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

Wataru Nakamura (nakamura@intcul.tohoku.ac.jp)
Tohoku University, Japan

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 1936/1983, 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 argument role and morphological value (cf. Jakobson 1936/1983):

(1)   a.   Case Hierarchy (Silverstein 1980/1993)
              Nom[inative]⇔Dat[ive] < Acc[usative]/Erg[ative] < Gen[itive]
       b.   Gender Hierarchy (Rice 2006)
              Masc[uline] < 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

MAX [Gender], MAX [Number], IDENT [Number], (4a), (4b), (4c), *Masc/Plural, *{Neut}, *{Gen} & *{Neut, Fem}
MAX [Case], IDENT [Gender], *{Neut, Fem, Masc}, *{Pl}, *{Pl, Sing}
IDENT [Case], *{Neut, Fem}, *{Gen, Acc/Erg, Dat}
*{Gen}, *{Gen, Acc/Erg}

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. *Hunde-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 1: Paradigms of *mein* 'my' and *kein* 'no'

	Singular			Plural		
	Masculine	Feminine	Neuter	Masculine	Feminine	Neuter
Nominative	mein/kein	meine/keine	mein/kein	meine/keine		
Accusative	meinen/keinen					
Dative	meinem/keinem	meiner/keiner	meinem/keinem	meinen/keinen		
Genitive	meines/keines		meines/keines	meiner/keiner		

Table 2: Paradigms of *der* 'the' and *dieser* 'this/these'

	Singular			Plural		
	Masculine	Feminine	Neuter	Masculine	Feminine	Neuter
Nominative	der/dieser	die/diese	das/dieses	die/diese		
Accusative	den/diesen					
Dative	dem/diesem	der/dieser	dem/diesem	den/diesen		
Genitive	des/dieses		des/dieses	der/dieser		

Table 3: Weak Paradigm of *gut* 'good'

	Singular			Plural		
	Masculine	Feminine	Neuter	Masculine	Feminine	Neuter
Nominative	gute	gute	gute	guten		
Accusative	guten					
Dative		guten	guten			
Genitive						

References

Aissen, Judith. 2003. "Differential object marking: iconicity vs. economy", *Natural Language and Linguistic Theory* 21, pp.435-483.

Bierwisch, Manfred. 1967. "Syntactic features in morphology: general problems of so-called pronominal inflection in German". In *To Honor Roman Jakobson: Essays on the Occasion of His Seventieth Birthday*, pp.239-270. The Hague: Mouton.

Blevins, James P. 1995. "Syncretism and paradigmatic opposition". *Linguistics and Philosophy* 18, pp.113–152.

de Lacy, Paul. 2006. *Markedness: Reduction and Preservation in Phonology*. Cambridge: Cambridge University Press.

Jakobson, Roman. 1936. "Beiträge zur allgemeinen Kasuslehre". Reprinted in Linda R. Waugh and Morris Halle (eds.) (1983), *Russian and Slavic Grammar: Studies 1931-1981*, pp.59-103. Berlin: Mouton.

Müller, Gereon. 2002. "Remarks on nominal inflection in German". In Ingrid Kaufmann and Barbara Steibels (eds.), *More than Words: A Festschrift for Dieter Wunderlich*, pp.113-145. Berlin: Akademie Verlag.

Prince, Alan and Paul Smolensky. 2004. *Optimality Theory: Constraint Interaction in Generative Grammar*. Oxford: Basil Blackwell.

Rice, Curt. 2006. "Optimizing gender". *Lingua* 116, pp.1394-1417.

Silverstein, Michael. 1980. "Of nominatives and datives". Reprinted in Robert D. Van Valin, Jr. (ed.) (1993), *Advances in Role and Reference Grammar*, pp.465-498. Amsterdam and Philadelphia: John Benjamins.

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)

Wunderlich, Dieter. 2004. "Is there any need for the concept of directional syncretism?" In Gereon Müller, Lutz Gunkel, and Gisela Zifonun (eds.), *Explorations in Nominal Inflection*, pp.373-395. Berlin: Mouton de Gruyter.