Describing Inflectional Paradigms with No Feature Decomposition: the Case of German

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This paper proposes a novel OT account of a subtype of German inflectional paradigms that avoids the use of language-particular feature decomposition of case, gender, and/or number (e.g. Jakobson 1936/1985, Bierwisch 1967, Blevins 1995, Müller 2002). The theoretical contribution of this paper is to provide an initial step for a typology of inflectional paradigms in terms of universal markedness hierarchies from which all necessary constraints are derived. An empirical focus here is on possessive articles (e.g. mein ‘my’, sein ‘his/its’) and a negative article kein ‘no’, whose paradigms are presented in Table 1. These paradigms have long been a matter of controversy, since they are one of the fundamental building blocks of the German lexicon and serve as an interface among syntax, morphology, and phonology.

There are six key observations to be noted about Table 1; (i) no gender distinction in the plural forms; (ii) no accusative in the singular feminine, singular neuter, and plural forms; (iii) no distinction between the dative and genitive in the singular feminine forms; (iv) a parallelism between the singular masculine and singular neuter forms; (v) a parallelism between the singular feminine and plural forms; and (vi) the plural dative form that disrupts the parallelism between the singular feminine and plural forms.

My proposal is that all of these observations follow from an OT constraint hierarchy composed of universal constraints to be introduced below. First, I propose to turn a set of universal markedness hierarchies in (1) into a set of markedness constraints in (2) in terms of stringency relation (de Lacy 2006), (which are freely rankable and compete against two types of faithfulness constraints, MAX and IDENT constraints, in (3)) under the assumption that nominative (the least marked case morpheme) is underspecified with respect to its role and morphological value (cf. Jakobson 1936/1983):

(1) a. Case Hierarchy (Silverstein 1980/1993)
   b. Gender Hierarchy (Rice 2006)
   Masc[ulin] < Fem[inine] < Neut[er]
   c. Number Hierarchy: Sing[ular] < Pl[ural]

(2) a. *{Gen}, *{Gen, Acc/Erg}, *{Gen, Acc/Erg, Dat}
   b. *{Neut}, *{Neut, Fem}, *{Neut, Fem, Masc}
   c. *{Pl}, *{Pl, Sing}

(3) a. MAX [Case], MAX [Gender], MAX [Number]
   b. IDENT [Case], IDENT [Gender], IDENT [Number]

Second, I propose to derive (4a)-(4c) and (5) from constraint conjunction (Smolensky 1995), an operation that combines more than one constraint into a complex constraint that is violated only when all the sub-constraints are violated. The basic idea behind (4) is that the German gender system grammaticalizes the semantic contrast between animate and inanimate and the one between man and woman (Wunderlich 2004); (4a)-(4c) allow no distinct accusative form in the singular feminine/neuter and plural (Observation (ii)) (cf. Aissen 2003). Likewise, (5) accounts for the syncretism between the dative and genitive in the singular feminine (Observation (iii)). Third, I propose to derive (6) from harmonic alignment (Prince and Smolensky 2004) of the gender hierarchy in (1b) and the number hierarchy in (1c):

(4) a. *{Undergoer/Neut} & *{Gen, Acc/Erg, Dat}
   b. *{Undergoer/Fem} & *{Gen, Acc/Erg, Dat}
   c. *{Undergoer/Plural} & *{Gen, Acc/Erg, Dat}

(5) *{Gen} & *{Neut, Fem}

(6) *{Masc/Plural} >> *{Fem/Plural} >> *{Neut/Plural}

(6) reflects the observation that the least marked gender in the unmarked, singular context (i.e. masculine) becomes the most marked gender in the marked, plural context. Together with *{Neut}, (6) ensures that the gender is reduced to feminine in the plural context and accounts for why there is no gender distinction in the plural forms (Observation (i)) and why there is a partial parallelism between the singular feminine and plural forms (Observation (v)), under the assumption that meine/keine and meiner/keiner are underspecified with respect to number.

Fourth, given the above set of constraints, I propose an OT constraint hierarchy in (7) for the inflectional paradigms of the possessive and negative articles in Table 1:

(7) The Constraint Hierarchy for Possessive and Negative Articles in German

<table>
<thead>
<tr>
<th>Constraint</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAX [Gender], MAX [Number], IDENT [Number], (4a), (4b), (4c), *{Masc/Plural} &amp; *{Neut}, *{Gen} &amp; *{Neut, Fem}</td>
<td></td>
</tr>
<tr>
<td>MAX [Case], IDENT [Gender], *{Neut, Fem, Masc}, *{Pl}, *{Pl, Sing}</td>
<td></td>
</tr>
<tr>
<td>IDENT [Case], *{Neut, Fem}, *{Gen, Acc/Erg, Dat}</td>
<td></td>
</tr>
<tr>
<td>*{Gen} &amp; *{Gen, Acc/Erg}</td>
<td></td>
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</tbody>
</table>

This constraint hierarchy is the output of the OT analysis and serves as a typological contribution to the understanding of the German possessive and negative articles.
The relative ranking of ‘MAX [Gender]’, ‘*{Neut}’, ‘IDENT [Gender]’, and ‘*{Neut, Fem}’ turns the singular neuter into the singular masculine and thereby accounts for a parallelism between the singular masculine and singular neuter (Observation (iv)).

Fifth, I propose to attribute the plural dative form (which disrupts the parallelism between the singular feminine and plural (Observation (vi)) to the fact that the plural dative is unambiguously encoded on nouns modified by the possessive/negative articles via the suffix –n (e.g. Hundé-n ‘dogs’, Bücher-n ‘books’). The existence of this suffix on the nouns makes it unnecessary to encode the plural dative on the articles as well as the nouns. This explains why the suffix -en (which is used as a slot filler as in Table 3 which contains no information on the gender, number, or case) is used to represent the plural dativeness in Table 1.

Finally, I will extend the above OT account to the other inflectional paradigms in German including another subtype of determiner paradigms (e.g. der ‘the’, dieser ‘this/these’) in Table 2 and weak paradigms of adjectives as illustrated in Table 3.

<table>
<thead>
<tr>
<th>Paradigm</th>
<th>Singular Masculine</th>
<th>Feminine</th>
<th>Neuter</th>
<th>Plural Masculine</th>
<th>Feminine</th>
<th>Neuter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominative</td>
<td>mein/kein</td>
<td>meine/keine</td>
<td>mein/kein</td>
<td>meine/keine</td>
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<td></td>
</tr>
<tr>
<td>Accusative</td>
<td>meinen/keinen</td>
<td>meiner/keiner</td>
<td>meinem/keinem</td>
<td>meinen/keinen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dative</td>
<td>meinen/keinen</td>
<td>meiner/keiner</td>
<td>meinem/keinem</td>
<td>meinen/keinen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Genitive</td>
<td>meines/keines</td>
<td>meiner/keiner</td>
<td>meinem/keinem</td>
<td>meiner/keiner</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Paradigm</th>
<th>Singular Masculine</th>
<th>Feminine</th>
<th>Neuter</th>
<th>Plural Masculine</th>
<th>Feminine</th>
<th>Neuter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominative</td>
<td>der/dieser</td>
<td>die/diese</td>
<td>das/dieses</td>
<td>die/diese</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accusative</td>
<td>den/diesen</td>
<td>dem/diesen</td>
<td>den/diesen</td>
<td>der/dieser</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dative</td>
<td>dem/diesen</td>
<td>der/dieser</td>
<td>den/diesen</td>
<td>der/dieser</td>
<td></td>
<td></td>
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<tr>
<td>Genitive</td>
<td>des/dieses</td>
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<tr>
<th>Paradigm</th>
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<th>Feminine guten</th>
<th>Neuter guten</th>
<th>Masculine guten</th>
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<tbody>
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<td>guten</td>
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<td>guten</td>
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</table>

References
Smolensky, Paul. 1995. “On the internal structure of the constraint component Con of UG”. Handout from talk at University of Arizona. (available from Rutgers Optimality Archive)