Hybrid Semantics for Modal Particles

Daniel Gutzmann

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Abstract

German modal particles show intriguing semantic and syntactic properties. To account for some of them – that they are non-truth-conditional, and that they can neither be coordinated nor focussed – I build on Kaplan’s (1999) insights, and sketch a view on semantics called Hybrid Semantics that refers to both truth and use conditions. To provide a formal implementation of the core ideas of Hybrid Semantics, I present $\mathcal{L}_{TU}$, a multidimensional type-driven logic. The tools of $\mathcal{L}_{TU}$ are then employed to account for the three properties of modal particles.


1 Getting started

German modal particles form a small and more or less closed set of specific lexical items. Here are the examples Hartmann (1998: 660) assigns to the class of modal particles (»MPs « henceforth):

(1) **Modal particles**: aber, auch, bloß, denn, doch, eigentlich, eben, etwa, einfach, erst, halt, ja, nun, mal, nur, schon, vielleicht, ruhig, wohl
Inquiries about the meaning of MPs have always been the driving force behind modal particle research; especially during the »communicative-pragmatic turn« (Helbig 1988: 16) in the 1970s and 1980s, a lot of work evolved that focused on the question of their communicative function within the discourse (Autenrieth 2002: 6).

But despite the fact that since Doherty 1985, 1987 a lot of work has been done trying to provide a formal approach to the meaning of modal particles (e.g., cf. the contributions in Abraham 1991), and despite the abounding literature on German modal particles in general, there is still no satisfactory analysis of modal particles available, as Zimmermann (t. a.) notes in a recent handbook article. In this paper, I present a new attempt to get a grip on the way in which MPs contribute to the overall meaning of an utterance. The approach is primarily based on the semantic tools developed by Christopher Potts (2005) for dealing with conventional implicatures on and on David Kaplan’s (1999) short but revealing remarks on how expressions that contribute use-conditional rather than truth-conditional content might be integrated into a formal framework. Furthermore, I hope that many of the intriguing semantic and syntactic properties MPs exhibit follow directly from my analysis without the need to dive into the discussion concerning their syntactic status. Due to lack of space, I will concentrate on a selection of their features to illustrate the general strategy by which the sketched analysis can be employed.

The most important feature of MPs, which motivates a Kaplan-style use-conditional approach in the first place, is, that they do not contribute to truth-conditional content of an utterance.

(2) Hein ist ja/wohl/doch auf See.
   »Hein is ja/wohl/doch at sea.« (Zimmermann 2004a: 543)

Whatever the concrete contribution of the MPs in (2) is, the whole utterance is true if Hein is at sea. This behavior clearly tells them apart from other non-MP particles like focus particles which contribute to the truth-conditional content of an utterance. This feature will be the starting point for the formal system I will sketch in § 2.

The two syntactic-semantic properties of MPs I will address in this paper are that MPs can neither be coordinated (3) nor being stressed to mark focus (4). Both restrictions set MPs apart from adverbs.

(3) *Peter hat ja und/oder doch sein Exam bestanden.
   »Peter has ja and/or doch passed his exam.« (Autenrieth 2002: 31)

(4) *David ist HALT ein Zombie.
   »David is HALT a zombie.«
In § 3, I show how both restriction can directly be accounted for by treating them as use-conditional expression in the sense I will now specify.

2 Hybrid semantics

The starting point for the formal approach to the meaning of modal particles and sentence mood I develop in this paper is Angelika Kratzer’s (1999, 2004) idea of employing the insights made in Kaplan 1999 to an analysis of the meaning of modal particles. In his very influential underground paper on the meaning of *ouch* and *oops*, David Kaplan (1999) sketches a vision of a semantic theory that goes way beyond the boarders of standard truth-conditional semantics. At the heart of his project lies the following observation:

> For certain expressions of natural language, a correct Semantic Theory would state rules of use rather than something like a concept expressed. (Kaplan 1999: 6)

This is of course not a new idea since it goes back to the traditions of Ordinary Language Philosophy and is most famously articulated in the following passage from Wittgenstein’s *Philosophical Investigations*:

> For a large class of cases – though not for all – in which we employ the word »meaning« it can be defined thus: the meaning of a word is its use in the language [...]. (Wittgenstein 1953: § 43)

In Kaplan’s vision, the idea of use-conditional content can receive a formal semantic treatment, just like the notion of truth conditions that dominates the semantic tradition since its very first days. However, contrasting with more radical versions of a «theory of meaning as use», the notion of truth still plays an important role in Kaplan 1999, but is accompanied by the idea of use conditions that govern the conventional meaning of certain expressions of natural language. That is, while for a large class of expressions, their meaning can be captured by describing the way in which those expressions determine the truth conditions of a sentence, there is another large class of expressions whose meaning has to be described by how they are used. While the former class contributes *truth-conditional* content, the latter conveys what could be called *use-conditional* content. Hence, in addition to the standard *t*-sentences that embody the core idea of truth-conditional semantics, there should also be analogous *u*-sentences that provide the use conditions in order to represent the meaning of use-conditional expressions. The following two sentences exemplify how a *t* - and a *u*-sentence may look like. The first is an all-time favourite, while the second one is derived from Kaplan’s (1999: 17) sketch of the meaning of *oops*. 
(5) »Snow is white« is true (in English) iff snow is white.

(6) »Oops« is felicitously uttered (in English) iff the speaker has just observed a minor mishap.

If you compare the t-sentence with the u-sentence, and think about the things that such truth conditions and use conditions may denote, you can anticipate Kaplan’s ingenious twist. Recall that it is a common technique in semantics to think of ordinary truth-conditional propositions as sets of worlds, namely the set of worlds in which the proposition is true. The set of worlds expressed by a truth-conditional proposition is thus based on the truth values. In the same way, if we take two use values like »felicitous« and »infelicitous«, we could render the meaning of use-conditional propositions analogously as the set of worlds in which the use-conditional expression is felicitously uttered. That is, we can regard both truth-conditional and use-conditional propositions as sets of possible worlds, although both sets come into being via different conditions, or more precisely, are defined by different characteristic functions: in the case of truth-conditional propositions, the set of worlds consists of those worlds that are mapped to »1« by the function representing the meaning of the proposition, while the characteristic function for the set of worlds of a use-conditional proposition is a function from possible worlds to use values, like »✓ « (felicitous) and »✗ « (infelicitous).

It is important to stress that, even if we introduce the notion of use into our system to describe the meaning of certain expressions, we are entirely dealing with semantics, not pragmatics. Of course, that means abandoning the view that semantics only concerns those kinds of meaning that are relevant for determining truth conditions. Instead, I adopt the view the scope of semantics lies on those aspects of meaning that are governed by linguistic conventions (cf. Kaplan 1999: 42).

Since the view on semantics just sketched relies on both truth and use conditions simultaneously, I want to call such an approach Hybrid Semantics. I think there are many possible ways to provide a formalization of the core ideas of Hybrid Semantics. The one I will now present – the logic $L_{TU}$ – relies heavily on Potts’ (2005) toolbox for conventional implicatures.¹

### 2.1 Types and denotations

The most important distinction between Hybrid Semantics and ordinary type-driven semantics consists in the introduction of a new type $u$ for use values, in addition to the common types $e$ for entities, $s$ for worlds, and $t$ for truth values. The set of basic types for $L_{TU}$ is divided into the set of basic truth-conditional types ($t$-types)

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¹ For the relation between conventional implicatures and use-conditional expressions, cf. e.g. Horn 2008 and Gutzmann 2008: § 3.
and basic use-conditional types (u-types). The set of all basic types for $\mathcal{L}_{TU}$ is the union of the basic t-types and u-types. To define the composition of complex types from the basic ones, I introduce a further division of u-types, namely into what I call hybrid u-types and pure u-types. Whereas pure u-types have a (pure or hybrid) u-type both in their domain and in their range, hybrid u-types have a u-type in their domain but a t-type in their range. I postpone the motivation for this distinction until I introduce tree-admissibility conditions in § 2.2 below, but the basic idea behind it is that while t-type and pure u-type expressions stick to their respective realms, hybrid u-type expressions can mediate between the two. The whole set of types for $\mathcal{L}_{TU}$ is given by the union of the set of t-types and the set of u-types (hybrid and pure ones). Thus, we have the following definition of types for $\mathcal{L}_{TU}$:

(7) **Types for $\mathcal{L}_{TU}$**

a. $e$, $t$, $s$, and $u$ are basic types for $\mathcal{L}_{TU}$.

b. $e$, $t$, and $s$ are basic truth-conditional types for $\mathcal{L}_{TU}$.

c. $u$ is the basic use-conditional type for $\mathcal{L}_{TU}$.

d. If $\sigma$ and $\tau$ are truth-conditional types for $\mathcal{L}_{TU}$, then $\langle \sigma, \tau \rangle$ is a truth-conditional type for $\mathcal{L}_{TU}$.

e. If $\sigma$ is a truth-conditional type for $\mathcal{L}_{TU}$ and $\tau$ is a (hybrid or pure) use-conditional type for $\mathcal{L}_{TU}$, then $\langle \sigma, \tau \rangle$ is a hybrid use-conditional type for $\mathcal{L}_{TU}$.

f. If $\sigma$ and $\tau$ are (hybrid or pure) use-conditional types for $\mathcal{L}_{TU}$, then $\langle \sigma, \tau \rangle$ is a pure use-conditional type for $\mathcal{L}_{TU}$.

For the introduction of u-types into the syntax of $\mathcal{L}_{TU}$, corresponding domains are introduced into the models for the logic. As a new basic domain for expressions of type $u$, we have $D_u = \{✓, ☇\}$, the set of use values. The rest works as usual.

(8) **Models for $\mathcal{L}_{TU}$**

The set of models for $\mathcal{L}_{TU}$ is given by $\mathcal{M} = \{\mathcal{M}_1, \mathcal{M}_2, \ldots\}$ such that each $\mathcal{M}_i \in \mathcal{M}$ is a pair $(D, I_i)$, such that

a. $D$ is a set of domains for $\mathcal{L}_{TU}$, such that

(i) $D_e$, a set of entities, is the domain for type $e$.

(ii) $D_t = \{0, 1\}$, the set of truth values, is the domain of type $t$.

(iii) $D_u = \{✓, ☇\}$, the set of use values, is the domain of type $u$.

(iv) $D_s$, a set of worlds, is the domain for type $s$.

(v) $D_{\langle \sigma, \tau \rangle}$, the set $\{f \mid f: D_\sigma \rightarrow D_\tau\}$, is the domain for a functional type $\langle \sigma, \tau \rangle$.

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2 This is just a matter of taste. Instead of speaking of t-types, hybrid u-types, and pure u-types, I could equally speak of pure t-types, hybrid t-types, and u-types.
b. $I_1$ is a valuation function that assigns a model theoretic object to each constant of $L_{TU}$, such that if $\alpha$ is an expression of $L_{TU}$ of type $\sigma$, then $I_1(\alpha) \in D_\sigma$.

2.2 Parsetrees and interpretation

So far, except for the introduction of additional u-types and a syntactic rule for quantifying over use-conditional propositions, the syntax of $L_{TU}$ is fairly simple as it does not introduce big changes to any standard type-driven logic commonly used in natural language semantics. Regarding its semantics, which is rather standard except for the new types, $L_{TU}$ does not deviate crucially from common systems like IL. Instead, following the route taken in Potts 2005, I will state the crucial parts of the syntax of $L_{TU}$ as constraints on how semantic parsetrees can be built for the derivation of complex expressions. Semantic parsetrees are crucial objects of the language of $L_{TU}$. They are connected, rooted, acyclic graphs. Each node of the tree has at most two daughters and at most one mother. A formal definition may look as follows (Potts 2005: 224):

(9) **Semantic parsetree** (general definition)

A semantic parsetree is a structure $T = (T, D, V, C)$, where

a. $T = \{n_1, n_2, \ldots \}$ is a set of nodes.
b. $D$ is an irreflective, intransitive binary dominance relation on $T$, such that, for all $n \in T$, there is at most one $n'$, such that $D(n', n)$, and there are at most two distinct nodes $n', n''$, such that $D(n, n')$ and $D(n, n'')$.
c. $D^*$, the reflexive, transitive closure of $D$, is acyclic.
d. There is a unique $r \in T$, the root of $T$, such that for $r$, there is no $n \in T$ such that $D(n, r)$.
e. $V$ is a valuation function, taking formulae of $L_{TU}$ to sets of nodes in $T$, according to a set of tree-admissibility conditions.

I assume the following tree-admissibility conditions ($\text{TACS}$) to constrain the set of possible parsetrees for $L_{TU}$:

(10) **Truth-conditional application**

\[
\alpha(\beta) : \tau^T \\
\alpha : \langle \sigma^T, \tau^T \rangle \quad \beta : \sigma^T
\]

(11) **Use-conditional application**

\[
\alpha(\beta) : \tau^U \\
\alpha : \langle \sigma^U, \tau^U \rangle \quad \beta : \sigma^U
\]

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\[3\] The superscripts $t$ and $u$ constraint the type variables to t-types and pure u-types respectively.
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(12) Isolated use-conditional content
\[ \beta : \tau \]
\[ \vdash \]
\[ \alpha : \sigma^u \]
\[ \alpha : \sigma^u \beta : \tau \]

(13) Hybrid application
\[ \beta : \sigma^r \]
\[ \vdash \]
\[ \alpha(\beta) : \tau^u \]
\[ \alpha : \langle \sigma^r, \tau^u \rangle \beta : \sigma^r \]

(14) Truth-conditional intersection
\[ \alpha \land \beta : t \]
\[ \alpha : t \]
\[ \beta : t \]

(15) Use-conditional intersection
\[ \alpha \land \beta : u \]
\[ \alpha : u \]
\[ \beta : u \]

These tactics take care of most of the special features of use-conditional expressions like expressives or – as we will see below – modal particles: They isolate them from the rest of the semantic parsetree as soon as they are applied to a truth-conditional argument (hybrid application) or they have no truth-conditional argument to be applied to (isolated use-conditional content). After being isolated by these rules, the truth-conditional content is passed up the parsetree unmodified whereas the use-conditional expression – separated by the meta-logical bullet »•« – sticks within the tree and cannot participate in further derivations. This ensures that use-conditional content does not end up at the root node of the semantic parsetree and hence that it does not have any influence on the truth-conditional content that the root node represents. For illustration, consider the simple parsetree for a sentence containing the modal particle \( \text{ja} \) which I assume to be of a hybrid \( u \subset \) expression of \( \langle t, u \rangle \).

(16) \( \text{ja} \sim \lambda p.\text{ja}(p) : \langle t, u \rangle \)

(17) David ist ja ein Zombie.
\[ \vdash \]
\[ \text{zombie(david)} : t \]
\[ \vdash \]
\[ \text{ja(zombie(david))} : u \]
\[ \lambda p.\text{ja}(p) : \langle t, u \rangle \text{zombie(david)} : t \]

Here \( \text{ja} \) applies to its propositional argument to yield a use-conditional proposition of type \( u \). After that it gets isolated according to hybrid application (13) and its argument is passed up the tree. In this simple example, the derivation ends at this point, but in principle, the passed up argument could be part of further derivational steps. As we see, the truth-conditional content of the sentence as represented by the root node of (17) is just \( \text{zombie(david)} : t \). That is, the proposition that David is a zombie.

\[ ^4 \] These rules correspond to Potts’ (2005) rules of CI-application and isolated CIs respectively.
This captures the intuitive idea that \( \text{uc} \)-expressions do not affect the truth conditions of a sentence. To be sure, we certainly want them to have some effect after all. To ensure this, I follow Potts’ (2005) idea of parse tree interpretation: In order to get the overall interpretation of an utterance we interpret the entire parse tree instead of solely its root node. However, I take the notion of multidimensionality a step further by assuming a slightly modified version of Potts’ mechanism which I like to call layered parse tree interpretation (LPI).

(18) **Layered parse tree interpretation** (LPI)

Let \( T \) be a semantic parse tree with independent use-conditional expressions \( \alpha_1 : \sigma_1^u, \ldots, \alpha_n : \sigma_n^u \) at nodes within it. \( R \) is a function that delivers the root node of a parse tree. The pragmatic parse tree \( P \) for \( T \) is given by the parse tree that is built from the expressions \( \alpha_1 : \sigma_1^u, \ldots, \alpha_n : \sigma_n^u \). Then the interpretation of \( T \) is:

\[
\llbracket T \rrbracket = \langle \llbracket R(T) \rrbracket, \llbracket R(P(T)) \rrbracket \rangle
\]

The basic idea behind LPI is simple: Just collect all independent use-conditional expressions from the parse tree and build a new parse tree out of them, which is called the **pragmatic parse tree** for the semantic parse tree. The interpretation for the semantic parse tree is then the tuple consisting of the interpretations of the root node of the semantic parse tree and the root node of its corresponding pragmatic parse tree. Crucially, the semantic and pragmatic parse trees are built using different **tacs**:

(19) **Semantic parse tree for \( \mathcal{L}_{\text{TU}} \)**

A semantic parse tree for \( \mathcal{L}_{\text{TU}} \) is a parse tree as defined in (9) and that is built according to the **tacs** (10)–(14).

(20) **Pragmatic parse tree for \( \mathcal{L}_{\text{TU}} \)**

A pragmatic parse tree for \( \mathcal{L}_{\text{TU}} \) is a parse tree as defined in (9) and that is built according to the **tacs** (11) and (15).

3 Discourse particles in hybrid semantics

Equipped with layered parse tree interpretation, we can now calculate the interpretation of an utterance containing a modal particle, like (17). Since there is only one isolated \( \text{uc} \)-expression in the semantic parse tree (17), namely \( \text{ja}(\text{zombie}(\text{david})) : u \), the pragmatic parse tree \( P((17)) \) for (17) is simple: It consists of this single expression. We therefore get the following interpretation for (17):

(21) \[
\llbracket (17) \rrbracket = \langle \llbracket \text{zombie}(\text{david}) : t \rrbracket, \llbracket \text{ja}(\text{zombie}(\text{david})) : u \rrbracket \rangle
\]
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For the sake of illustration, I follow Kratzer’s (1999, 2004) proposal for the use conditional meaning of *ja*:

\[
\langle \lambda p. ja(p) \rangle^c = \text{that function } f \in \{ f | f: D_i \rightarrow D_u \} \text{ such that } f(p) = \bigvee \text{ iff } c_S \text{ believes that } p \text{ is common knowledge of } c_S \text{ and } c_H, \text{ or that it is verifiable on the spot that } p, \text{ else } f(p) = \bigwedge.
\]

Given this interpretation, we end up with the following truth and use conditions for an utterance of *David ist ja ein Zombie*:

\[
\langle (17) \rangle^c = \begin{cases} 
(1, \bigvee) & \text{iff David is a zombie and } c_S \text{ believes that it is common knowledge that David is a zombie} \\
(1, \bigwedge) & \text{iff David is a zombie and } c_S \text{ doesn't believe that it is not common knowledge that David is a zombie} \\
(0, \bigvee) & \text{iff David is not a zombie and } c_S \text{ believes that it is common knowledge that David is a zombie} \\
(0, \bigwedge) & \text{iff David is not a zombie and } c_S \text{ doesn't believe that it is common knowledge that David is a zombie}
\end{cases}
\]

I hope that this simple example suffices to show how the logic $\mathcal{L}_{TU}$ implements the basic ideas of Hybrid Semantics in a formal way. However, before I go on to show how some of the characteristic syntactic and semantic properties of German modal particles can be addressed directly within this framework, some caveats are in order. First, note that LPI is not define in case there are no use-conditional expressions hanging around inside the semantic parse tree. This could be solved by augmenting LPI with the condition that if there are no independent use-conditional expressions in $T$, then the interpretation of $T$ is just given by its root node. However, I do not take this route since I believe that every sentence has conditions of use beside its truth conditions. The reason for this is that every utterance has a sentence mood which I regard as use-conditional in nature too, following insights of Wittgenstein (1953) and Stenius (1967).\footnote{For a suggestion on how sentence mood and its interaction with modal particles can be modeled within $\mathcal{L}_{TU}$, see Gutzmann 2008.}

Secondly, let me stress that I believe that not all MPs in German can be analyzed in the same way as *ja*, especially as not all of them are simple functions from propositions...
to use-conditional propositions. The idea that not all MPs work the same way is already present in Zimmermann 2004b, who distinguishes between MPs which are sentence mood modifiers and MPs which could be called »free modifiers«. For instance, an MP like ja belongs to the latter class, whereas MPs like wohl or denn directly interact with sentence mood and receive far more complex interpretations (cf. Gutzmann 2008: § 6; Zimmermann 2004b).

3.1 Modal particles cannot be coordinated

Limitation of space does not permit me to go into the details of how the many particular features of MPs can be addressed with the tools of Hybrid Semantics. However, to give an impression, I illustrate the strategy employed by means of two properties of MPs, namely that they cannot be coordinated and that they cannot be stressed to mark (alternative) focus.

As illustrated in example (3), MPs cannot be coordinated. I think there are two possible ways of how an analysis of MPs as use-conditional expressions can explain this behavior. First, it seems that German und »and« cannot directly coordinate use-conditional expressions, because the same restriction does not hold only for MPs but for other uc-expressions as well.

   man and damn it is hot here in
b. *Aua und oje, ich hab mich verletzt!
   Ouch and oh I have myself hurt

So it may be that und is just not of the right type, which must have to be something like \(\langle\langle t, u\rangle, \langle t, u\rangle, \langle t, u\rangle\rangle\) in case of *ja und doch.

The second way of explaining why MPs cannot be coordinated is by reference to their absence from the truth-conditional component of a sentence, while assuming an elliptical view on coordination like the one proposed by Wilder (1995, 1997). In such a view, coordination can be analyzed by means of deletion processes, namely forward deletion (FwD) and/or backward deletion (BwD).

(25) a. Mary bought and ate the veggie burger.
   b. [Mary bought the veggie burger BWD] and
      [Mary FWD ate the veggie burger]

According to Wilder the identity of the deleted material has to be checked at LF. However, as Potts et al. (2008) show, there is a lot of evidence that use-conditional expressions are invisible at LF, at least when it comes to checking identity conditions. For instance, while both NPs in an NP or no NP construction have to be identical at
LF, expressives can be inserted without problems, in contrast to truth-conditional equivalent expressions or ordinary truth-conditional modifiers (cf. Potts et al. 2008).

(26)  
   a. Water or no water – I’m not hiking in this heat.
   b. Water or no fucking water – I’m not hiking in this heat.
   c. *Water or no H₂O – I’m not hiking in this heat.
   d. *Water or no hot water – I’m not hiking in this heat.

If the conclusion drawn by Potts et al. (2008) is empirically valid, then we have a neat explanation for the observation that use-conditional expressions cannot be coordinated. When it comes to checking the identity of the material that got elided in a coordination of use-conditional expressions like MPs, they are just invisible. A corresponding LF would therefore look like this:

(27)  
   David is MP and MP a zombie
   b. *[David ist ] und
      [ ein Zombie]

Obviously, this is not a well-formed LF in German. Therefore, given the evidence that uc-expressions do not count when checking identity conditions, we have a straightforward way to account for their inability to be coordinated.²⁶

3.2 Modal particles cannot be stressed

To account for the observation that MPs cannot be stressed for marking focus, a similar strategy is employed; it all comes down to the fact that MPs operate at a different dimension of meaning, so to speak, as soon as they have been fed with their argument.

In order to illustrate this, I make use of Rooth’s (1992, 1996) version of alternative semantics for focus. In his version of focus semantics, there are two interpretation function, namely \([\cdot]^o\), the ordinary interpretation function, and \([\cdot]^f\), the focus interpretation function that delivers a set of alternatives for focused expressions of the same type. Furthermore, Rooth (1996) assumes a focus interpretation rule that by introducing a presupposition, accounts for the fact that certain focus pattern are only suitable in specific contexts.
Focus interpretation rule
(28)  Where $\phi$ is a syntactic phrase and $C$ is a syntactically covert semantic variable, $\phi \sim C$ introduces the presupposition that $C$ is a subset of $[\phi]^f$ containing $[\phi]^o$ and at least one other element.

Consider the following simple example, in which we have a focus feature on Mary:

(29)  
\begin{enumerate}
\item Mary$_F$ loves Peter.
\item \[[\text{love}(\text{peter})(\text{mary}_F)] \sim C_n\]
\item \text{love}(\text{peter})(\text{mary}_F) \sim C_n
\item \text{mary}_F \lambda y. \text{love}(\text{peter})(y)
\end{enumerate}

According to the focus interpretation rule (28), the presupposition of (29a) is that $C$ is a subset of the focus value $[\text{love}(\text{peter})(\text{mary}_F)]^f$, which may be for instance the set \{$\text{Mary loves Peter, Peter loves Peter, Hans loves Peter, …}$\}, and that $C$ contains $\text{Mary loves Peter}$ and at least one further element. Obviously, there could be an adequate solution for the value of $C$ in the context.

Now consider the semantic parsetree for a sentence containing a stressed MP.

(30)  
\begin{enumerate}
\item *David ist ja$_F$ ein Zombie. (*David is ja a zombie)
\item \[[\text{zombie}(\text{david})] \sim C_n\]
\item \text{zombie}(\text{david}) : t \sim C_n
\item \text{ja}_F(\text{zombie}(\text{david})) : u
\item \text{ja}_F : \langle t, u \rangle \text{ zombie}(\text{david}) : t
\end{enumerate}

The crucial point is of course, that the MP gets isolated from the rest of the derivation after it has been applied to its propositional argument. Hence, $C$ attaches to an expression without a focus feature, which triggers an unsolvable presupposition:

(31)  
\begin{enumerate}
\item \[[\text{zombie}(\text{david})] \sim C_n\] presupposes that …
\item $C_n \subseteq \{\text{David is a zombie}\}$, and
\item $\text{David is a zombie} \in C_n$, and
\item $C_n$ contains at least one further element besides $\text{David is a zombie}$.\end{enumerate}
Since there cannot be any contextually given value for $C_n$ that satisfies such a presupposition, focussing an MP will always yield an inappropriate utterance.

4 Conclusion and outlook

With Hybrid Semantics I have sketched a view on semantics that is based on Kaplan's (1999) idea that the meaning of some expressions of natural language is best captured by their conditions of use instead of how they contribute to truth conditions. Accordingly, a sentence receives both a truth and a use value as its interpretation in Hybrid Semantics. Secondly, I presented $\mathcal{L}_{TU}$, a formal implementation of the core ideas of Hybrid Semantics, that makes use of many of the formal tools mounted by Christopher Potts in his work on conventional implicatures (Potts 2005, 2007a), but slightly deviates from his work regarding the possible types and the interpretation procedure. Conceptually, $\mathcal{L}_{TU}$ is very different from the Logic of Conventional Implicatures, as its ontology is richer: it introduces a really new kind of denotations – use values.

Finally, I employed $\mathcal{L}_{TU}$ for an analysis of three central properties of German modal particles, namely (a) that they do not contribute to truth conditions, (b) that they cannot be coordinated, and (c) that they cannot be stressed to mark focus. The first property is directly captured by translating MPs into (hybrid) use-conditional expressions, i.e. expressions that contribute to the use conditions of an utterance. I addressed the impossibility of MPs to be coordinated on purely semantic grounds. At first sight, it seems that the German coordination $\text{und}$ »and« is not able to coordinate use-conditional expressions. However, I argued for a more general explanation that refers to the observation that use-conditional expressions are invisible at LF (Potts et al. 2008), such that the identity checking involved in coordination (Wilder 1995, 1997) fails. Given Rooth's (1992, 1996) theory of focus interpretation, the fact that MPs cannot be focused follows directly from the way they compose with other expressions during the derivation of the semantic parsetree: Since they are isolated after being applied to their argument, they are not passed up the tree. Therefore, the focus interpretation operator $\sim$ attaches to an expression without any focus value and hence triggers a presupposition on the value of $C$ that is impossible to be satisfied, thus rendering any utterance containing a stressed MPs inappropriate.

What I have presented in this paper is just a first small step towards a deeper understanding of the way in which the meaning of modal particles contributes to the overall meaning of an utterance. It is part of the more general question of how use-conditional expressions enter into semantic composition with ordinary truth-conditional or other use-conditional expressions. A lot of work is still to be done. For instance, many of the particular features of MPs could not be addressed in this paper, like their inability to be fronted or their scoping behavior. Furthermore, I hope that
the tools of $\mathcal{L}_{TU}$ can be employed for an analysis of other use-conditional expressions, constructions, or even certain stress pattern. And certainly, in its present status, $\mathcal{L}_{TU}$ is not the last word on the formalization of the core ideas of Hybrid Semantics. A detailed comparison of $\mathcal{L}_{TU}$ with other frameworks like (Potts 2007b,c) index based approach to expressives or dynamic variants of multidimensional semantics (Geurts & Maier 2003; Nouwen 2007) may lead to a better understanding of $\mathcal{L}_{TU}$ and help to improve it further to account for a broader range of empirical phenomena.

References


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Daniel Gutzmann

Deskriptive Sprachwissenschaft
Deutsches Institut
Johannes Gutenberg-Universität Mainz
55099 Mainz · Germany
danielgutzmann@gmail.com