regarding the semantics, use-conditional propositions denote use-conditions. This is achieved by adding a new denotation domain for the basic type u to the common model-theoretic definitions.

(52) The domain of expression of type u is $D_u = \{\checkmark, \not\checkmark\}$, the set of use-values.⁷

Since **VERUM** denotes an semantic object of type u when applied to its propositional argument, this captures directly that **VERUM** poses use-conditions on an utterance instead of affecting the truth-conditions of the corresponding proposition.

Because our approach is multidimensional and distinguishes the use-conditional content from the truth-conditional one, it can straightforwardly solve the problems for R&H's approach we raised in the last section. Let us first address assertions. Assuming a sentence mood operator for assertions (like, e.g. Gutzmann, 2008; Krifka, 1995, 2001), it can easily be explained why **VERUM** is not part of the assertion. Without going into the details of how to define this operator, it is clear that it cannot take scope over **VERUM**(p). Since **VERUM** is an hybrid expression of type $\langle\langle s, t \rangle, u\rangle$, it combines with its argument according to the rule of hybrid use-conditional application (48) and is therefore isolated from the semantic parsetree returning the truth-conditional content unmodified. Hence, the assertion operator can only take the remaining proposition without **VERUM** as its argument.

(53) Karl **SCHREIBT** ein Buch. "Carl IS writing a book."



That is, what is asserted is the plain truth-conditional content of the sentence and not **VERUM**(p). A parallel reasoning applies to questions as well. We end up with the question whether Carl writes the book and the independent use-conditional proposition **VERUM**(**write**(**book**)(**carl**)).

(54) **VERUM in assertions**

Karl **SCHREIBT** ein Buch. "Carl IS writing a book."

\rightsquigarrow **ASSERT**(p), **VERUM**(p)

(55) **VERUM and questions**

SCHREIBT Karl denn ein Buch? "Is Carl writing a book?"

\rightsquigarrow **QUESTION**(p), **VERUM**(p)

For those who feel uncomfortable having sentence mood operators in the semantics, the multidimensional approach can easily explain the facts if we make the reasonable

⁷" \checkmark " stands for felicity, while " $\not\checkmark$ " is infelicity.

assumption that what is asserted by a declarative or questioned by an interrogative is solely the root node of the corresponding semantic parsetree. Since VERUM is removed from the semantic derivation, it is not present at the root node.

5 The discourse semantics of VERUM

So far, we have shown that, despite their advantages, the previous proposals run into problems, and we have spelled out our multidimensional analysis. The goal of this section is to elaborate on the use-conditional meaning of VERUM as a “conversational operator”. Does it emphasize the truth of the proposition? Does it bear on the certainty of the speaker who utters the sentence? In what follows, we argue that VERUM is an instruction of the speaker, who wants to downdate $?p$ from the Question Under Discussion (henceforth QUD).

5.1 Downdate $?p$ from QUD

Let us start with the discourse distribution of VF. Richter (1993) observes that sentences with VF cannot be uttered out of the blue, as (56) shows.⁸

- (56) a. He, hast Du es schon gehört? # Karl SCHREIBT ein Buch.
hi has you it already heard Carl writes.VF a book
 “Hi, have you already heard it? Carl IS writing a book.”
 b. [Telephone call] # Mit wem SPRECHE ich?
with whom talk.VF I
 “Who IS speaking?”

In Richter’s terms, at least part of the lexical material must be given. This is shown by the following examples. Given the question in (57), the answers in (58) are all perfect since they constitute genuine answers to A’s question. In contrast, the same answers become infelicitous if VERUM is added.

- (57) A: What did Carl do on the weekend?
- (58) a. B: He finished his book. (English)
 b. B: Er hat sein Buch beendet. (German)
 c. B: Acabó su libro. (Spanish)
- (59) a. B’: # He did finish his book. (English)
 b. B’: # Er HAT sein Buch beendet. (German)
 c. B’: # Sí acabó su libro. (Spanish)

⁸This is a further difference between VF and information focus. While the latter is possible in out-of-the-blue contexts (with maximal focus projection), VF is not:

- (i) [Karl hat ein BUCH geschrieben.]_F Karl has a book written.
 “Karl wrote a BOOK.”
- (ii) #Karl HAT ein Buch geschrieben.
 Karl has a book written
 “Karl did write a book.”

This shows that containing new information is too broad a condition to license VERUM. It is only felicitous if the lexical material that constitutes the propositional content of the sentence is already given in the discourse context.

The fact that VF cannot be used out of the blue also poses a problem for R&H's approach. They do not address the discourse behavior of VF, but they define VERUM in terms of "being sure that it should be CG" that p . We can show how this is problematic with the following example, where a goat walking into a room is supposed to become part of the CG without the need of any acknowledgment from the interlocutors.

- (60) SCENARIO: A goat walks in. A sees the goat and is pretty sure that it is a goat. B hasn't seen the goat, yet.
- A: Da ist/#IST eine Ziege.
there is/is-VF a goat

Since A is sure that it should be CG that there is a goat, R&H predict that VF would be felicitous in such a context, but it is not the case, as (60) illustrates.

To account for these discourse restrictions on the felicity of VF, we relate the semantics of VERUM to the discourse component. We argue that VERUM is an instruction to be interpreted as a separate performative (cf. Portner, 2007). Specifically, the argument of VERUM is a proposition p and the instruction is that the speaker wants to downgrade the corresponding question $?p$ from the QUD. This idea is summarized in (61).

- (61) $[[\text{VERUM}(p)]^c \approx \text{The speaker } c_S \text{ wants to downgrade } ?p \text{ from QUD.}$

The QUD (Ginzburg, 1996; Roberts, 1996) is a partially ordered set of questions that guide the interlocutors' intentions when they engage in a conversation. We can assume that the QUD is never an empty stack of questions. There is always a question in QUD that brings about a conversation. It can be a very general one, such as "What is the state of affairs?", and any of the following questions will be entailed by this very first one. Following Groenendijk and Stokhof (1984, 16) one interrogative Q1 entails another Q2 iff every proposition that answers Q1 answers Q2 as well. As Roberts puts it, if the question at stake is "What do you like?", this entails the question "What food do you like?", because the answers to the second question will all be answers to the first question, too. The cooperative interlocutors in dialog recognize a common goal, and attempt to achieve it by resolving the questions that belong to QUD. We have mentioned that the questions in QUD are partially ordered, because once the questions are resolved, they disappear from the QUD, and this obeys an order. In particular, only if $?p$ is maximal (i.e., on top of the stack) can we resolve it and eliminate it from the QUD. We borrow Engdahl (2006)'s terms *update* and *downdate* to appeal to the move that includes or erases a question $?p$ from the QUD (62).

- (62) Question under Discussion (from Engdahl (2006, 95))
- a. QUD: A partially ordered set that specifies the currently discussable issues. If a question q is maximal in QUD, it is permissible to provide any information specific to q using (optionally) a short answer.
 - b. QUD update: Put any question that arises from an utterance on QUD.
 - c. QUD downdate: When an answer a is uttered, remove all questions resolved by a from QUD.

Let us illustrate the general idea with a few examples:

- (63) A: Is Carl writing a book?
 \rightsquigarrow QUD Update: QUD = $\langle ?\text{write}(\text{book})(\text{carl}) \rangle$
 B: Yes. \rightsquigarrow QUD Downdate: QUD = $\langle \rangle$

(63) is an idealized scenario where the QUD only contains a very specific question $?p$, namely whereas Carl is writing a book. Once the addressee answers this question, the pair $\langle \text{Carl is writing a book, Carl isn't writing a book} \rangle$ disappears from the QUD (assuming that B's answer is accepted by the discourse interlocutors). (64) is an example with a *wh*-interrogative.

- (64) A: What did Carl do on the weekend?
 \rightsquigarrow QUD Update: QUD = $\langle ?\lambda P.\text{on-the-weekend}(P)(\text{carl}) \rangle$
 a. B: Er hat sein Buch beendet.
 \rightsquigarrow QUD Downdate: QUD = $\langle \rangle$

In such a question, which is treated as denoting a set of properties that apply to Carl, a felicitous answer would be to name one of the properties that Carl has. For instance, B proposes to downdate the QUD by resolving the question with the assertion that Carl has finished a book.

Crucially, our account correctly predicts that the speaker cannot treat this information as already part of the QUD ((65)). We can only downdate $?p$ from the QUD if we assume that $?p$ is already part of the stack of questions under discussion ((66)).

- (65) B': # Er HAT sein Buch beendet.
 \rightsquigarrow The speaker wants to downdate **?finish(book)(carl)**.
 (66) Datedating $?p$ presupposes that $?p$ is maximal in QUD.

This explains straightforwardly – and without the need of any stipulations – that VF cannot be used out of the blue. Recall the goat example, repeated and analyzed in (67).

- (67) SCENARIO: A goat walks in. A sees the goat and is pretty sure that it is a goat. B hasn't seen the goat yet. QUD = $\langle \rangle$
 Da ist/#IST eine Ziege.
 \rightsquigarrow The speaker wants to downdate the question of whether there is a goat.

Even though all the moves in a dialogue are recorded in the CG and so is the appearance of the goat, discussing whether it is true or false that this fact holds is not relevant (Roberts, 1996), because it does not yield a partial answer to $?p$ in QUD. In (67) we assume an – admittedly simplified – scenario, where the QUD is empty before the goat walks in. An assertion is felicitous, because it introduces a new $?p$ in the QUD, i.e., whether it is true or false that a goat just walked in. By contrast, the use of VERUM is infelicitous, because it requires that $?p$ is maximal in the QUD before the utterance that contains VERUM.

The same strategy that we have used to explain VF in assertions holds for the occurrence of VF in *yn*-questions. Consider (68).

- (68) SCENARIO: The pupils A, B, C have to find out the capitals of the German states.

- A: #**IST** Wiesbaden die Hauptstadt von Hessen?
 “Is Wiesbaden the capital of Hessen?”

The answer in (68) is infelicitous because the question **?capital(Hessen)(Wiesbaden)** is not in the QUD prior to the utterance of the interrogative sentence. Compare now (68) with (69).

- (69) A: Peter behauptet, dass Wiesbaden die Hauptstadt von Hessen ist.
 “Peter claims that Wiesbaden is the capital of Hessen.”
 ~> QUD Update: QUD = **<?claim(capital(Hessen)(Wiesbaden))(peter)>**
 ~> QUD Update: QUD = **<?capital(Hessen)(Wiesbaden),
 ?claim(capital(Hessen)(Wiesbaden))(peter)>**
- B: **IST** Wiesbaden denn die Hauptstadt von Hessen?
 “Is then Wiesbaden the capital of Hessen?”
 ~> The speaker wants to downdate the question of whether Wiesbaden is the capital of Hessen.

The assertion that precedes the *yn*-question places **?capital(Hessen)(Wiesbaden)** on top of the QUD. This is what allows the felicitous utterance of the sentence that contains VF.

5.2 VERUM and emphasis on truth

This proposal for VERUM as a conversational operator explains neatly the fact that VF cannot occur felicitously out of the blue. In this subsection we argue that it also explains in a simple way the relationship VERUM bears with the emphasis on truth.

Recall that we have not included in the semantics of VERUM any notion related to the truth of *p* (in contrast to Höhle 1992) or the speaker’s certainty of *p* (in contrast to R&H). This is not to say that these properties are alien to the meaning of VERUM. We can show that the principles of cooperative communication derive them straightforwardly.

First, if the speaker asserts that *p*, and at the same time wants to downdate *?p*, then s/he must be sure that *p* should be added to the CG. This emphasizes that *p* is true, because we have the impression of a double assertion that *p*.

Second, if the speaker asks whether *p*, and at the same time wants to downdate *?p*, the certainty condition applies to the addressee and his answer, since the speaker in a question is by definition not committed to its propositional content (if the speaker were sure about *p*, she would not ask whether *p*).

In other words, the status of the speaker’s commitment in every speech act will determine where we place the certainty toward *p*. The emphasis on truth is the translation of VERUM interpreted as an instruction to downdate *?p* from the QUD.

5.3 Imperatives

We want to conclude by pointing out an additional advantage of this approach, which has to do with VERUM’s interaction with different sentence types. We have shown the effects of VERUM both in assertions and *yn*-questions. What is the contribution of VERUM in imperatives? Consider again the dialog in (70).

- (70) A: [hesitating to sit down]
 B: NIMM dir endlich den Stuhl!
take.IMP.VF you finally the chair
 “Do take the chair!”

An appeal to the QUD does not seem very plausible at first sight, since imperatives do not seem to be connected with question-answer pairs. However, we could argue that uttering an imperatives raises the question of whether the addressee fulfills the order.

- (71) **Imperatives and QUD**
 A: Nimm den Stuhl!
 \rightsquigarrow QUD Update: QUD = $\langle ?\text{take}(\text{the-chair})_{(C_A)} \rangle$
 B: Ja. QUD Downdate: QUD = $\langle \rangle$

Now, if A is hesitating whether or not to sit (as is the case in (70)), then we can update the QUD with the set of propositions “that the addressee takes the chair” and “the addressee does not take the chair”. Another possible context for a VERUM-imperative is one where the order has been issued several times, as in (72).

- (72) A: John, please, take the chair.
 B: (No reaction)
 A: Honey, will you please take the chair?
 B: (No reaction)
 A: NIMM dir endlich den Stuhl!

Clearly, the question of whether or not the addressee complies with the order is now maximal in the QUD. Only when the two possibilities are maximal at the QUD, does the use of VERUM become available. Whenever this restriction is not obeyed, then VERUM-imperatives are not allowed.

- (73) [The speaker opens the door and sees John standing next to a chair]
 # NIMM dir den Stuhl!

In other words, VERUM-imperatives are unavailable out of the blue, as was the case for the other sentence types.

6 Conclusions and prospects

To summarize our main claims and findings, we have treated VF as the realization of a use-conditional operator called VERUM. A multidimensional analysis of VF accounts for the fact that we cannot negate it, and that it has semantic wide scope (i.e., its meaning is always attributed to the speaker). In our analysis, VERUM takes a truth-conditional proposition as its argument and returns an independent use-conditional proposition. Since this proposition is on an independent tier, what is asserted/questioned is still the ordinary propositional truth-conditional content. The use-conditional meaning that we have proposed for VERUM corresponds to the speaker’s wish (i.e., an instruction) to downdate from the QUD the question built from p . We have shown that this can account for many of the discourse conditions under which VF is felicitous. Not only this,

the emphasis on truth the previous literature had taken to be the meaning of VERUM can also be derived from this semantics.

There are various open questions that arise from this work on VERUM and VF that deserve further research. First, there is the technical problem that *wh*-interrogatives with VERUM pose, since in this case we should allow the operator to take as argument the set of propositions denoted by *wh*-questions. Second, we would like to study a wider range of discourse restrictions on the occurrence of VF. For instance, an answer to a *yn*-question such as *Schreibt Karl ein Buch?* (Is Carl writing a book?) cannot be answered with an assertion containing VERUM without the affirmative particle *ja* (yes). Moreover, we would also like to explore the role of the interlocutors' epistemic biases towards one of the answers to the question under discussion (p or $\neg p$), and how these interact with the felicity of VF.

References

- Beaver, David I. and Brady Clark, 2008. *Sense and Sensitivity*. Oxford: Blackwell.
- Engdahl, Elisabet, 2006. Information packaging in questions. In Bonami, Olivier and Patricia Cabredo-Hofherr (eds.), *Empirical Issues in Syntax and Semantics 6*, pp. 93–111.
- Geurts, Bart, 1998. The mechanisms of denial. *Language*, 74:274–307.
- Ginzburg, Jonathan, 1996. Interrogatives: questions, facts and dialogue. In Lappin, Shalom (ed.), *The Handbook of Contemporary Semantic Theory*, pp. 385–422. Oxford: Blackwell.
- Groenendijk, Jeroen and Martin Stokhof, 1984. *Studies on the Semantics of Questions and the Pragmatics of Answers*. Ph.D. thesis, University of Amsterdam.
- Gutzmann, Daniel, 2008. *On the Interaction between Modal Particles and Sentence Mood in German*. Master's thesis, University of Mainz.
- , 2009. Hybrid semantics for modal particles. *Sprache und Datenverarbeitung*, 33:45–59.
- Höhle, Tilman N., 1992. Über verum-fokus im deutschen. In Jacobs, Joachim (ed.), *Informationsstruktur und Grammatik*, pp. 112–141. Westdeutscher Verlag.
- Horn, Laurence R., 1989. *A natural history of negation*. CSLI.
- , 1996. Exclusive company: *only* and the dynamics of vertical inference. *Journal of Semantics*, 13.
- Kratzer, Angelika, 1999. Beyond *ouch* and *oops*. In *Cornell Conference on Theories of Context Dependency*. Cornell University.
- Krifka, M., 1995. The semantics and pragmatics of polarity items. *Linguistic Analysis*, 25:209–257.

- Krifka, Manfred, 2001. Quantifying into question acts. *Natural Language Semantics*, 9:1–40. doi:10.1023/A:1017903702063.
- Lenoetti, M. and V. Escandell-Vidal, 2009. Fronting and verum focus in Spanish. In Dufter, A. and D. Jacob (eds.), *Focus and background in Romance languages*, pp. 155–204. Amsterdam/Philadelphia: John Benjamins.
- Portner, Paul, 2007. Instructions for interpretation as separate performatives. In Schwabe, Kerstin and Susanne Winkler (eds.), *On Information Structure, Meaning and Form*, pp. 407–426. Benjamins.
- Potts, Christopher, 2002. The syntax and semantics of *as*-parentheticals. *Natural Language and Linguistic Theory*, 20:623–689.
- , 2005. *The Logic of Conventional Implicature*. Oxford University Press.
- Recanati, François, 2004. Pragmatics and semantics. In Horn, Laurence R. and Gregory Ward (eds.), *The Handbook of Pragmatics*, pp. 442–462. Blackwell.
- Richter, Frank, 1993. Settling the truth.
- Roberts, Craige, 1996. Information structure: Towards an integrated theory of formal pragmatics. In Yoon, Jae-Hak and Andreas Kathol (eds.), *OSU Working Papers in Linguistics, Volume 49: Papers in Semantics*, pp. 91–136.
- Romero, Maribel, 2005. Two approaches to biased *yes/no* questions. In Alderete, John, Chung-hye Han, and Alexei Kochetov (eds.), *Proceedings of the 24th West Coast Conference on Formal Linguistics (WCCFL)*, pp. 352–360. Somerville, MA: Cascadilla Cascadilla Proceedings Project.
- Romero, Maribel and Chung-hye Han, 2004. On negative *yes/no* questions. *Linguistics and Philosophy*, 27:609–658.
- Rooth, Mats, 1992. A theory of focus interpretation. *Natural Language Semantics*, 1:75–116.
- Truckenbrodt, Hubert, 2006. Replies to the comments by Gärtner, Plunze and Zimmermann, Portner, Potts, Reis, and Zaefferer. *Theoretical Linguistics*, 32:387–410. doi:10.1515/TL.2006.025.

Daniel Gutzmann & Elena Castroviejo
Universität Frankfurt & University of Chicago
danielgutzmann@gmail.com &
castroviejo@uchicago.edu