Spellout and the Weak, Strong, Mixed Declension in German and Definiteness in Bulgarian

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1. Introduction

- German has the weak (1a), strong (1b) and mixed (1c) adjectival declension. The determiner marker –er can appear either on the definite article (1a) or on the adjective (1b), (1c), but cannot coexist on both (2).

- Generalization
  The adjective and the definite article compete for the same marker. If the marker is not present on the article, it must appear on the adjective.

(1)  a. der alte Mann  b. alter Mann  c. ein alter Mann
    the old man-nom  old man-nom  an old man-nom

(2)  a. * der alter Mann  b. * einer alter Mann
    the old man-nom  an old man-nom

- In Bulgarian, the definite article –ta can appear either on the noun (3a) or on the adjective (3b), (3c), but not on more elements at the same time (4).

- Generalization
  The noun and the adjective(s) compete for the same marker. The marker appears on the highest element in DP.

(3)  a. knigata  b. interesnata kniga  c. goljamata interesna kniga
    book-the interesting-book book
    big-the interesting-book

(from Franks 2001)

(4)  a. * interesnata knigata  b.* goljamata interesnata knigata
    interesting-book-book
    big-the interesting-book

- Proposal
  Certain features (in certain languages) can be spelled out only once. The behavior of DPs in German and Bulgarian can be attributed to the fact that the relevant feature - the gender feature in German DPs and the definiteness feature in Bulgarian DPs - can be spelled out only once.

2. Analysis

2.1. Gender feature

    Merger of $\alpha$ and $\beta$ forms \{\(\gamma\{\alpha, \beta\}\}\}, where $\gamma$ is the label and $\alpha$ and $\beta$ sets of features. And the label (head) $\gamma$ is either $\alpha$ or $\beta$. 
b. \{\alpha,\{\alpha,\beta\}\}
\alpha
\beta
• Syntactic structure means growth of information.
• Given (5), (1a) looks like (6).

(6) der alte Mann (only relevant features):
\{\{D, def\} \{\{Mann, N, MASC, SG\} \{\{alt, A\}, \{Mann, N, MASC, SG\}\}\}\}\}
\{D, def\} \{\{Mann, N, MASC, SG\} \{\{alt, A\}, \{Mann, N, MASC, SG\}\}\}\}
\{alt, A\} \{Mann, N, MASC, SG\}

This DP gets its case (NOM) in the course of derivation.

• Competition for a common marker (–er) can be analyzed in the spellout of non-terminals approach because the competing elements are dominated by the common node (DP).
  
  For spellout of non-terminal nodes, see Weerman & Evers-Vermeul (2002), Neeleman & Szendrői (2005) or Caha (2006).

• Thus, spellout begins with the DP in (7).

2.1.1. Deleted gender feature

Step 1
No vocabulary item (VI) that can express def, alt, Mann, MASC, SG, NOM in the lexicon.

(7) 
DP \def,alt,Mann,MASC,SG,NOM
D
NP
AP N

Step 2
Spellout goes down, first to the left to the specifier, as is standardly assumed (e.g. Kayne (1994) or Fukui & Takano (1998)).
D with def and the inherited features MASC, SG, NOM should be spelled out.
Der is inserted from the lexicon.

(8) 
def,MASC,SG,NOM D DP NP der
AP N

See (9) that the determiner marker –er can express case, gender and number:
(9) (D)er hat Probleme.
     (1)he has problems

Step 3
Spellout goes to NP with alt,Mann and the inherited features SG,NOM but there is no VI for this NP in the lexicon. (cf. Schlenker (1997), where, in contrast, features are only transmitted from one head to the next.)

(10)          D P
        der       NP   alt,Mann,SG,NOM
            /       /
              AP     N

Step 4
Spellout moves to the adjective.

(11)          D P
        der       NP
            /       /
              alt,SG,NOM     AP     N
                               ➔   alte

- We get –e on the adjective alt, not –er as on D. The gender feature is already deleted (after spellout of D); this feature can be spelled out just once in German.

- This is supported by the mixed declension paradigm in (12):
In cases where the determiner marker (13) appears on (k)ein (kein=no, ein=a) in (12), the default marker -en appears on the adjective (the only exception is NOM/ACC,FEM,SG).
And if the determiner marker does not appear on the (k)ein, it must appear on the adjective, see NOM,MASC,SG and NOM/ACC,NEUT,SG.

(12) The mixed declension

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<tr>
<th></th>
<th>MASC</th>
<th>FEM</th>
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<th>PL</th>
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<tbody>
<tr>
<td>N</td>
<td>kein</td>
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<td>kein altes</td>
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<td>keinem alten</td>
<td>keinem alten</td>
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</tbody>
</table>

(13) The determiner marker (common for personal pronouns and determiners)

<table>
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<tr>
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<th>MASC</th>
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<tbody>
<tr>
<td>N</td>
<td>er</td>
<td>e</td>
<td>es</td>
<td>e</td>
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<tr>
<td>A</td>
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<td>e</td>
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<td>er</td>
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<tr>
<td>D</td>
<td>em</td>
<td>er</td>
<td>em</td>
<td>en</td>
</tr>
</tbody>
</table>
Given that \((k)ein\) appears only in singular and only in NOM,MASC and NOM/ACC,NEUT and that \(–es\) is always common for NOM and ACC in NEUT,SG, the main task of the determiner marker (-er or \(–es\)) on the adjective in NOM,MASC,SG and NOM/ACC,NEUT,SG is to differentiate the masculine gender from the neuter gender.

See also (14) that the determiner marker (-er, \(–es\)) is used to disambiguate gender. *Du* expresses case and number but not gender.

(14) a. du alt-er
    you old

b. du arm-\(–es\) Kind
    you poor child

• Why \(–e\) on *alt* in (11), and not the default marker \(–en\)?

Since \(–e\) prevents \(–en\) from appearing in adjectival singular structural case environments (15), with the exception of \(–en\) in A, MASC,SG.

• This shows that the case and number feature are not deleted after spellout (in contrast to the gender feature).

(15) The weak declension

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<th>PL</th>
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<tbody>
<tr>
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<td>der alte</td>
<td>die alte</td>
<td>das alte</td>
<td>die alten</td>
</tr>
<tr>
<td>A</td>
<td>den alten</td>
<td>die alte</td>
<td>das alte</td>
<td>die alten</td>
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<td>der alten</td>
<td>dem alten</td>
<td>den alten</td>
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</tbody>
</table>

• That the case and number feature is inherited (not deleted) is also evidenced by the weak nouns (case feature is not intrinsic to the N).

(16) a. der Bär
    the bear-nom

b. dem Bär-en
    the bear-dat

c. die Bär-en
    the bears-nom

**Step 5**

Finally, spellout goes to the noun and *Mann* is inserted.

(17)

```
      DP
     /  \ 
   der   NP
     /   \ 
    alte  N Mann,SG,NOM ➔  Mann
```

2.1.2. **Non-deleted gender feature**

• It is not a general rule that the gender feature is spelled out only once.

In Czech, the gender feature is not deleted from the featural bundle (18).

(18) a. s t-ou star-ou žen-ou
    with the-instr.fem.sg old-instr.fem.sg woman-instr.fem.sg

b. s t-im star-ým muž-em
    with the-instr.masc.sg old-instr.masc.sg man-instr.masc.sg
2.1.3. How deep can the feature transmission be?

- Prediction: one phase because phases are spellout domains.
  Test with *tisíc* (thousand), which can be noun or numeral. DPs are phases (Chomsky 2006).
  In (19b) *tisíc* has gender and number feature and blocks agreement between the head noun *žen* and the demonstrative *tím*.
  The prediction is valid; (19a) is one spellout domain, (19b) two spellout domains (DPs).

(19) a. s t-čmi tisíc-i star-ými žen-ami
    with the-instr.pl thousand-instr old-instr.pl women-instr.fem.pl
  b. s t-im tisíc-em star-ých žen
    with the-instr.masc.sg thousand-instr.masc.sg old-gen.pl women-gen.fem.pl

2.2. Definiteness feature

2.2.1. Deleted definiteness feature

- Bulgarian example (3b) *interesnata kniga* after narrow syntax:

(20)

```
{{{D, def} {{{D, def}, {{knig, N, FEM, SG} {{interesn, A}, {knig, N, FEM, SG}}}}}}}

{D, def} {{{knig, N, FEM, SG} {{interesn, A}, {knig, N, FEM, SG}}}}
{interesn,A} {knig, N, FEM, SG}
```

- Spellout of (20):

  **Step 1**
  Spellout begins with DP.
  There is no VI in the lexicon that can express *def, interesn, knig, FEM, SG, NOM*.

(21)

```
DP  def,interesn,knig,FEM,SG,NOM
    D  NP
    AP  N
```

  **Step 2**
  Spellout goes down and D with *def* and the inherited features *FEM, SG, NOM* should be spelled out.
  But *-ta* cannot be spelled out by itself.

(22)

```
def,FEM,SG,NOM  D  NP
    AP  N
```
Step 3
Spellout continues with NP.
There is no VI for def, interesn, knig, FEM, SG, NOM in the lexicon.

(23)  

Step 4
Spellout goes to the adjective and finds interesna, which can host –ta.
Thus, the definiteness feature is deleted.

(24)  

That articles wait for their host is supported by the fact that their form is sensitive to phonological properties of the host.

Step 5
Spellout goes to the noun and kniga is inserted (not knigata because def can be spelled out only once).

(25)  

2.2.2. Blocking of more complex spellout

• In example (3a), knigata is spellout of the whole DP:

(26)  

Similarly, in Danish hesten (horse-the) is spellout of the whole DP:

(27)  

Thus, spellout of non-terminals blocks more complex spellout (28a).
See that the definiteness feature can be spelled out by itself (28b).

(28) a. * den hest  
    the horse  

b. den gamle hest  
    the old horse  

(from Hankamer & Mikkelsen 2005)

2.2.3. Separate plane of adverbials
A potential problem for the present approach (29).
One would expect the article on *mnogo*.

(29) mnogo xubavi-te knigi
    very nice-the books  

(from Franks 2001)

In Danish, even argument adverbials can license the suffixed definiteness marker (30).
But one would expect *den* because there is no VI for the whole DP ejeren af grisen.

(30) a. ejer-en [pp af grisen]
    owner-def of pig-def  

b. * den ejer [pp af grisen]
    def owner of pig-def  

(from Hankamer & Mikkelsen 2004, 7 (24))

• Adverbials (PPs and AdvPs) are not visible for (this type of) spellout; they occur on a separate plane.
  • Hale (2001): adjunct morphemes in Navajo verbs belong to separate dimesion and in contrast to other affixes, they are ordered from right to left (in accordance with their semantic scope).
  • Ochi, M. (1999): Adverbials in Scandinavian or English do not block PF merger. (And there is an adjacency requirement on PF merger.)
    In Afarli (1997), adverbs are assumed to be merged on a separate plane.
    In Chomsky (2001), adjuncts are merged by pair-merger.

3. Conclusion
Differences between the strong, weak and mixed adjectival declension in German are due to the gender feature that can be spelled out only once.
The behavior of the definite article in Bulgarian DPs can be attributed to the fact that the definiteness feature can be spelled out only once.
Both phenomena can be straightforwardly analyzed in an approach that assumes spellout of non-terminal elements with feature inheritance.

Appendix

German strong declension:

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References:
Chomsky, N. (2006), Approaching UG from below. Ms. MIT.
Hankamer, J. & L. Mikkelsen (2004), A puzzle about PPs in Danish definite DPs. Handout from LSA Annual Meeting, Boston.