Inflectional morphology and sentence mood in German

Horst Lohnstein and Ursula Bredel

Abstract

This article focuses on the interaction of the categories of the verbal inflectional system and A-bar and head movement processes for the determination of sentence moods in German. An analysis and semantic interpretation of the verbal inflection categories together with semantic properties of A-bar and head movement leads to a theory which derives sentence moods as preliminary stages of illocutionary forces in a strict compositional fashion. Based on the semantics of y/n-interrogatives, the other sentence moods are reconstructed in dependency on the verbal mood and the phrase and head being positioned in the left periphery of the clause whose mood they destinate.

1. Introduction

The morphological and syntactic structures generated by grammatical systems are interrelated in various ways. One aspect concerns the units of inflectional morphology and their interaction with principles of sentence formation. In German, the number of distinctions provided by the combination of inflectional units exceeds the number of distinctions determinable by syntactic means to a considerable degree.

At first sight, the verbal paradigm appears to have no fewer than 144 finite verb forms. This is true if one follows the classification system of Latin grammarians as linguists usually do. Then we have to distinguish at least three personal categories, two numeral categories, six tenses, two modal categories, and two genera verbi (3 x 2 x 6 x 2 x 2 = 144).

A closer look at the morphosyntax of these categories shows most of them to be periphrastic forms. If we isolate the morphologically simple forms, the number of 144 decreases dramatically. Only the three personal categories, the two numeral categories, two of the six tenses (present and preterite) and the modal forms indicative and subjunctive prove to be categories shaped by simple word forms. Thus, the system becomes much smaller: instead of 144 we get 24 finite verbal forms only.

In this paper, we want to reduce this number even further. We intend to show that the functional categorizations person, number, tense, and mood, which are morphologically realized in the verbal paradigm of German, are themselves derivations of a more simple morphological structure, which we sketch in sections 2-4. We argue that person, number, tense and mood are specific interpretations of underlying abstract meanings which can be derived from the meanings of the morphological units that constitute them. Taking the argument one step further, we suggest in sections 5 and 6 that the inflectional system of German thus reconstructed affects the structure of syntactic projections as well. Section 7 introduces the inflectional category of verbal mood as the filler of a sentential functional category M(ood)P on a par with AgrP and TenseP. In section 8, M(ood)P is assumed to be the highest left peripheral projection, and the interaction of verbal mood and syntactic movement processes is addressed. Section 9 relates syntactic movement to semantic interpretation and constructs a unifying theory of the various components for the determination of sentence moods. The resulting semantic objects are equipped with relevant properties for the determination of the illocutionary force of the clause.

2. The inflectional system of the verbal paradigm

Table 1 shows the 24 forms of the verbal paradigm. With respect to the distinction between weak and strong verbs, we get an exhaustive list of non-periphrastic German verb forms:

---

logical system falls into two classes: shall not give a detailed account of it. However, the distribution of these elements is not homogeneous in so far as (1) the system has at its disposal 5 linguistic devices to build finite verb forms: Table 1: The verbal paradigm of German

<table>
<thead>
<tr>
<th></th>
<th>ind pres</th>
<th>ind pres</th>
<th>sub pres</th>
<th>sub pres</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(weak)</td>
<td>(strong)</td>
<td>(weak)</td>
<td>(strong)</td>
</tr>
<tr>
<td>lach - s-t</td>
<td>geb - n</td>
<td>lach - s-t</td>
<td>geb - n</td>
<td>lach - s-t</td>
</tr>
<tr>
<td>lach - t</td>
<td>geb - t</td>
<td>lach - t</td>
<td>geb - t</td>
<td>lach - t</td>
</tr>
<tr>
<td>lach - n</td>
<td>geb - n</td>
<td>lach - n</td>
<td>geb - n</td>
<td>lach - n</td>
</tr>
</tbody>
</table>

The starting point of our analysis of the inflectional regularities will be an observation relating to the surface of these forms. The German inflectional system has at its disposal 5 linguistic devices to build finite verb forms:

(1) -n, -ss, -t, -s and umlaut/ablaut

However, the distribution of these elements is not homogeneous in so far as overcase only marks some forms of strong verbs, and in what follows we shall not give a detailed account of it.1

With respect to the distribution of the units -n, -ss, -t and -s the morphological system falls into two classes:

(2) a. -n and -s are units with unambiguous functions: wherever we find the -s, the second person singular is marked. And whenever we want to mark the second person singular, we have to use this -s. Analogously, -n marks the plural forms of the first and third persons plural, and vice versa we have to choose an -n to mark these categories.

b. The behavior of -t and -ss is less consistent. -t always marks the second person consistently. It also seems to be a sign to mark the third person singular; but this is only the case in the form of the indicative present. Moreover, -t also marks all indicative and subjunctive forms of the preterite of weak verbs. -ss seems to be a marker for the first person singular. But within the forms of the indicative preterite of strong verbs, it does not do its job (gab/*gabe). In addition, -ss also marks all present and indicative forms of the subjunctive of both weak and strong verbs.

The first conclusion to be drawn from this observation might be the following: -s and -n are signs that mark person/number categories uniformly. -ss and -t can mark person/number categories but they do not have to do so. Furthermore, -t also marks tense (preterite) and -ss also marks mood (subjunctive). This unorthodox distribution of -t and -ss leads us to an unorthodox morphological reconstruction of the German verbal paradigm.

3. stem – base – word form

In the linguistic literature there is no consensus as to how to decompose complex verb forms. Some linguists plead for the concepts root and stem (cf. Richter 1982). The root of a verb is an underlying invariant morpheme with a specific lexical meaning. Because of the invariance of the consonants within a root, Richter (1982:180) defines the root as a „sonorant framework“ („Konsonantengerüst“) of a verb. By contrast, a stem is defined as a combination of the root and some other morphological material. According to this definition, weak verbs have one root (for example, lach) and two stems (lach- for the present tense, lach- for the past tense); strong verbs have more than one root and the same number of stems. The verb werfen, for example, has at least four roots (werf, würf, warf, würf); these roots are the source for the stems (werf-, würf-, warf-, würf-), which are used to build person/number categories.

Another proposal is made by Eisenberg (1998), who, refraining from using the concept of a root, defines the stem as the smallest common morphological unit of a lexeme. The phonological variations of the stem of a strong verb are defined as allomorphs of a stem or as stem forms. A stem is then...
defined as a set of stem forms. From this point of view, a verb does not have a root; it has at least one stem form (all weak verbs; for example *lach*) and at most five stem forms (*werfen, wirf, würf, wurf, wurf*).

Whereas in Richter’s proposal the *-t* of the past tense forms is part of the stem, Eisenberg opts for a concept where *-t* is a morpheme linked to the stem. In the following, we use Eisenberg’s stem concept. In addition to this, we use two other concepts: base and word form.

The base is defined by Neef (1996:46) as a morphological unit constituting grammatical categories which structure a grammatically specified paradigm. For example, the base for all person/number categories of the indicative preterite of the weak verb *lachen* is *lacht*; the base for all person/number categories of the subjunctive preterite of the strong verb *werfen* is *würf*.

The term word form is defined as a morphological unit which holds all possible information a word can bind morphologically.

The relation between stem, base, and word form is conceptualized as a relation of successive incorporation:

Figure 1: word form and base configuration

```
word form
   base
  /\           \
stem form      tense/mood pers/num
[[[läch]]] t   [st] (2. ps. sg. subj. present)
[[[lach]]]  (t+t) (2. pers. pl. ind. preterite)
```

With respect to the concepts stem, base, and word form, the whole verbal paradigm can be represented as follows (*t* is element of {*+, −*}):

| Weak verbs:                                                                 |
|-----------------------------|-----------------|-----------------|
| Ind. pres.                | ([stem form]_{st}) | (st) [−α pl-morpheme]_{2t} |
| Ind. pers.                | ([stem form]_{ps}) | (ps st) [−α pl-morpheme]_{2t} |
| Ind. past.                | ([stem form]_{ps+t+} | (ps st+t) [−α pl-morpheme]_{2t} |
| Subj. past.               | ([stem form]_{ps+t+} | (ps st+t) [−α pl-morpheme]_{2t} |

| Strong verbs:                                                            |
|-----------------------------|-----------------|-----------------|
| Ind. pres.                | ([stem form]_{st}) | (st) [−α pl-morpheme]_{3t} |
| Ind. pers.                | ([stem form]_{ps+t+} | (ps st+t) [−α pl-morpheme]_{3t} |
| Ind. past.                | ([stem form]_{ps+t+} | (ps st+t) [−α pl-morpheme]_{3t} |
| Subj. past.               | ([stem form]_{ps+t+} | (ps st+t) [−α pl-morpheme]_{3t} |

Table 2: The structure of weak and strong verbs

4. The morphological status of *-t* and *-w*:

As shown above, we look upon the *-t* of the preterite and the *-t* of the third person singular as morphemes. Also, we characterize the *-w* of the subjunctive as well as the *-w* of the first person singular as morphemes, as Eisenberg (1997) and Redder (1992), for example, do. In doing so, we argue against recent positions that opt for defining the *-w* of the subjunctive as a prosodic feature (Neef 1996, R. Wiese 1996, Wunderlich/Fabri 1995).

On this morphological concept, we interpret the distribution of the morphemes *-t* and *-w* described above as a difference of binding structures:

If *-w*/*-t* indicate person/number, they are linked to the base. Together with the base they build the word form. We then speak of word form configuration of *-w*/*-t*.

If *-w*/*-t* indicate mood/tense, they are linked to the stem. Together with the stem they build the base. We then argue that *-w*/*-t* are base-configurated units. The corresponding binding structure may be called base configuration.

The advantage of this analysis is at least the following: the seemingly unhomogeneous behaviour of *-t*/*-w* can be reanalyzed systematically as a difference between binding structures. Thus, the phonological identity of all *-w*/*-t*-occurrences in the verbal paradigm can be treated uniformly. In chapter 6, we will also argue that the meaning of *-t* and *-w* is consistent in
Inflectional morphology and sentence mood in German 241

all cases and that the different interpretations of \(-\text{at}\) are the result of different binding structures and not of the morphological units themselves.

As regards the categorizations tense and mood, the conceptualization of the morphological relations mentioned above leads to the generalization in Figure 2, where \(w\) means word-form-configuration and \(b\) means base-configuration.

Figure 2: The distribution of \(-\text{at}\) and \(-t\) in the verbal paradigm

<table>
<thead>
<tr>
<th></th>
<th>ind pres</th>
<th>sub pres</th>
<th>imp sg</th>
</tr>
</thead>
<tbody>
<tr>
<td>-at, *at</td>
<td>-t, *t</td>
<td>*</td>
<td>***</td>
</tr>
<tr>
<td>-bt, *bt</td>
<td>-t, *t</td>
<td>*</td>
<td>***</td>
</tr>
</tbody>
</table>

Figure 2 suggests that \(-t\) and \(-\text{at}\) are distributed as being complementary to the mood/tense categories. However, when taking into account the empirical forms shown in Table 1, we see that there is a serious problem with the conceptualization of the \(\text{ind pret}\). As far as Figure 2 is concerned, we assume that the \(-\text{at}\) in the forms of the \(\text{ind pret}\) is not an inflectional morpheme. But Table 1 shows that weak verbs provide the \(-\text{at}\) in all forms of the \(\text{ind pret}\).

The assumption that \(-\text{at}\) in the forms of the \(\text{ind pret}\) is not an inflectional morpheme but a prosodic feature is based on at least the following consideration: if \(-\text{at}\) were really an inflectional morpheme that marks \(\text{ind pret}\), it would have to occur in all forms of the \(\text{ind pret}\). But, as we have shown, this is not the case with the forms of strong verbs, where \(-\text{at}\) does not appear.

We therefore interpret \(-\text{at}\) of the \(\text{ind pret}\) of weak verbs as a prosodic feature which marks the distinction between the \(\text{ind pres}\) and the \(\text{ind pret}\) of the third person singular:

Without the occurrence of \(-\text{at}\), the forms of \(\text{ind pres}\) and \(\text{ind pret}\) would have identical phonological/graphemic representations ((3a)), despite the underlying structure being different, as is shown by (3b).

(3) a. \([\text{V-}t]\)
    \(<\text{V-}t>\)
    \(<\text{V+}t>\)

b. 3. ps sg ind pres: \([\text{stem}]_{\text{w}} + t_{\text{at}}\)

Because \(\text{ind pret}\) and \(\text{ind pres}\) share the same contexts, they need to be distinguished in some way. That is why \(\text{pret}\) adds a schwa-syllable.

The plural forms of \(\text{ind pret}\) take the schwa-syllable because of their specific prosodic structure (*\text{nacht}, *\text{achten}). With the schwa-syllable of the third person singular, the paradigm becomes unbalanced: there are four forms with schwa (third person singular and all plural forms) and two forms without (first and second person singular). The result is what Eisenberg (1997, 1998:180) calls the balance of the paradigm (paradigmatischer Ausgleich).

All forms of the \(\text{ind pret}\) paradigm of weak verbs insert \(-\text{at}\).

5. Tense and mood

Traditional analyses tend to interpret tense and mood by isolating these categorizations from each other. They start with the definition of form and function of present and preterite on the one hand, and indicative and subjunctive on the other.

The function of the indicative preterite is then defined as a form marking the past. The indicative present is defined as a form which marks the present. The morphological marker of the pres/pret-distinction is \(-t\). Thus, the \(-t\) of the \(\text{ind pret}\) gets the functional interpretation past.

A serious problem arises in defining the function of the subjunctive. Although the function of the subjunctive on the other. The morphological marker of the pres/pret-distinction is \(-t\). Thus, the \(-t\) of the \(\text{ind pret}\) gets the functional interpretation past.

The events expressed by means of the subj pret entail \(-t\), the whole form cannot be interpreted as a form of the past. The events expressed by means of the subj pret are localized in a virtual present. As far as we know, this observation has nowhere led to reinterpreting the \(\text{ind pret}\) as past. Instead, most linguists assume that the paradigms of ind and subj are quite different with respect to their meanings. Due to this analysis, the verbal paradigm is split, which prevents the morphological structure of tense and mood from being viewed as strictly compositional.

The problem described here can be solved by means of a uniform interpretation of the morphological units involved in the formal configuration of tense and mood categories as well as the formal configuration of specific person/number categories. This is achieved by means of a uniform interpretation of \(-\text{at}\) and \(-t\). In the following section, we will show that tense and mood are structured compositionally not only with respect to their mor-
phology, but also with respect to their meaning. The syntactic effects of these meanings will be discussed in section 7.

6. The interpretation of -mm and -t

Let us now look more closely at the semantic characteristics displayed by the various markers. In order to reconstruct a unique interpretation for -mm and -t, respectively, which is abstract enough to cover their various uses, we will pursue the minimal assumption that their core meaning, though always invariant, is relativized with respect to different domains of evaluation. We therefore first want to discuss the concept of deixis along with the various dimensions of deictic interpretation. This concept, originally proposed by Bühler (1934), differentiates several dimensions with respect to which an utterance is interpreted in its context of use, comprising, especially, the speaker, the time, and the place of speech. These dimensions can be related to coordinates meeting in one point, the origo, which is determined by the value me for the speaker coordinate, the value now for the time coordinate, and the value here for the place coordinate. This is Bühler’s original concept of the me-here-now origo.

Since the place coordinate is rather irrelevant for the verbal inflectional system in German, we omit it here, but we add a world-coordinate in order to capture differences in modal interpretation that are introduced by the various verbal moods in German. We thus achieve a three-dimensional system of deictic organization, see Figure 3, according to which – we propose – the verbal inflectional elements are to be interpreted.

Figure 3: The deictic system

```
world
  
  time
  
  person

<me, now, actual world>
```

Our main assumption now is that -mm and -t are inflectional elements which, respectively, express invariant relations on the various deictic dimensions.

For -mm, we assume that it expresses the part-of relation holding between the reference of some verbal expression (to be determined in due course) and the origo-position.

The -t-marker, on the other hand, operates in just the opposite way in that it shifts the reference of some verbal expression from the origo-position to some other position on one of the deictic coordinates.

Now recall the two types of morphological binding, namely wordform and base, used in the purely formal analysis of the inflectional system in Figure 2. What we now want to propose is that the linking of the -mm/-t-markers to the base makes them operate on the proposition, whereas linking them to the word form makes them operate on the predication structure.

This leads to the following functional characterizations of -mm and -t with respect to the deictic dimensions on the one hand and the base- versus wordform-configuration on the other.

4. The interpretation of the markers

a. -mm

**person:** The denotation of the predicate is part of the element on the person coordinate in the origo-position (the speaker).

**time:** The evaluation time of the proposition is part of the time coordinate in the origo-position (now).

**world:** The evaluation world of the proposition is part of the world coordinate in the origo-position (the actual world).

b. -t

**person:** The predication is expressed according to some individual/object different from the origo-position (not the speaker).

**time:** The evaluation time of the proposition is different from the origo-time (not now).

**world:** The evaluation world of the proposition is different from the origo-world (not the actual world).

The generalization, then, is that -mm uniquely marks membership in the origo-position, while -t uniquely marks distance from the origo-position.

If we now relate these concepts to the classification in Figure 2, which captures the occurrence of -mm and -t with respect to the different verbal forms in German, we get the shifting effects in (3) for the -t-marked categories.

5
is in Paris is true in w'. In order to properly conceptualize w', it has to be strongly similar to w₀, with the exception of the set of conditions mentioned. So, there has to be a strong similarity between w₀ and w', expressed by \( \texttt{w₀ \to w'} \), and there has to be some difference, expressed by \( \texttt{w₀ \to w'} \).

Let us call this notion modal shift under minimal distance, which is proposed in Lohnstein (2000) to capture the intuition that unembedded clauses marked with \( \texttt{sub pret} \) are evaluated with respect to worlds which are for the most part identical to the actual world (specified by \( \texttt{w₀ \to w'} \)-marking), but have to be somewhat different from it (specified by \( \texttt{w₀ \to w'} \)-marking). On this account, the difficulties with the simultaneous occurrence of \( \texttt{w₀ \to w'} \) and \( \texttt{w₀ \to w'} \) in the \( \texttt{sub pret} \)-form disappear, leading to a coherent picture for the interpretation.

Next, consider the observation that clauses marked with \( \texttt{sub pres} \) behave on a par with imperative clauses in so far as they neither allow for question formation nor for assertions.

\[
\begin{align*}
(8) \quad & \text{a.} \quad \text{Wer steige auf die Leiter?} \\
& \text{b.} \quad \text{Steige Peter auf die Leiter?} \\
& \text{c.} \quad \text{Peter steige auf die Leiter.} \\
& \text{d.} \quad \text{(*Nein, das ist nicht wahr.)} \\
& \text{(*No, that isn’t true.)}
\end{align*}
\]

These options seem to be available for clauses marked with \( \texttt{ind pres/pret} \) and \( \texttt{sub pres} \) only.

\[
\begin{align*}
(9) \quad & \text{Wer steigt/stiegt/steige auf die Leiter?} \\
& \text{Who climb/ind pres/ind pret} \text{ the ladder} \\
& \text{Who climbs/climbed/\textbf{would climb} \text{ the ladder?}}
\end{align*}
\]

In order to derive these different properties of main clauses, we can assume that the verbal moods determine a relation between the actual world and some other worlds with respect to which the proposition expressed becomes evaluated.

In Lohnstein (2000:41), a distinction is drawn between an epistemic and a factive domain. These two domains are related to each other by the notion of actualizability. The epistemic domain is given by all propositions which denote knowable situations, events or states. Therefore, these situations must be situated in the temporal interval which encloses the past up to
Inflectional morphology and sentence mood in German

The present. They can never be situated in the future and they can never become topical.

The factive domain, on the other hand, contains all propositions which describe situations, events, or states which are facts or will become facts in the ongoing course of events. These situations are never in the past, because events from the past can never be made topical (again). The factive domain, therefore, contains all propositions which describe present and future facts. Since facts do not allow for a distinction according to truth and falsity, it now follows that propositions that are evaluated with respect to the factive domain do not allow for questions or assertions. These options are available only if the respective propositions become evaluated on the epistemic domain.

Between the two domains there is an overlapping area, which Lohnstein (2000) called the realistic domain. This domain contains the known facts. The intuitions about these domains are expressible by the partition of the set of possible worlds into the following three classes.

Figure 4: The domains with respect to which propositions become evaluated

<table>
<thead>
<tr>
<th>Realistic</th>
<th>Epistemic</th>
<th>Factive</th>
</tr>
</thead>
</table>

Notice that this classification, though inducing a partition by modal notions only, also contains temporal distinctions.

The epistemic domain is given by the intersection of all propositions describing epistemic content. The factive domain is given by the intersection of all propositions describing facts which are the case and which will be the case in the further course of events.10 The realistic domain contains all worlds which are compatible with the known facts.

The distinction between the two domains enables us to pick up the criterion of the direction of fit between words and world, introduced by Searle (1975) in order to discriminate classes of speech acts. Propositions evaluated with respect to the factive domain have a world-to-word direction of fit, while propositions evaluated with respect to the epistemic domain have word-to-world direction of fit. Quite crucially, this distinction is reflected in the morphological system of verbal inflection, rather than in a system necessary for pragmatic reconstruction.

Relating these considerations to the categories of the verbal inflectional system in German, as in Figure 2, yields the following generalizations:

(10) a. Propositions marked with ind pres, ind pret, and sub pret allow for questions and assertions, because they are evaluated with respect to the epistemic domain.

b. Propositions marked with sub pres and imperative do not allow for these options, because they are evaluated with respect to the factive domain.

Needless to say, only epistemic content can be true or false and therefore assertable or questionable. Facts, on the other hand, do not have these properties, precisely because they are facts.

The reason why sentences with special verbal mood markers are evaluable with respect to truth or falsity while others are not can now be related to properties of elements from the inflectional system. Furthermore, from the assumption that imperatives are evaluated with respect to the factive domain, it follows that they are always interpreted with a progressive aspect.11 For sub pres used in main clauses, the interpretation as fact introducing devices follows immediately.

7. Verbal mood as a functional category

As has become clear from the foregoing sections, verbal mood influences sentence mood in crucial respects and interacts in systematic ways with principles of sentence formation. In particular, verbal mood allows for or prohibits the formation of questions, declaratives, imperatives. Therefore, what is needed is a theory which brings together the various subcomponents necessary for the constitution of sentence mood in a uniform way and which derives the semantic effects in a compositional fashion.

Let us start with some considerations about functional categories. Since the very beginning of theorizing about functional categories, use has been made of the inflectional elements and their content in order to motivate their existence. With minor exceptions,12 little attention has been devoted to
Inflectional morphology and sentence mood in German

Verbal mood with respect to its sentential relevance. Instead, since Chomsky (1986), a CP-structure was assumed to account for the properties of the left periphery of clauses in the world’s languages. Especially in the case of the Germanic V2-languages, the positions provided by a projection of the functional category C were useful and necessary in explaining movement processes, providing as they did the landing sites for the finite verb and ±wh moved constituents. The two positions are established by the head and the specifier position of CP. But despite the feature [±wh], necessary to discriminate declaratives from questions, no further content was ascribed to the C° head position. On the basis of the [±wh]-feature, only two sentence types were distinguishable, but the others, like imperatives, exclamatives, or optatives, need different feature specifications. The assumption of a CP as the highest projection of the main clause is therefore mainly based on two factors:

(11) a. the availability of two different landing sites for head- movement and A-bar-movement
b. the distinction between questions and declaratives

The intuitions about the compositional nature of a mood-proposition combination were largely ignored by the syntactic theorizing during the 80s and 90s. In recent developments (Rizzi 1997, Chomsky 1995, Cinque 1999) a ForceP is mentioned, which we assume is intended to capture the rather long-standing insights from semantics into the need for establishing a relationship between a mood component and finitely marked propositions, as shown in Figure 5.15

Figure 5: The combination of mood (attitude) with the proposition

Given the need of combining the verbal with the sentential mood, let us now assume that the verbal mood constitutes a functional category – along with Agr and Tense – which establishes the highest projection of the main clause. What was referred to a moment ago as a ForceP turns out to be a mood phrase MP, at least as far as the Germanic languages are concerned.15

For German (and the other V2-languages as well), it is widely taken for granted that the two left-peripheral positions of main clauses become filled by two derivational processes moving the finite verb to M° (the former C°-position) and some [±wh]-phrase into the specifier position SpM (the former SpC-position).

The finite verb, therefore, targets M° by head movement (originally proposed by Travis (1984)), while the [±wh]-phrase targets the SpM-position by A-bar movement, as shown in the diagram in Figure 6.

Figure 6: Mood phrase and landing sites

The content of the functional category M° is provided by verbal inflectional morphology on a par with Tense and Agr. Under these assumptions, the need for a CP for main clauses disappears along with the discrepancies it raised.

In order to derive the relevant mood effects, we have to look at the regular grammatical devices and their semantic contributions as well as their systematic interaction with the syntactic principles of structure building.

The next step we have to take in constructing an inflection-based theory of sentence moods is to clarify how far the two movement types using M° and SpM as landing sites determine the properties of the various sentence moods.
8. The semantics of sentence mood

Based on assumptions about the semantic structure of interrogatives proposed by Groenendijk/Stokhof (1982, 1984, 1996) and Higginbotham (1996), Lohnstein (2000, 2001) develops a compositional theory of sentence moods which makes crucial use of Frege's (1892) analyses of the judgement (German: *Urteil*). He distinguishes three acts being required to form an assertion or claim: first thinking, second judging, and third claiming. The result of the first act, thinking, is the thought (German: *Gedanke*), grammatically realizable as a *y/n*-Question. 16

The thought, then, induces a bipartition of the set of possible worlds, because the proposition *p* expressing the thought divides the set of all possible worlds into two classes: one class of worlds in which the proposition is true, and the other class of worlds in which the proposition is false. We therefore achieve worlds at which *p* is true and worlds at which ¬*p* is true and all worlds belong either to the first or the second class. The result of joining these two classes is the whole set of worlds and the intersection between the two classes is empty. This means that the whole set of worlds divides into a partition. 

Judging, Frege's second act, requires the acknowledgement of the truth of the thought. Technically speaking, judging means reducing a bipartition induced by the thought to the class of those worlds at which the proposition is true.

Claiming, the third act, anchors the object (reduced bipartition) in the context of discourse, thereby guaranteeing that the illocutionary force provided with this object can take effect.

Lohnstein (2000, 2001) generalizes the interplay of the three acts distinguished by Frege to the main sentence moods: *y-n*-interrogative, *wh*-interrogative, declarative, and imperative, thereby deriving appropriate semantic representations for the different moods in a compositional fashion. While declaratives are derived by reducing the bipartition, the semantic object denoted by a *wh*-question is derived by computing the closure under logical conjunction of the Cartesian product between the denotation of the *wh*-phrase and the bipartition indicated by the thought. In the case of a *y*-question, the bipartition remains unmodified keeping the representation of the thought unchanged.

It is important to note that these compositional processes work if and only if the verbal mood is *ind pres*/pret or *sub pret*, that is, the class of moods inflectionally marked with *-t*. As mentioned in Figure 4, these ver-

bal moods determine that the proposition is being evaluated with respect to the epistemic domain. Assertion and question formation is therefore possible only in epistemic contexts. This does not work if the verbal mood is imperative or *sub pres*, which determine the proposition to be evaluated on the factive domain (see again Figure 4), as the following examples from German suggest.

(18) Ind pres/sub pret
   a. *Wen gibt/gebe Maria ein Buch?*
      *Whom gives/would give Mary a book?*
      *Deiner Freundin*
      *your girlfriend*
   b. *Gibt/gebe Maria ihrer Freundin ein Buch?*
      *Does/would Mary give her friend a book?*
   c. *Ein Buch gibt/gebe Maria ihrer Freundin.*
      A book gives/would give Mary her friend.

(19) Imp/sub pres
   a. *What will/may give/die Maria ein Buch?*
      *What will/may give Mary a book?*
      *Ja/Nein*
      *yes/no*
   b. *Gibt/gebe Maria ein Buch?*
      *Give/give subj I Mary a book?*
      *Deiner Freundin*
      *your girlfriend*
   c. *Deiner Freundin gibt/gebe ein Buch.*
      Your girlfriend give/give subj I a book?
      *wahr/falsch*
      *true/false*

The example in (19a) is ungrammatical because, as we have already seen, the [*wh*-phrase] is incompatible with a proposition which is related to the factive domain.

Fronting of the finite verb in (19b) does not lead to a *y/n*-question as in (18b). Again, this is because the factive domain does not allow for a bipartition at all. 17 In (19c), no assertion derives by fronting a [*wh*-phrase] as opposed to (18a). Again, the reason is that there is no partitioning possible on the factive domain. Although the construction is well-formed, no effects concerning the sentence mood show up.

Summing up the discussion so far, we have seen that propositions marked with *ind pres*/pret or *sub pret* can combine with a [*wh*-phrase] to
form a wh-question. The semantic composition thereby leads to a Boolean lattice representing the meaning of the wh-question. By the same operations, the assertion is derived by substituting the [+wh]-phrase with the [-wh]-phrase. Therefore, the only difference between these two kinds of sentence formation rests on differences in the [+wh]-specification of the participating phrases, reducing the differences between these two sentence moods to properties of the participating lexical items. Y/n-questions are formed from the propositionally induced bipartition without the need of any further lexical material.

Turning to propositions marked with imperative or sub pres, we see that these combinations fail to supply any of the above-mentioned effects. The explanation is quite simple: it follows from the fact that only epistemic content can be true or false and therefore allow for a bipartition of the set of indices. Since this does not hold for the factive domain, no bipartition is possible. It follows that question formation with propositions from the factive domain is generally impossible, and that assertive clauses cannot be formed because there is no partition to reduce. Note that in all these constructions, the possibility of forming declarative or interrogative objects is blocked for the same reason.

### 9. On the interaction of inflectional morphology and syntactic heads

Bringing together the contents and properties of the functional category (verbal) mood, assumed to be the highest projection of Germanic root clauses, we can derive essential properties of the illocutionary force of sentences in terms of sentence mood constitution. Note that ForceP (mentioned by Chomsky 1995; Rizzi 1997) is a projection introduced to contain exactly these properties. Therefore, the notions MP and ForceP are different names for the same concept.

Concentrating on independent root clauses for the moment, the following general picture emerges as regards the distribution of lexical and phrasal elements in the left periphery of German clauses according to effects on the sentence mood constitution.

---

![Figure 7: Parametrization of the mood phrase for main clauses.](image-url)

The SpM position (the former SpCP position) can be occupied by a [+wh]-phrase, a [-wh]-phrase, or remain empty. These kinds of occupation are possible for all verbal moods except imperatives that do not allow for a [-wh]-phrase in the SpM-position.

It is obvious that only lexical or phrasal material in the SpM position is relevant for the determination of the resulting sentence mood in combination with the (temporally specified) proposition represented here as an AgrP. This means that A-bar-movement of a [+wh]-phrase serves the purpose of specifying the properties of the sentence mood if the verbal mood is ind pres/pret or sub pret. Although these structural options are available for all verbal moods (except the imperative, to which we return), the sentence mood effects obtain for ind pres/pret or sub pret only.

We now arrive at the point at which the syntactic structures can meet the semantic objects and we can see how the structure and the processes involved lead to the relevant objects of semantic interpretation.

Since, in German, two root operations have to be assumed to derive the various sentence types illustrated in (19), namely A-bar-movement of a [-wh]-phrase into the position SpM and head movement of the finite verb into the M\(^i\) position, we can now relate the semantic operations to the
Inflectional morphology and sentence mood in German

moved constituents in a one-to-one fashion. The [+wh]-phrases are the phrasal elements which interact with the propositional bipartition to yield the wh-question or the declarative sentence, respectively. If no phrase is moved to the SpM-position, the unmodified bipartition remains, deriving the y/n-question as desired.

As we have already noted, these operations are restricted to the use of

ind pret/pret or sub pret verbal mood in order to affect the sentence mood. In the other cases, either an ungrammatical structure results or no modal effect obtains, see Figure 7.

But note that long extraction of a [+wh]-phrase into an imperative main clause is possible in German, as can be seen from (20).

(20) a. [Wohin] sag mir, dass Du nie wieder tiefst!
   [To which place], tell me, that you will never go again t!
   b. Sag mir, wohin, du nie wieder tiefst!
   Tell me, [to which place], you will never go again t!

In (20a), the matrix clause is marked as imperative and is at the same time compatible with a [+wh]-phrase. The sentence mood does not change and the scope of the wh-operator is restricted to the embedded clause. (20a) has the same interpretation as (20b) according to sentence mood. We therefore have to conclude that the SpM-position in imperative clauses is available even for [+wh]-phrases and that the reason for the ungrammaticality of short wh-movement in imperative clauses is due to conditions of interpretation. Furthermore, there seems to be a last resort principle for the interpretation of wh-chains, which allows the chain to be interpreted at the position of the intermediate trace.

Let us now look more closely at the distribution of the finite verb and the act Frege called the announcement of the judgement (Kundgabe des Urteils). As can be seen from the examples in (21), all independent root clauses reveal the verb-second pattern, which means that the finite verb occupies the M₀ position. Contrasting these patterns with embedded clauses in German, we generally find the finite verb in the final position of the clause in accordance with the OV-order of German.

The following structural description shows that embedded clauses in German are generally verb final.

Figure 8: Parametrization of the mood phrase for embedded clauses.

This regularity suggests that the position of the finite verb marks the distinction between embedded versus independent clauses. But what is the difference between these two kinds of clause structures from the perspective of sentence mood?

First of all, the M₀ position seems to be the position relevant for marking the place of the modal anchoring of the respective proposition. This can be either the context of discourse or the grammatical context. Take modal anchoring to be a two-place relation between a proposition and some kind of context. For every proposition the relevant context has to be specified by some regular grammatical means.

Since propositions expressed by independent clauses are anchored in the context of discourse, and propositions expressed by embedded clauses are anchored in the grammatical context, it appears that the position of the finite verb marks the anchoring place of the respective proposition.

Let us take that to be the case. Then we can assume that the finite verb occupying the M₀ position indicates that the modal anchoring of the proposition takes place in the context of discourse; otherwise (i.e., if the finite
Inflectional morphology and sentence mood in German

verb remains in its final position) the proposition is anchored in the grammatical context.

Now note that anchoring of a proposition in the context of discourse is another formulation for Frege’s announcement of the judgement (Kundgabe des Urteils). We therefore arrive at the hypothesis that the occupation of the head M₀ position by the finite verb is a device for the modal anchoring of the proposition in the discourse. This expresses that a proposition with declarative mood is an announcement, with interrogative mood is a question, and with imperative mood is a request.

As regards the positioning of the finite verb, we do not find differences with respect to distinctions in the verbal mood. All independent clauses have the finite verb in M₀ irrespective of the specific specification of the verbal mood. The restrictions necessary to block the occurrence of some verbal moods (for instance, imperative) from embedded clauses have to be formulated with respect to properties of the epistemic/factive domain. As pointed out in Bredel/Lohnstein (2001a), further properties of the German verbal inflectional system make it possible to account for some of these cases.

We end up with a theory of sentence mood that captures the three acts of Frege’s Judgement (Urteil) and generalizes to the main sentence moods (declarative, interrogative, imperative) which seem to appear in all languages of the world.

Especially for German (and with some minor modifications for the whole class of the Germanic V2 languages), the theory allows for the derivation of the relevant sentence mood distinctions in a compositional fashion, not only with respect to the semantic objects but also according to the syntactic structures and the distribution of the elements of the verbal inflectional system.

This happens in a uniform way in the single left peripheral system of the syntactic structure that is provided by the mood phrase MP.

We therefore arrive at a language specific parametrization for sentence mood constitution, as expressed in the following structure:

Figure 9: Mood phrase, verbal mood and semantic objects

This structure is projected by the inflectional category verbal mood and we thereby obtain a unique domain, the mood phrase MP, in which the unique phenomenon of sentence mood constitution can be accounted for.

10. Summary

This paper started with observations that, in German, the number of inflectional morphological units exceeds the number of possible syntactic distinctions. A closer look at the principles of the abstract properties of the inflectional system suggested that there are only five units, which structure all forms of the paradigm. Two of these means, -t and -!, have turned out to be extremely flexible. By their various possibilities to link to the stem or the wordform, respectively, they generate specific person/number, mood, and tense categories. -t and -! achieve this differentiation by virtue of their basic meanings, distance (t) and part of (!), which are flexible enough to be applied to different domains of evaluation depending on their morphological status. As was shown in the foregoing discussion, the inflectional category verbal mood determines relevant aspects of clause structure and allows the derivation of sentence moods in interaction with the principles of syntactic and semantic composition. The functional categories establishing
the VP-dominating projections in sentence formation are now given by Agr, Tense, and Mood, thus restricting these classes to elements of the verbal inflectional system. Especially the mood phrase MP together with its parameterization through the two movement types (A-head- and head movement) lead to a coherent interpretation of the various sentence moods in German along the lines of a compositional semantics.

Notes
1. See e.g. Eisenberg (1997) and Wunderlich and Fabri (1995).
3. We do not take into consideration the specific change of the vowel in the forms of the second and third person. For an interesting interpretation of this phenomenon, see Wiese (1994).
4. For the most important phonological constraints see B. Wiese (1994), Neef (1996) and Eisenberg (1997; 1998). ([uml = umlaut])
6. Analyses which at least in part include the morphological diagnosis of the compositionality of mood and tense can be found in Thieroff (1992) and Fabriceus-Hansen (1999).
7. See also Fabricius-Hansen (1999) for similar assumptions.
8. The abbreviations are to be understood in the following way: [VP] is the denotation of the predicate, a property. [Sp] is the denotation of the speaker. P is a proposition, i.e., a set of worlds. w is the actual world, w' is some world different from the actual world, t is the present time, and t' is some other time than the present.
9. These notions correspond to Kratzer's (1978) conversational backgrounds.
10. These notions correspond to Kratzer's (1978, 1991) notions of conversational backgrounds.
14. But see also Cheng (1991) for several East Asian languages, cf. also Brandner (2000). Both authors concentrate on the notion of clause similarity, which relates closely to properties of sentence mood.

References


262  Horst Lohnstein and Ursula Bredel


Inflectional morphology and sentence mood in German

Reis, Marga, and Inger Rosengren

Richter, Helmut

Rizzi, Luigi

Sadock, Jerrold, and Arnold Zwicky

Schwartz, Bonnie, and Sten Vikner

Searle, John

Stalinaker, Robert

Stenius, Erik

Thairoff, Rolf

Stechow, Armin von, and Dieter Wunderlich (eds.)

Vikner, Sten