

## Introduction

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### 1. Nominal Inflection as an Interface Phenomenon

Nominal inflection is a prototypical interface phenomenon. The morphological component of a grammar determines the *inventory* of nominal inflection markers in a given language (which is further constrained by the phonological component), and the syntactic component regulates their actual *distribution*. The connection between the inventory and the distribution of nominal inflection markers in inflecting languages is made by morpho-syntactic features which play a role in both components: Case features, gender features, and number features. A straightforward and simple assumption might be that these morpho-syntactic features are in fact identical in the morphological and syntactic components. On this view, the morphological component ensures that, e.g., the nominal inflection marker for a German demonstrative determiner *dies* ('this') bearing the feature specification [+dat,+masc,-pl] would be *-em*: *dies-em*.<sup>1</sup> The relevant morphological information can be read off the paradigm in table 1.

Accordingly, one may then assume that the syntactic component ensures that the form *dies-em* shows up in positions that bear a specification [+dat,+masc,-pl], as a consequence of, e.g., lexical requirements of an embedding verb and inherent properties of a noun that follows the determiner. Thus, in (1), the verb *trauen* ('trust') requires a dative object NP, and NP-

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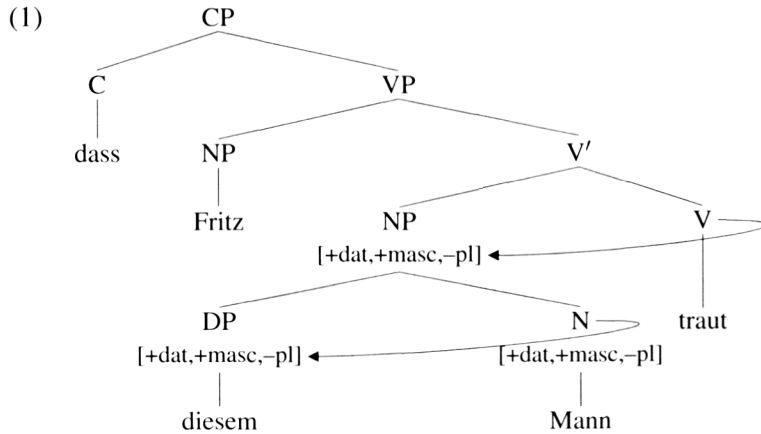
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<sup>1</sup>Following standard practice, [-pl] encodes the singular here; [+pl] stands for plural. Furthermore, the question arises of whether case and gender features should be taken to be binary (cf. [±nom]), as assumed in the text, or should be considered privative (cf. [nom]), or should be reanalyzed as values of multi-valued features (like [case:nom]; see Gazdar et al. (1985)). For the purposes of the present discussion, we can neglect this issue; see Adger (2003, ch. 2) for a recent overview.

Table 1: Determiner inflection in German

	[-pl]			[+pl]		
	[+masc]	[+neut]	[+fem]	[+masc]	[+neut]	[+fem]
[+nom]	-er	-es	-e	-e	-e	-e
[+acc]	-en	-es	-e	-e	-e	-e
[+dat]	-em	-em	-er	-en	-en	-en
[+gen]	-es	-es	-er	-er	-er	-er

internal agreement requires the determiner to share not only case, but also gender and number features with the noun ([+masc], [-pl], in the case at hand).<sup>2</sup>



‘that Fritz<sub>nom</sub> trusts this<sub>dat</sub> man<sub>dat</sub>.’

## 2. Inflection Classes

However, upon closer inspection things turn out not to be that simple. A first complication is the existence of inflection classes in many languages. Despite some claims to the contrary (e.g., in Wunderlich (1996)) it seems likely that case, gender, number, and other independently motivated features do not suffice to correctly predict the shape of a nominal inflection marker for any

<sup>2</sup>(1) has an NP-over-DP (rather than a DP-over-NP) structure and is simplified in a number of respects (e.g., concerning a possible subject position above the VP); but nothing hinges on this in the present context.

given noun stem in any syntactic context, in languages like Latin, Greek, Polish, or Russian. Consider, e.g., the situation in Russian. Masculine noun stems in Russian can belong to two different inflection classes: to a first inflection class (here called [1]) that has no marker in the nominative singular, and *u* in the dative singular (compare *student-Ø*, *student-u* ('student')); or to a second inflection class ([2]) that has *a* in the nominative singular and *e* in the dative singular (compare *mužčin-a*, *mužčin-e* ('man')). Similarly, feminine noun stems (ending in a soft consonant) can belong to two different inflection classes: either to class [2] (compare the nominative and dative forms *nedelj-a*, *nedelj-e* ('week')), or to a third inflection class ([3]) that has no marker in the nominative singular, and *i* in the dative singular (and that contains only stems ending in a soft consonant; compare *kost'-Ø*, *kost-i* ('bone')). The relevant morphological paradigms are shown in table 2.<sup>3</sup>

Table 2: Noun inflection in Russian

	[-pl]			[+pl]		
	class [1]	class [2]	class [3]	class [1]	class [2]	class [3]
[+nom]	-Ø	-a	-Ø	-i	-i	-i
[+acc]	-Ø/-a	-u	-Ø	-i/-ov(-ej)	-i/-Ø	-i/-ej
[+dat]	-u	-e	-i	-am	-am	-am
[+gen]	-a	-i	-i	-ov(-ej)	-Ø	-ej
[+inst]	-om	-oj	-ju	-ami	-ami	-ami
[+loc]	-e	-e	-i	-ax	-ax	-ax

Thus, we face the following situation. On the one hand, it can hardly be denied that there are certain tendencies correlating gender and inflection class in Russian. For instance, nearly all nouns in class [3] are feminine; all nouns in class [1] are masculine; and the number of non-feminine nouns in class [2] is comparatively small. On the other hand, however, a strict one-to-one correspondence does not hold. Hence, it seems that the postulation of a morphological inflection class feature is unavoidable (see Aronoff (1994), Corbett & Fraser (1993), Fraser & Corbett (1994), Halle (1994)). However, whereas gender is a feature that must play a role in syntax (after all, the gender feature of a given noun stem can only be determined by looking at an agreeing item

<sup>3</sup>The paradigms are presented here in a simplified form that ignores many complications. In particular, neuters are missing; furthermore, most morpho-phonological variation and the effects of systematic phonological rules are ignored.

in its syntactic context), this does not seem to hold for inflection class in any obvious way: There are no syntactic operations (like agreement, government, etc.) that refer to inflection classes.<sup>4,5</sup>

Incidentally, the same kind of problem shows up in a language like German, whose inventory of noun inflection markers is otherwise much poorer than that of Russian. Table 3 gives an overview of the inflection classes that must be assumed for nouns in German.<sup>6</sup>

*Table 3: Noun inflection in German*

	[1] <sub>m,n</sub>	[2] <sub>m</sub>	[3] <sub>n,m</sub>	[4] <sub>m,n</sub>	[5] <sub>m</sub>	[6] <sub>f</sub>	[7] <sub>f</sub>	[8] <sub>f</sub>
[+nom, -pl]	-Ø	-Ø	-Ø	-Ø	-Ø	-Ø	-Ø	-Ø
[+acc, -pl]	-Ø	-Ø	-Ø	-Ø	-(e)n	-Ø	-Ø	-Ø
[+dat, -pl]	-Ø	-Ø	-Ø	-Ø	-(e)n	-Ø	-Ø	-Ø
[+gen, -pl]	-(e)s	-(e)s	-(e)s	-(e)s	-(e)n	-Ø	-Ø	-Ø
[+nom, +pl]	-(e)	-''(e)	-''er	-(e)n	-(e)n	-(e)n	-''(e)	-(e)
[+acc, +pl]	-(e)	-''(e)	-''er	-(e)n	-(e)n	-(e)n	-''(e)	-(e)
[+dat, +pl]	-(e)n	-''(e)n	-''ern	-(e)n	-(e)n	-(e)n	-''(e)n	-(e)n
[+gen, +pl]	-(e)	-''(e)	-''er	-(e)n	-(e)n	-(e)n	-''(e)	-(e)

As indicated by the indices *m(asc)*, *f(em)*, and *n(eut)* in table 3, gender information does not suffice to predict the inflection class of noun stems in German. Most of the variation concerns the choice of the correct plural marker. However, even if one confines attention to the highly impoverished system

<sup>4</sup>This holds true almost by definition; if inflection classes were visible in syntax, they would have the status of genders. However, see Bernstein (1993) for a different view according to which inflection class does play a role in syntax after all, in the realm of head movement.

<sup>5</sup>At first sight, one might assume that a similar problem arises with a feature [ $\pm$ animate], which is crucial for the correct determination of accusative forms of members of inflection class [1] of Russian nouns, and of accusative forms of plural nouns in general. (The generalization is that [+animate] singular noun stems of class [1] and all [+animate] nouns stems in the plural use the genitive marker in accusative contexts, whereas the respective [-animate] noun stems use the nominative marker in accusative contexts.) However, in this case one can plausibly argue that a feature [ $\pm$ animate] also plays a role in syntax – e.g., for the determination of unmarked word order.

<sup>6</sup>Parts of a marker that have been put in brackets (like “(e)”) remain without overt realization in certain contexts, as a consequence of fully predictable morpho-phonological variation. A marker accompanied by the diacritic '' triggers obligatory umlaut of a ([+back]) stem vowel. Note that the table is still somewhat incomplete; for instance, the plural marker -s that is standardly attached to loan-words and proper names (plus stems ending in a non-schwa vowel) is missing throughout.



in the singular, inflection class membership cannot be predicted from gender information of a noun stem. Whereas all feminine stems remain without an inflection marker in the singular, and all neuter stems take an *-s* in the genitive and no marker otherwise (at least not in modern Standard German; see below), things are slightly more complex for masculine stems: There is a distinction between “strong” and “weak” masculine noun inflection; compare *Mann-es* (‘man’, genitive singular), which belongs to one of the strong classes (viz., [3]) in table 3 and thus takes a genitive marker *-s*, with *Dirigent-en* (‘conductor’, genitive singular), which belongs to the “weak” class [5] and takes an *-(e)n* in genitive contexts (as well as in all other non-nominative cases). Again, there are tendencies that correlate the choice of inflection marker with independently given features (as concerns the case currently under consideration, weak masculines tend to be [+animate]). However, these correlations are not strict (for instance, strong masculines can be either [+animate] or [–animate], and weak masculines can in principle be [–animate] as well, as in *Planet-en* (‘planet’, genitive singular)). Consequently, even if one considers only the reduced system of noun inflection markers in the singular, it is hard to deny the existence of two separate, non-predictable inflection classes for masculines in German noun inflection.<sup>7</sup> In sum, irreducible inflection class features appear to be unavoidable in morphology, which gives rise to systematic mismatches between morphology and syntax with regard to the inventory of features employed in the two components.

### 3. Syncretism and Underspecification

A second potential problem for a simple view of the role of nominal inflection between morphology and syntax (according to which the morpho-syntactic features relevant in the two components are identical) is more theory-internal: It arises under a well-motivated approach to instances of syncretism in inflection marker paradigms that relies on a decomposition of morpho-syntactic case, gender, and number features into more primitive features. Consider, e.g., the following example: By cross-classifying standard case, gender, and number features, we end up with twenty-four different combinations that make up the paradigm for determiner inflection in German; see table 1. However,

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<sup>7</sup>Unless one is willing to introduce a fourth gender, that is; see Eisenberg (2000). Also see Wurzel (1998), Cahill & Gazdar (1999), Blevins (2000), Wiese (2000) for comprehensive treatments of the system of noun inflection classes in German.

closer inspection reveals that there are only five different forms: *-e*, *-er*, *-en*, *-es*, and *-em*. Thus, there is massive syncretism.<sup>8</sup> While there is disagreement as to the extent to which this syncretism is systematic, and to what extent it is accidental, it is widely believed that at least some cases of inflection marker homonymy in the determiner paradigm have a common basis, and should be treated uniformly. For instance, there is a single inflection marker for [+dat,+masc,-pl] and [+dat,+neut,-pl] contexts, viz., *-em*; this marker differs from the markers in all other paradigm cells in table 1. Given the restricted distribution of the marker, and the similarity of the contexts in which it shows up, it seems extremely unlikely that this is an accident. And indeed, all existing theoretical analyses of German determiner inflection that we are aware of strive to capture this instance of syncretism. A straightforward way to do this is to postulate a common source for multiple occurrences of inflection markers in different paradigm cells. Such a “common source” can be identified by means of the concept of *natural class*: [+dat,+masc,-pl] and [+dat,+neut,-pl] contexts differ only in the gender information, and the *-em* syncretism (plus, ultimately, several other phenomena) can then be taken to show that masculine and neuter gender have some property in common that sets them apart from feminine gender; i.e., masculine and neuter form a natural class. Natural classes of grammatical categories (like gender or case) can be formally captured by decomposing the standard categories into combinations of more primitive features.

Thus, for the case at hand, we might want to dispense with a primitive [+neut] feature altogether, and rather assume that the combination of [ $\pm$ masc] and [ $\pm$ fem] gives rise to the three genders in German: [+masc,-fem] captures masculine gender; [-masc,+fem] describes feminine gender; and [-masc,-fem] represents neuter gender, thereby corresponding to the word’s etymology (the fourth a priori possible combination [+masc,+fem] would then remain unused). Crucially, we can now say that the marker *-em* in the system of determiner inflection in German is not characterized by reference to fully specified morpho-syntactic features like [+dat,+masc,-fem,-pl] and [+dat,-masc,-fem,-pl]; rather, it is characterized only by the feature set [+dat,-fem,-pl]. Thus, there is an *underspecification* with respect to gender

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<sup>8</sup>At least for the purposes of this introduction, the notion of syncretism can be understood in a broad sense, as homonymy of inflection markers in some grammatical domain.

features, and this underspecification makes it possible to systematically account for the syncretism with *-em* in table 1.<sup>9</sup>

The same point can be made for case features. As an example, consider again the system of determiner inflection in German in table 1. It is difficult to imagine that the *-es* markers used for both nominative and accusative in neuter contexts are unrelated; and the same goes for the *-e* markers used for both nominative and accusative in feminine (and plural; see the last footnote) contexts. Similarly, *-er* markers are used for both dative and genitive in the feminine determiner declension; and again, this does not look accidental.

To systematically account for such kinds of syncretism spanning different cases in Slavic, it has been proposed by Jakobson (1962) that case features should be decomposed into combinations of primitive features that are somewhat more abstract. Taking this tradition initiated by Jakobson as a point of departure, a decomposition of case features in German has then been proposed by Bierwisch (1967) and, following him, Blevins (1995), Wunderlich (1997), and Wiese (1999). According to these analyses, standard case features like [+nom], [+acc], [+dat], and [+gen] are decomposed into the more primitive features [ $\pm$ gov(erned)], [ $\pm$ obl(ique)]. A cross-classification of these two binary features yields the four cases: Nominative is encoded by the feature specification [ $-\text{gov}, -\text{obl}$ ], accusative by [ $+\text{gov}, -\text{obl}$ ], dative by [ $+\text{gov}, +\text{obl}$ ], and genitive by [ $-\text{gov}, +\text{obl}$ ]. Thus, nominative and accusative on the one hand, and dative and genitive on the other, form natural classes – the non-oblique ([ $-\text{obl}$ ]) vs. oblique ([ $+\text{obl}$ ]) cases. An inflection marker can then bear underspecified (rather than full) case information that refers to a natural class of cases (rather than to a single case). For instance, the inflection marker *-er* that shows up in the dative and genitive of feminine (singular)

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<sup>9</sup>In principle, underspecification with respect to gender features can also derive the systematic absence of gender distinctions in the plural. However, since gender distinctions are neutralized in general in the plural in German (i.e., in other domains as well, so that there is no such thing as gender agreement in the plural), it is not clear whether such an assumption would ultimately prove necessary.

Note also that Wiese (1999) sets up a system of primitive features [ $\pm$ standard], [ $\pm$ special] which avoids the surplus specification arising under the proposal in the text ([ $+\text{masc}, +\text{fem}$ ]): The cross-classification of these two binary features yields the three genders plus an additional plural category. By thus treating plural on a par with gender, it becomes possible in principle to refer to feminine and plural as a natural class; this does not seem a priori implausible in view of the instances of syncretism with *-e* (in the nominative and accusative) and *-er* (in the genitive) that affect feminine and plural in the system of determiner inflection in German; see table 1.

contexts may now be assumed to be characterized by the feature specification [+obl,–masc,+fem,–pl]; similarly, the inflection marker *-es* that shows up in the nominative and accusative of neuter (singular) contexts can be characterized by underspecified case information: [–obl,–masc,–fem,–pl].

We take it that an underspecification approach to syncretism can be viewed as a well-established and interesting research program.<sup>10</sup> However, it raises questions concerning the interface of morphology and syntax. As a result of underspecification and feature decomposition, many word forms may now initially end up with impoverished feature specifications – involving, say, [+obl] instead of [+gov,+obl] (dative) or [–gov,+obl] (genitive); or [–fem] instead of [+masc,–fem] (masculine) or [–masc,–fem] (neuter); or, indeed, the empty specification [ ]. If morphology and syntax do not necessarily employ identical feature specifications, a first task is to guarantee that the morphological specification is compatible with the syntactic specification. A standard means to achieve this is to adopt a constraint that requires the morpho-syntactic feature specification in morphology (i.e., of the inflection marker or the inflected word form, depending on specifics of the analysis) to be a *subset* of the morpho-syntactic features provided by the syntactic context that the inflected word form (hence, the marker) shows up in; see Halle (1997), among many others.

A second, arguably less straightforward task arising with underspecifi-

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<sup>10</sup>We hasten to add that this this should not be taken to imply that other approaches to syncretism are inherently inferior. An interesting alternative research tradition derives cases of syncretism by invoking the notion of *paradigm geometry*, where concepts like adjacency and distance of paradigm cells play a crucial role. See Johnston (1997), McCreight & Chvany (1991), and Postma (1994), among others; and for an integrated approach that combines underspecification and paradigm geometry, Gallmann (this volume).

A second important alternative research strategy accounts for instances of syncretism by relying on *rules of referral*; these rules basically state that the inflection marker for some morpho-syntactic feature specification is identical to the inflection marker determined for some other feature specification. See Zwicky (1985) for the original concept, and Corbett & Fraser (1993) and Stump (2001) for slightly different implementations. Again, an underspecification approach is by no means inherently incompatible with the simultaneous adoption of referral rules; but an informal overview suggests that there is a tendency to primarily focus on one of the two concepts in actual analyses.

Finally, a third principled approach to syncretism relies on syntactic impoverishment operations that manipulate (typically, simplify) syntactic feature specifications for the purposes of morphology (see Bonet (1991), Halle & Marantz (1993), Noyer (1997; 1998), Bobaljik (2002), and Frampton (2002), among others). This kind of approach is usually complemented by a simultaneous adoption of underspecification.

cation is to ensure that syntax does not have access to the underspecified morpho-syntactic feature specifications that are motivated by morphological considerations but are of no use syntactically: Thus, verbs do not select NPs marked [+obl]; rather, they select NPs bearing, e.g., dative case. Adjectives do not agree with [–fem] (i.e., masculine or neuter) nouns; rather, they agree with, e.g., masculine nouns. However, it is a priori not clear why only fully specified features specifications seem to be available for syntactic operations, and underspecified information resulting from decomposition cannot be seen; and the question arises how these mismatches between morphology and syntax can or must be resolved.

That said, closer scrutiny might reveal the existence of phenomena that do suggest an availability of underspecified morpho-syntactic information in syntax after all. Potential candidates are free relative clauses, across-the-board dependencies, and parasitic gaps in languages like Russian, Polish, and German (see Groos & van Riemsdijk (1981), Bayer (1988), McCreight (1988), and Franks (1995)). These constructions exhibit matching effects that seem to be sensitive to a morphological (rather than syntactic) notion of case, which might be amenable to an analysis in which underspecified case information is available in syntax. Evidence from parsing might point in the same direction: Instances of syncretism act as the source of local ambiguities in parsing (see, e.g., Fanselow & Frisch (2004)); and parsing effects triggered by local ambiguities might offer clues as to whether morphological underspecification is or is not visible in syntax.

#### **4. Morphology-Syntax Interactions**

In addition to the question of how morpho-syntactic features can link morphology and syntax in nominal inflection, the question arises whether one component can directly be held responsible for properties of the other. It seems that a case can be made that there is an influence in both directions. On the one hand, it has been argued that the system of nominal inflection markers as determined by the morphology can have a direct impact on the syntax, e.g., in permitting syntactic operations that would otherwise not be available (cf., e.g., the idea that head movement takes place only in the presence of a sufficiently rich morphological paradigm); see Bernstein (2001) and Longobardi (2001) for overviews. Similarly, it has been proposed that there is a direct correlation between features that must be assumed in morphology to account

for the inventory of inflection markers and the presence of an appropriate functional head in the syntax (see Alexiadou (this volume) for overview and discussion).

On the other hand, properties of the paradigm of strong adjective inflection in German, and the very existence of the so-called “mixed” adjective paradigm, directly argue for the influence of the syntactic context on the shape of morphological inflection markers (see Eisenberg (1999)). Furthermore, as Gallmann (1998) has observed, there are cases in German where an a priori expected nominal inflection marker must disappear in a specific syntactic context (viz., when there is no preceding NP-internal item that bears an overt inflection marker). Compare, e.g., (2-a) with (2-b), and (3-a) with (3-b).<sup>11</sup>

- (2) a. ohne Dirigent-Ø/\*-en  
without conductor<sub>acc</sub>  
b. ohne dies-en Dirigent\*-Ø/-en  
without this<sub>acc</sub> conductor<sub>acc</sub>
- (3) a. aus Holz-Ø/\*-e  
of wood<sub>dat</sub>  
b. aus dies-em Holz-Ø/-e  
of this<sub>dat</sub> wood<sub>dat</sub>

At least at first sight, this phenomenon of case-marker drop would seem like a clear case of syntax determining morphological shape (but see Thieroff (2000; this volume), Sternefeld (this volume) for critical discussion). Comparable phenomena in the domain of number marking in a variety of languages which illustrate how syntax may determine morphological realization are addressed by Ortmann (this volume).

<sup>11</sup>The judgements are Gallmann’s; they are somewhat subtle. As noted above, *Dirigent* (‘conductor’) is a weak masculine noun belonging to inflection class [5] in table 3; the ending one might expect in (2-a) is *-en* rather than *-Ø*, on a par with what can be seen in (2-b). The situation in (3) is slightly more involved: *Holz* (‘wood’) is a neuter noun belonging to inflection class [3] in table 3. The dative marker *-e* is archaic, and in any event optional, which is why it does not show up in table 3. However, the crucial point is that it may occur only in certain syntactic contexts, viz., when there is an immediately preceding agreeing item that bears a (non-null) inflection marker.

## 5. Theories of Inflection

Various theories of inflection have been proposed whose validity can be checked against the type of questions in the domain of nominal inflection that have just been mentioned. Following Stump (2001), we can distinguish between four general types of approach, which can be characterized by two pairs of notions. First, *incremental* theories postulate that inflection markers add information (features) to a stem that was not there before; in contrast, it is assumed in *realizational* theories that inflection markers do not add information – they simply realize information that is already present. Second, in *lexical* theories, inflection markers are always correlated with (perhaps abstract) morphemes that exist independently in the lexicon; in contrast, *inferential* theories do not posit a specific lexical entry for inflection markers.

Theories like the lexical approach in Lieber (1992) or Wunderlich's (1996; 1997) Minimalist Morphology belong to the class of *lexical-incremental* approaches. On this view, a Russian noun like *student-u* with a morpho-syntactic feature specification like [+dat,+masc,-pl] (abstracting away again from a possible finer-grained specification resulting from feature decomposition), or a German demonstrative determiner like *dies-em* with a feature specification like [+dat,+masc,-pl] would consist of two morphemes each. On the one hand, there are the stems: *student* ([+N,+masc,class[1]]) and *dies* ([+D]). On the other hand, there are the inflection markers *-u* ([+dat,+masc,-pl,class[1]) and *-em* ([+dat,+masc,-pl]), respectively.

Distributed Morphology (see Halle & Marantz (1993), Halle (1994; 1997), and Harley & Noyer (1999) for an overview) is *lexical-realizational*. In this approach, the inflection markers *-u*, *-em* in the examples just given are not assumed to be morphemes that are stored in the lexicon; rather, they are realizations (more precisely, post-syntactic spell-outs) of an abstract Q-morpheme (or, in more recent versions of Distributed Morphology, f-morpheme) that bears the relevant morpho-syntactic features.

It seems that theories of the *inferential-incremental* type have rarely been pursued; but theories of the *inferential-realizational* type include most of what has been done in word and paradigm approaches (see Matthews (1991), Anderson (1992), Corbett & Fraser (1993), Aronoff (1994), Stump (2001), and literature cited in these works). Under an inferential-realizational approach, nominal inflection markers like *-u* and *-em* in the above examples would neither be morphemes in their own right, nor would they function as

realizations of morphemes. Rather, rules of the morphological component simply predict the word forms *studentu*, *diesem* for the stems *student*, *dies* if the latter items carry the appropriate morpho-syntactic feature specifications.

These various kinds of morphological approaches to inflection marking clearly make different predictions for the way in which the interaction with the syntactic component can take place. Lexical-incremental approaches at least open up the possibility that the inflection marker occupies a separate head position in syntax where it is in principle accessible for syntactic rules (like the operations Move or Agree in the Minimalist Program; see Chomsky (2001)), and from where it can project its morpho-syntactic features. The lexical-realizational theory of Distributed Morphology crucially assumes (abstract) inflection markers to be syntactic heads (with spell-out operations applying after syntax). In contrast, there is no way that an inflection marker could be syntactically active in inferential-realizational approaches. Similarly, there is an important difference with respect to the classic issue of whether inflectional morphology should be allowed to recognize the concept of null morphemes or null endings: There does not seem to be a possibility to do without null morphemes in lexical-incremental and lexical-realizational approaches (even though the kinds of null morphemes that must be assumed may be different). However, whereas they have no recourse to the concept of null morpheme, inferential-realizational approaches are free to either postulate or deny the existence of null endings. (Still, there seems to be a clear preference for the latter strategy.)

These differences notwithstanding, it is worth noting that the various approaches also converge on a number of fundamental issues. A particularly conspicuous instance of convergence is the assumption that the concept of competition plays a role in inflectional morphology. Essentially, this is due to the fact that most approaches to nominal inflection rely on underspecification of inflection marker specifications to at least some extent, which almost invariably leads to theoretical indeterminacies that are not well supported by the empirical evidence. Thus, underspecification brings with it the problem that more than one inflection marker would often be compatible with a given morpho-syntactic feature specification. However, in the vast majority of cases, only one inflection marker is eventually appropriate for any given specification.

In order to solve conflicts of this type, recourse is made to extrinsic ordering in analyses like those of Bierwisch (1967), Wurzel (1984; 1998), and



Halle (1994). Alternatively, it has often been suggested that the notion of specificity plays a role (see, e.g., Kiparsky (1973), Lumsden (1992), Halle (1997), Noyer (1997), Wiese (1999), and Gunkel (2003)): In the case of conflict, the most specific inflection marker is chosen. According to a simple understanding of the notion, an inflection marker is more specific than another one if it is characterized by more morpho-syntactic features. Thus, if, e.g., *dies-e*, *dies-er*, *dies-es*, and *dies-em* would all be a priori possible forms for a [+dat,+masc,-pl] specification (as, e.g., they are in Blevins' (1995) approach), *dies-em* is preferred over the other options because it is the most specific form (characterized by the features [+dat,-fem,+obl], as opposed to, say, *dies-e*, which is specified as [ ] in Blevins' analysis, or *dies-er*, which is specified as [+obl] only). In some cases, though, the simplest concept of specificity may not suffice to unambiguously predict the sole grammatical form because the two forms in question are characterized by the same number of morpho-syntactic features. In cases like these, an additional resort to feature hierarchies may be called for, as it has been proposed by Lumsden (1992), Noyer (1997), and Zifonun (2003), among others.

With the advent of Optimality Theory (Prince & Smolensky (1993)), a framework exists that has in fact been designed to handle instances of competition among various forms. Optimality Theory is more flexible and powerful (hence, less restrictive) than other approaches that also incorporate a notion of competition. Consequently, analyses that rely on extrinsic ordering, specificity, or feature hierarchies can all be translated into an optimality-theoretic framework without much ado. Of course, the question arises as to whether an optimality-theoretic approach to nominal inflection can be more than merely a translation of existing approaches, and is justifiable on its own grounds (see, e.g., Müller (2001) for an analysis of German determiner inflection, and Stiebels (2002), Wunderlich (2003) for more comprehensive studies that attempt to show that this might be the case).

## 6. Paradigms

A final important issue to be mentioned here concerns the status of inflectional paradigms. There are two basic possibilities. First, inflectional paradigms exist as genuine grammatical objects. Second, inflectional paradigms do not exist; they are epiphenomena, and their only relevant status is that of generalizations that need to be derived. The first view is

adopted in word and paradigm approaches, in Minimalist Morphology (where a paradigm is conceived of as a “multi-dimensional, potentially recursive matrix whose dimensions are defined by the morphological features of word forms”; Wunderlich (1996, 96)), and elsewhere; it also seems to be predominant in Optimality Theory (see McCarthy (2001)). Arguments for this view can be gained if one can show that certain constraints can only be formulated for paradigms, fully specified or underspecified (not for smaller units like morphemes or word forms), or that there are general properties or patterns that hold only of paradigms (and cannot be stated for smaller units). Arguments to this effect can be found in Carstairs(-McCarthy) (1987; 1991; 1994) (cf. in particular his Paradigm Economy and No Blur Principles), Wurzel (1987), Plank (1991) (and other contributions in the same volume), Williams (1994), Wiese (1999), McCarthy (2001), Blevins (this volume), and elsewhere. However, if arguments of this type can be shown to be spurious, there is no reason to maintain paradigms as genuine grammatical entities, and considerations of theoretical parsimony may then suggest dispensing with the concept in toto. Such an attempt is made by Bobaljik (2002), who shows that a meta-constraint on paradigms proposed by Williams (1994) (what he calls the “Instantiated Basic Paradigm Requirement”) is falsified by evidence from noun inflection in Russian. Furthermore, it is worth noting that paradigms cannot have any theoretical status whatsoever in certain approaches because of the architecture of the framework; most notably, this holds for Distributed Morphology.

## 7. The Contributions

The contributions to this volume tackle questions of the type illustrated above from different points of view. Most of the articles collected here are based on talks given at the workshop “Feature Distribution in the Noun Phrase” (“Merkmalsverteilung in der NP”) that was part of the 24th annual DGfS conference in Mannheim (February 27–March 1, 2002), or at the workshop “Inflectional Paradigms: Primitives and Structures” at IDS Mannheim (May 23–24, 2003). The contributions cover many typologically diverse languages (see the entry “languages” in the index). Still, it turns out that there is a certain bias towards Russian (which figures prominently in the papers by Blevins, Müller, Wiese, and Wunderlich) and German (which the papers by Eisenberg

& Sayatz, Gallmann, Karnowski & Pafel, Sternefeld, and Thieroff are mainly concerned with); and this bias is, to some extent, mirrored in this introduction.

Given the interface nature of nominal inflection, it does not come as a surprise that some of the contributions focus more on the syntactic component, and some more on the morphological component. Among the former are the papers by Alexiadou, Karnowski & Pafel, Ortmann, Sternefeld, and Thieroff; among the latter, the papers by Blevins, Eisenberg & Sayatz, Gallmann, Müller, Wiese, and Wunderlich. However, attention is paid to *both* components throughout; syntactic analyses are developed with an eye on morphology, and vice versa.

Major morpho-syntactic features that play a role in nominal inflection are (i) case, (ii) gender, (iii) inflection class, and (iv) number. Since many of the languages under consideration in this book are fusional in the sense that they involve portmanteau markers that encode several morpho-syntactic features in one form, all four feature types are addressed in most of the contributions. Still, there are differences in focus. For instance, gender features play a special role in the papers by Alexiadou, Thieroff, Wiese, and Wunderlich; inflection classes in the papers by Alexiadou, Blevins, Müller, and Wiese; case features in the papers by Gallmann, Sternefeld, and Wunderlich; and number features in the papers by Eisenberg & Sayatz and Ortmann. In several of the papers, the focus is extended from the inflectional domain proper to the stem: Alexiadou, Blevins, Wiese, and Wunderlich are all concerned with issues relating to both the forms of inflection markers and the forms of stems, which includes phenomena like stem alternation and theme vowel distribution; and Eisenberg & Sayatz make a case for a non-categorical transition from number marking to derivational morphology.

Finally, we consider it an attractive feature of the present volume that many of the theoretical approaches mentioned above are adopted or discussed here. This holds, for instance, for word and paradigm models (Blevins, Wiese); Distributed Morphology (Alexiadou, Müller); Optimality Theory (Gallmann, Ortmann, Wunderlich); the Minimalist Program (Alexiadou, Müller, Sternefeld); lexical approaches (Alexiadou, Müller, Sternefeld, Wunderlich), inferential approaches (Blevins, Thieroff, Wiese), and even what may be classified as mixed lexical/inferential approaches (Karnowski & Pafel).

It follows from these considerations that the articles collected in the present volume can be grouped in various ways – according to language

(-type); according to the grammatical component that dominates the perspective (morphology vs. syntax); according to the empirical domain or phenomenon in focus (e.g., case vs. gender/class vs. number); according to the theoretical framework chosen; etc. In view of this, we deemed it best to settle for an alphabetical order.

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Before his death, Wolfgang Ullrich Wurzel (1940-2001) had agreed to participate in the DGfS workshop on feature distribution in NPs. This volume is dedicated to his memory.

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