The interaction of gender and declension in Germanic languages[1]

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In the Germanic languages, gender and declension are two classification systems with a restricted functional load. Still, both persist in many languages, and in some of these languages they are even intimately interrelated, i.e. gender can be predicted based on declension, or declension can be predicted based on gender. Several Germanic languages and dialectal varieties of German are compared with respect to this link between gender and declension. Based on contrastive data, the interaction seems to depend on the level of complexity, i.e. the number of declensions and genders. When complexity decreases, the conditioning of both categorization systems is either more strongly interrelated (leading to parallelization in the most extreme cases), or gender and declension are dissociated and bound to new, more transparent conditioning factors. The developments are interpreted against the background of the hypothesis that gender and declension are used complementarily in profiling the number category: gender profiles the singular, whereas declension profiles the plural.

Keywords: declension, gender, Germanic languages, German, inflectional morphology

1. Introduction

Several classification systems are found in the modern Germanic languages. Two of these are characteristic of nouns: gender and declension. Although gender is inherent to nouns (i.e. the source or controller), it is

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only "reflected in the behaviour of associated words" (Hockett 1958: 231), which are the target domain. In German, for example, three lexical genders[2] become evident in the inflection of associated articles and adjectives, cf. feminine gender in (1a), neutral gender in (1b), and masculine gender in (1c).

(1)   Definite   Indefinite
    a. *die* *kalte Nase*   *eine kalte* *Nase*
        the-F cold nose   a-F cold-F nose
        'the cold nose'   'a cold nose'
    b. *das* *kalte Glas*   *ein*   *kaltes*   *Glas*
        the-N cold glass   a-NON-F. cold-N glass
        'the cold glass'   'a cold glass'
    c. *der* *kalte Winter*   *ein*   *kalter*   *Winter*
        the-M cold winter   a-NON-F cold-M winter
        'the cold winter'   'a cold winter'

Thus, gender can be deduced from the declension of items in the surrounding NP. Declension, in contrast, is only reflected in the noun itself. Historically, declensions were expressed overtly by suffixes forming nominal stems when combined with a root (e.g. the so-called *a-* or *iz/az*-classes in Proto-Germanic). Endings marking case and number were added to such stems (cf. Fortson 2010: 83). In contrast, declensions are not separately expressed in contemporary German and only become evident in number and case marking (cf. 2). In languages that have lost case marking on nouns, like in Swedish, the only markers of declension are number markers, most often only plural markers (cf. 3).

(2)   Sing. nom. Sing. gen.   Plural
    a. *See*   *Sees*   *Seen*   'lake'
    b. *Bär*   *Bären*   *Bären* 'bear'
    c. *Last*   *Last*   *Lasten* 'load'

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[2] We will need to restrict ourselves to what Dahl calls lexical gender, i.e. genders "determined on the basis of the properties of a noun" (Dahl 1999a: 106), as opposed to referential gender, i.e. genders determined "on the basis of the referent of a noun phrase". This means that highly transparent systems like the Standard English pronominal gender system, which relies on the referent's sex (cf. pronominalization of *the doctor* with *he* or *she*), are left out of consideration.

(3) Sing. Plural
  a. *gata* *gator* 'street'
  b. *ros* *rosor* 'rose'
  c. *bil* *bilar* 'car'
  d. *pojke* *pojkar* 'boy'

Although their target domain differs, gender and declension have a lot in common. Both classification systems are inherent to nouns in the Germanic languages. Most nouns belong to one specific lexical gender and one specific declension. Although conditioning principles can be identified in the assignment of lexical gender[3] and declension,[4] these establish tendencies rather than rules for most simplex nouns, such that gender and declension are not securely predictable in large portions of the lexicon.

With respect to function, gender is at first hand useful in reference tracking – a function which often does not suffice because there are only two or three lexical genders available. According to another account, gender supports framing constructions, at least in German (see Ronneberger-Sibold 1994, 2007, 2010). This means that gender is the only invariable category in an NP and thus the most reliable feature. It is first marked (overtly) on the article (left frame) and then complemented (covertly) by the noun (right frame): *d-as* [N] *kleine Kind* [N]. Nevertheless, for learners this functionality comes at a high price, and the functionality is reduced as soon as two nouns of the same gender appear within the same NP. Declension, producing allomorphy and thus increasing the learning effort without any obvious use, at first glance seems to have no function at all. The use of both classification systems for the language system is thus restricted, and compared with gender having been characterized as "the most puzzling of the grammatical categories" (Corbett 1991: 1), declension seems no less puzzling to us.

Even if both gender and declension exist in many Germanic languages today, the languages vary to a great extent. English – just as Afrikaans – no longer possesses lexical gender, but a referential gender system has

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[3] Cf. Köpcke (1982), Bittner (1987, 1994, 2000), Köpcke & Zubin (1984, 1996, 2009), Corbett (1991), Zubin & Köpcke (2009), Duke (2009).
[4] Cf. Wurzel (1986, 1989, 1994), Bittner (1988, 2003), Bittner & Bittner (1990), Köpcke (2000a, 2000b, 2002), Dammel & Kürschner (2008), Kürschner (2008), Dammel, Kürschner & Nübling (2010b).

developed in pronominal inflection (*he* vs. *she* vs. *it*). Languages like Swedish, Danish, and Dutch have an opposition of two lexical genders, whereas German, Luxembourgish, Yiddish, Faroese, Norwegian, and Icelandic preserved the full distinction between three lexical genders from Proto-Germanic.

English has reduced declensions to only one productive class, the *s*-plural (as opposed to zero marking in the singular). All other declensions only consist of a few items, sometimes solely of one (cf. *oxen, children, sheep*). Dutch and Afrikaans have two fully productive declensions left (*en*- vs. *s*-plurals), Swedish and German have six or more declensions, and it is nearly impossible to count all the declensions in Icelandic, since they are based on markers in most of the case-number-slots.[5]

Moreover, the Germanic languages show variation with respect to inter-relating gender and declension. In some languages, gender can be predicted on the basis of declension (*DeclensionFirst* according to Enger 2004, Nübling 2008), or declension can be predicted on the basis of gender (*GenderFirst*). Whatever direction is right here, gender and declension are used as conditioning factors (cf. Neef 2000a, b) for the allomorphy bound to the other categorization system. This closely connects both categorization systems. German and Norwegian are examples of languages with a close link between gender and declension (cf. Bittner 2000, Enger 2004). In other languages, like Dutch, this link is looser. It is therefore interesting to ask if the interaction between gender and declension is somehow functional, and what are the reasons for the loosening of the link.

Through a historical comparative study of the development of gender and declension in selected Germanic languages and German dialects, this article will set out to deal with this question. We will introduce the general relation between gender and declension in Section 2. After that, we will have a closer look at the link between gender and declension in Standard German and in some German dialectal varieties in Section 3. In Section 4, we will compare the findings from German with a couple of

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[5] It is not trivial to decide how many declensions (and also genders) there are in a language. Counting classes crucially depends on how one deals with notions such as productivity, distinctions between macro and micro classes (cf. Carstairs 1987) and inheritance hierarchies (cf. Haspelmath 2002: 125–130). Since we basically want to account for the complexity of the morphosyntactical system, we include all frequently used declensions and give indicative rather than exact numbers.

other Germanic languages. Section 5 offers a typology of the developments identified, and finally, Section 6 summarizes the findings and discusses possible reasons for the interaction of both classification systems.

2. The relation between gender and declension

The link between gender and declension in Germanic languages stems from Proto-Germanic, both systems being relics of older semantically or grammatically based classification systems.[6] Both systems provided formal variation, either in the morphological paradigms of associated words (gender) or in their nominal paradigms (declension). By interaction between gender and declension we mean that they are linked in terms of conditioning, i.e. gender is partly predictable on the basis of declension, and declension is partly predictable on the basis of gender. This is obvious when gender functions as a predictor for declension (GenderFirst), or when declension predicts gender (DeclensionFirst, cf. Enger 2004: 52). For example, in German, the great majority of all feminine nouns go with the plural marker *n*, as in *Ente-n* 'ducks', *Lampe-n* 'lamps', etc. Gender thus functions as a predictor of declension classes, i.e. GenderFirst. On the other hand, all nouns with an umlaut plural and zero ending (except three)[7] have masculine gender. Thus, declension can be an indicator of gender as well, i.e. DeclensionFirst. There is no obvious evidence corroborating that one of these two complementary principles dominates. Still, in a historical study Enger (2004) has shown that Norwegian nouns change their declension class with respect to gender, rather than vice versa. GenderFirst thus seems to dominate for at least most of the Norwegian nouns. There is evidence that this is true for other Germanic languages as well, see e.g. Bittner (2000) for German.[8]

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[6] See also Wurzel (1986). Gender goes back to an initial two-way distinction probably based on animacy, agentivity, or the capability of subject marking, cf. Meier-Brügger (2002: 280). Another reconstruction based on quantification is provided by Leiss (2000, 2005). The Indo-European primary suffixes were derivational suffixes, cf. Fortson (2010: 83), for specifying sex and building diminutives, abstracts, and marking locality; cf. Meier-Brügger (2002: 289ff.).

[7] That is, *Klöster* 'monasteries' with neuter gender, and *Töchter* 'daughters', *Mütter* 'mothers' with feminine gender.

[8] Corbett (1991: 49) argues in favor of the opposite, at least for the case of German.

Evidence from languages like Norwegian and German thus suggests that it might be beneficial to link gender and declension with each other.[9] So what kind of a benefit might there be?

Wurzel (1986, 1989) suggests that the memorability of non-functional devices might be improved when they are directly linked to other items in the language system (cf. also Bittner 2000). For example, declensions can be linked to phonological devices determining the variation, and might be predictable from the final sound of a noun stem (such as the allomorphs of the English *s*-plural), or from the stem's prosodic structure such as *-en* and *-s* in Dutch, which create trochaic feet in the plural forms. Wurzel (1989) argues that gender functions in a similar manner in determining the variance of declension. Vice versa, as discussed above, declension might just as well improve the memorability of gender. In fact, Kastovsky (2000) considers the breakdown of the noun declension system in Old and Middle English as the main reason for weakening the "sensitivity for the category of gender" (Kastovsky 2000: 722). In his view, memorizing gender was tied to the formal variance of nominal classes, and with their disappearance gender was just not memorable anymore. As a consequence, gender targets were redistributed based on the semantics of their referents.

Still, linking dysfunctional declension classes to solely restrictedly functional gender, or vice versa, does not seem to be significantly helpful for memorizing both categories. It might, however, be a way to reduce the overall complexity of the classification systems. We suppose that the link between gender and declension might also have a further use, namely in the profiling of the highly relevant number category (according to Bybee's relevance concept, cf. Bybee 1994). This thought will be deduced from the history of German in Section 3.

3. The relation between gender and declension in German

3.1. Standard German

As mentioned above, in former times declensions were expressed by separate overt markers. An illustrative example of this principle is provided

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[9] Nevertheless, not all Germanic languages link gender and declension in conditioning. Dutch, for example, has two highly type- and token-frequent declensions distinguished by plurals in *-s* and *-en*, respectively. Nouns of both Dutch genders appear regularly with both these plural markers. Thus, in some Germanic languages, like Dutch, there is no link at all between gender and declension (more details in Section 4.4).

Number	Case	root (lexeme)	D	Suffix (case/number)
Singular	nom./acc.	*lamb-	iz	-∅
	genitive	*lamb-	iz	-aza
	dative	*lamb-	iz	-ai
Plural	nom./acc.	*lamb-	iz	-ō
	genitive	*lamb-	iz	-om
	dative	*lamb-	iz	-omoz

Figure 1. Overt declension marker (primary suffix) in the paradigm of Proto-Germanic 'lamb' (iz-/az-class); "D" = declension

by the so-called *iz-/az*-class which solely contained neuter nouns denoting small creatures around a farm (New High German *Lamm–Lämmer* 'lamb', *Huhn–Hühner* 'hen', *Ei–Eier* 'egg', etc.). *-iz* is the primary suffix and can be described as an overt declension class marker, cf. Figure 1.

Later, this overt class marker developed into a covert class marker, due to *i*-umlaut and reinterpretation of former *iz-* as a plural marker. Today, *Lammes* (< *lambizaza*) and *Lämmer* (< *lambizō*) are the two index forms from which the declension class can be inferred. A similar development has happened in all other classes as well, i.e. class markers fused with grammatical markers and were formally integrated into them. The class markers thus merge with so-called host categories, specifically number and case, in the Old Germanic languages. Although declensions 'hide' in a foreign marking system, this development paradoxically stabilizes the class markers: by using the allomorphs, and by producing new allomorphs in another grammatical category, the class markers become such an integral property of the noun that, as long as the host categories (grammatical categories) are retained, they can no longer be lost. The typical pattern of further change that we witness is a shift from less relevant host categories[10] (in the sense of Bybee 1985, 1994) to ones that are more relevant (Dammel 2003, 2011, Nübling 2008; see Figure 2). From this, we can observe that, the risk of
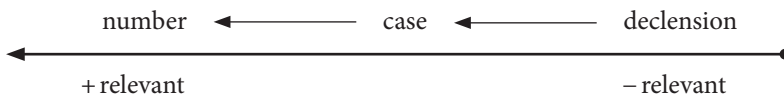
number ⟵———— case ⟵———— declension

+ relevant   − relevant

Figure 2. The relevance-driven path of covert declension markers

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[10] Number is more relevant to a noun than case because it directly affects the concept designated by the noun (several objects instead of only one). Case does not affect the concept itself, it only marks the semantic roles in the sentence.
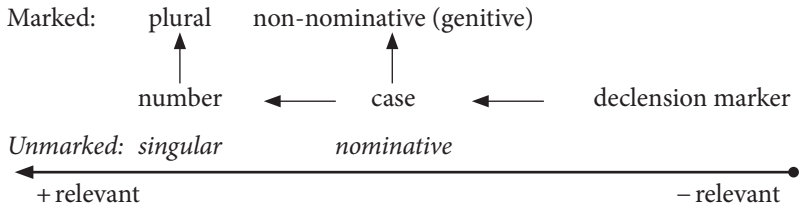
Marked: plural   non-nominative (genitive)

              number ←—— case ←—— declension marker

Unmarked: singular   *nominative*

——●
  + relevant   − relevant

Figure 3. The disappearance of declension markers from unmarked category values, and their persistence on marked ones

declension to be lost decreases with growing relevance of the grammatical markers it is connected to. This pattern is not only typical for German, but also for most, if not all, other Germanic languages.

At the same time, it can be observed that class markers disappear from the unmarked values of the host categories in favor of the marked ones. Class membership thus often becomes invisible in the unmarked values singular (number) and nominative (case) (see Figure 3), but remains visible in the marked values plural (number) and genitive (case).

The principles of relevance and markedness may thus explain why most of the old declension class markers are concentrated in the plural form (and, if at all, in the genitive singular form). The selective behavior of umlaut illustrates this most clearly, being retained in the plural but deleted in the singular.

We can summarize the history of the number and case categories using the concept of category profiling and reduction, which is well-established in German historical linguistics (see e.g. Schmidt 2004: 348, Wegera & Solms 2000: 1544–1545). Profiling a category means that the grammatical markers become more salient. In syntagmatic profiling they become longer, more clearly visible, or even spread to the lexical root of the word (this happened with umlaut). Paradigmatic profiling means that the number of allomorphs increases. Regarding the history of declension, the number category is thus profiled while the case category is reduced. Plural marking becomes more salient because marked plurals are opposed to unmarked singulars in the declension of native German nouns.

Returning now to the question of the relation between declension and gender, gender develops in a similar relevance- and markedness-driven process. In Nübling (2008), it is observed that the profiling of the number category is supported both by the development of gender and by that of

declension marking. In German, the expression of gender is exclusively restricted to the singular value (see also Corbett 1991: 155). Consider the following examples in (4), partly repeated from (1):

(4)	Sing. def.	Sing. indef.	Plural def.	Plural indef.
a.	**die** *kalte Nase*	*eine kalte Nase*	*die kalten Nasen*	*kalte Nasen*
b.	**das** *kalte Glas*	*ein kaltes Glas*	*die kalten Gläser*	*kalte Gläser*
c.	**der** *kalte Winter*	*ein kalter Winter*	*die kalten Winter*	*kalte Winter*

Gender markers are printed in bold. The examples show that gender is only expressed in the singular. Combined with the above mentioned observation that declension marking is reduced in the singular (cf. unmarked singular forms like *Lamm* 'lamb', *Bahn* 'train'), and that it is increasingly restricted to the plural (*Lämm<u>er</u>*, *Bahn<u>en</u>*), the number category is profiled by different classification systems in both dimensions of number: by gender in the singular, and by declension in the plural (Nübling 2008). This complementary function, which is schematized in Figure 4, links both class systems closely together in their common function to serve a highly relevant noun category.

Figure 4 is rather complex and schematizes the interdependencies in more detail: first of all, the expression of gender and declension depends directly on the number category: singular triggers marking in gender targets, and plural triggers declension markers (as shown by the two solid arrows), so both gender and declension are triggered by the number category. Gender is neutralized in the plural. In the singular, declension is
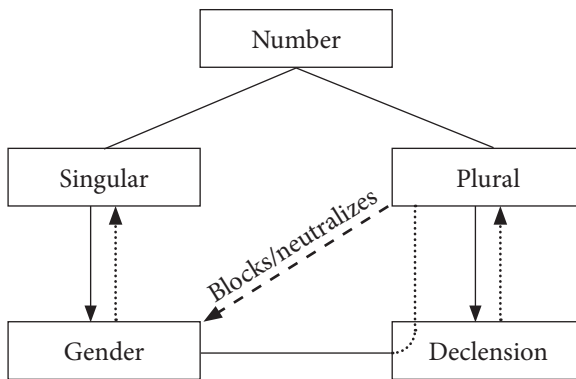

Figure 4. Inter-relations between number, gender, and declension in German

only visible in one, namely the genitive slot. In this slot, the allomorphy is again governed by gender for most classes: feminine nouns always go without case marking, neuter ones always with -*s*, and most masculine nouns – apart from the weak class with -*en* – with -*s* as well. Declension is thus primarily marked in the plural slot (cf. Wurzel 1994).

Gender marking has not always been restricted in this way in the history of German: in Old High German, the definite (or demonstrative) article – i.e. the most important carrier of gender – still had three different forms available in the plural paradigm, i.e. in the nominative/accusative slots: *dio* (F) vs. *dia*/*die* (M) vs. *diu* (N) (in Icelandic this system is still preserved). Conversely, more singular slots of many classes, besides just the genitive, expressed declension. A look at the history of German thus tells us that the marking of gender and declension is complementarily restricted to the two slots of the number category.

Furthermore, new developments can be observed (dotted arrows): in the history of German, gender – at least feminine gender – gets marked to some extent in the phonological make-up of the word itself: most feminine nouns are trochaic with a second schwa-syllable, e.g. *Pflanze* 'plant', *Rose* 'rose', *Miete* 'hire', etc. They all form their plurals by adding *n*. In this way, feminine nouns are distinguished from nouns of the other genders by means of their phonological make-up. This means that gender resembles declension, which by definition is marked on the word itself (albeit, at least today, via specific grammatical endings), but in contrast with declension, it is also marked in the stem's form. To illustrate this development, Table 1 contains some doubtful cases with respect to feminine or masculine gender. These show that gender differences are reflected in the phonological make-up of the respective word, most reliably in the feminine. There is no single schema for the masculine (except for so-called weak masculine forms that designate human males). The dominating principle for the masculine forms (except the weak class) seems to be that they should be formally different from feminine ones, i.e. either monosyllabic or ending in -*en*.

Most of the nouns in Table 1 have the same historical origin but developed differently with various genders assigned. Again, this development yields clear gender marking in the domain of the singular value (see the dotted arrow between gender and singular in Figure 4).

Gender also influences the plural, although indirectly, by selecting specific plural allomorphs (dotted arrow towards plural via declension): most

Table 1. Doubtful cases with respect to feminine and masculine gender, and the feminine gender schema in German

Feminine nouns in the singular Schema: trochee ending in [ə]	Masculine nouns in the singular No single schema[a]
Akte 'document'	*Akt* 'act'
Hode 'testicle'	*Hoden* 'testicle'
Knolle 'bulb'	*Knollen* 'bulb'
Krake 'octopus'	*Kraken* 'octopus'
Quelle 'spring'	*Quell* 'font' (poetic)
Ruine 'ruin'	*Ruin* 'decay, downfall'
Scherbe 'cullet'	*Scherben* 'cullet'
Socke 'sock'	*Socken* 'sock'
Spalte 'cleavage, column'	*Spalt* 'chasm, chink'
Truppe 'force'	*Trupp* 'brigade'
Zehe 'toe'	*Zeh* 'toe'

Note: There are only very few doubtful cases concerning feminines and neuters, but some rare exceptions exist, such as *die Idylle–das Idyll* 'idyll', *die Etikette–das Etikett* 'etiquette–label'.
[a] Except for those trochaic masculines denominating animates; see Bittner (1987), Köpcke (1995)

of the time, the feminine plural is formed by adding -(*e*)*n*, whereas only the masculine plural can be formed with umlaut (be it with the ending -*e*, or be it without any ending), cf. *der Gast–die Gäste* 'guest', *der Grund–die Gründe* 'reason', *der Garten–die Gärten* 'garden', *der Boden–die Böden* 'floor'. The neuter shares its two plural suffixes with masculine nouns (i.e. {-e} and {+UL + -er}). This leads to a clear feminine–non-feminine distinction (Bittner 2003). Although there is no one-to-one relation between gender and plural allomorphy, both entities are clearly connected. Declension, however, does not become obsolete in this development, since the correct plural marker for the neuter and the masculine still needs to be chosen by means of the declension information. Also for nouns which inflect irregularly, declension alone can provide the relevant information on the plural marker (cf. the dotted arrow between declension and plural).

To summarize, the presence of gender markers signals the singular, whereas the presence of declension signals the plural. This means that the highly relevant number category was strengthened with support from both classification systems. In the singular, number is expressed on the syntagmatic level (on the determiners), whereas in the plural it is indicated

Num.	Gender	Declension		Number	Classification
Sing.	Three genders: *die Blume* ('flower') *der Kranz* ('wreath') *das Boot* ('boat')	(Partly in OHG)		Singular contains gender (syntagmatic manifestation)	Three classes: *die Blume* *der Kranz* *das Boot*
Pl.	OHG (adjectives, pronouns 3rd ps.)	Plural allomorphs: *Blume-n* *Kränz-e* *Boot-e*	→	Plural contains declension (paradigmatic manifestation)	(Still) more than three classes: *Blume-n* *Kränz-e* *Boot-e*

Figure 5. The fusion of gender and declension in support of number expression in the history of German

on the paradigmatic level (by plural allomorphy). Thus, different profiling strategies are used. Figure 5 shows how the two classification systems complementarily profile the number category.

The function of declension as the supporter of the plural value is most clearly observable in a rather surprising and revealing contemporary development: the emergence of a further declension class, the so-called mixed declension of the masculine and the neuter. These nouns combine strong genitives (in -(*e*)*s*) with weak plurals (in -(*e*)*n*) – a combination which was impossible before: (*das Hemd* 'shirt')–*des Hemdes–die Hemden*; (*der Staat* 'state')–*des Staates–die Staaten*. This new so-called mixed class already contains more than 40 members. Only number profiling can be the reason for this new development: -(*e*)*n* is developing into the most prototypical plural ending in German (almost all feminine nouns inflect like this, many masculine and some neuter ones as well), and (*e*)*s* has always been restricted to the genitive singular (the *s*-plural is very marginal in German).[11] By combining these two suffixes in this manner, each of them becomes more monofunctional: -(*e*)*n* disappears more and more from the genitive singular (where it is still found in the weak masculines such as *des Affe-n–die Affe-n* 'ape') and expands into the plural. Thus, plural and genitive singular become non-ambiguous.

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[11] Marcus et al. (1995) and Clahsen (1999), by contrast, regard the *s*-plural as the only productive marker in German, i.e. they consider all other plural markers lexicalized. This is unlikely, because the *s*-plural only has a marginal status and is restricted to foreign words, short words, and proper names. Many former *s*-plurals are replaced by native ones as soon as the corresponding words increase in token frequency (Wegener 2002, 2004).
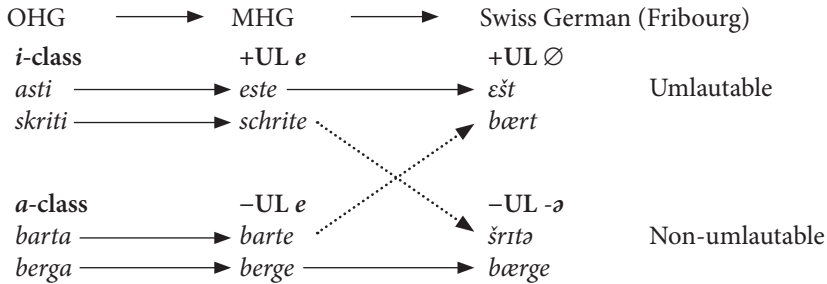
3.2. German dialects

It is often assumed that the Standard German noun system is rather complex because of the long writing tradition starting in Early New High German and resulting in a strong standardization. For this reason, a glance at 'naturally' developed dialects which are neither written nor standardized might be revealing (see also Harnisch 2000, Nübling 2008). Do dialects preserve the same number of genders and declensions as the standard variety? Do they tighten the link between them, or do they relate them to other (external, i.e. formal or semantic) properties of the noun? Since there are many dialects in German, we can only deal with some exemplary varieties, but some striking developments can clearly be shown.

First of all, many dialects completely lose case marking on nouns. This reduces the number of declensions because in contrast with the standard language, the genitive stops serving as a declension marker. The reduction of a host category thus causes a strong reduction in the number of declensions. Furthermore, many Southern (High German) dialects are affected by *e-* and *n-*apocope. This lowers the potential of case and number marking, e.g. the Standard German plural *Tag-e* 'days' corresponds to Alemannic *Dag-Ø* which is therefore homophonous with the singular. Nevertheless, morphological reactions against these sound laws can be observed (e.g. morphological umlaut such as *Däg* 'days' in some dialects, or endings from other declension classes such as *Reschd-er* 'rests' in Alemannic vs. Standard German *Rest-e*).

It is important to note that umlaut marking was not reduced or lost, but instead used for plural marking even more intensely than in the standard variety, especially on masculine nouns. This development can be illustrated in the nominal system of the **Swiss German dialect of Fribourg** (Henzen 1927): in OHG, the strong masculines belonged to two classes, the *i-* and the *a-*class. The former underwent *i-*umlaut (e.g. NHG *Ast–Äste* 'branch'), but the latter did not, even if a noun contained an umlautable[12] vowel (e.g. NHG *Arm–Arme* 'arm'). In the dialect of Fribourg, this system was restructured: schwa was apocopated from every umlautable masculine, and umlaut was used for plural marking regardless of a noun's original class membership. By contrast, all non-umlautable masculine nouns resisted apocope, i.e. they were pluralized by the attachment of *e* (see Figure 6). Thus, originally

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[12] Only back vowels are called 'umlautable' in German, because originally, the umlaut process consisted of fronting back vowels in assimilation to following front vowels.

OHG	MHG	Swiss German (Fribourg)	
i-class	+UL *e*	+UL ∅	
asti	este	εšt	Umlautable
skriti	schrite	bært	
a-class	−UL *e*	−UL *-ə*	
barta	barte	šrɪtə	Non-umlautable
berga	berge	bærge	

Translation: OHG *asti* etc. 'twigs', *skriti* 'steps', *barta* 'beards', *berga* 'hills'

Figure 6. The restructuring of the masculine *a*- and *i*-class in Swiss German (Fribourg)

non-umlauting nouns such as OHG *barta* > MHG *barte* 'beards' adopted morphological (analogical) umlaut and allowed apocope, cf. Swiss German *bært* 'beards'. Morphological umlaut also holds for Standard German (c.f. *Bärte* 'beards') but it is not linked to apocope in the same manner.

The assignment of the two classes distinguished by [+/−umlaut] is restricted to masculine gender.[13] At the same time, it is dominated by the number category: if umlaut is possible, it is obligatorily applied – if not, schwa apocope is prevented. The most important principle is that plural needs to be marked. Declension thus serves the number category and is subordinated to it; furthermore, it is strictly connected to gender.

The feminine–non-feminine distinction characteristic of NHG (as introduced above) is not reflected in this dialect: the old three-gender system is fully preserved, and every gender has exclusive plural endings. Most of the neuter nouns still keep their old zero plurals, which means that they did not undergo number (plural) strengthening, e.g. *Wort* (sing.) – *Wort* (plural) 'word' (for further details, see Nübling 2008: 313–315). The level of difference between the genders, as reflected in declensions, is larger than in Standard German.

In some **Alsatian** dialects, however, gender and declension are linked even more closely than in Fribourg. According to Beyer (1963), masculine nouns form their plural by umlaut, feminine ones by the suffix *e*, and neu-

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[13] There are some neuter nouns with {umlaut + *-er*}, but {umlaut + zero} is solely restricted to masculines.

ter nouns by adding *er*. This means that gender and declension tend to be linked in a one-to-one-relation. Feminine nouns which formed their plural by means of umlaut, such as *Wurscht–Wirscht* 'sausage', even changed their gender into masculine. In other cases, nouns changed their declension according to their gender. Unfortunately, Beyer (1963) does not provide detailed information about these developments. More research into the history of this variety would be valuable. However, from Beyer's observations we can draw the conclusion that a 1:1-correspondence between gender and declension is (or has been) developing.

Our third example concerns **Low German in East Friesland** (Reershemius 2004). Here, gender was paradigmatically reduced to a two-gender-system, resulting in a neuter and a common gender (which goes back to a merger of feminine and masculine nouns). In strong contrast with the Alsatian dialects, the link between gender and declension has completely been given up in this dialect. The plural endings are only determined by the number of syllables in the stem: monosyllabic nouns take a syllabic (!) *-n* and disyllabic ones a non-syllabic *-s*: *Schkååp–Schkååpn* 'sheep', *nöut–nöutn* 'nut', *bauk–baukn* 'book' vs. *schkåpke–schkåpkes* 'small sheep', *apel–apels* 'apple', *finge–finges* 'finger'. This prosodic conditioning actually corresponds to plural marking in Modern Dutch: the plural output has to form a trochaic foot. Only one old and non-productive ending attaching to a small group of the former *iz-/az*-neuters is left, namely *-e* (*kalf–kalwe* 'calf', *lam–lame* 'lamb').

The link between gender and declension is thus given up after the gender system has been reduced to two genders. At the same time, the number of declensions decreases, and their conditioning is based on a formal, i.e. prosodic principle.

4. The relation between gender and declension in some Germanic languages

We have seen that gender and declension are intimately linked in the history of Standard German, and that the dialects of German developed in a variety of ways with respect to declension and gender. In this section, we will give short overviews of the declension systems in some other Germanic languages, highlighting the parallels and divergences with respect to the German varieties. We will focus especially on languages which

have reduced complexity to a high degree – with complexity defined as the number of declension or gender classes available – without actually losing their declension and gender systems. The Mainland Scandinavian languages and Dutch provide examples of such cases.

4.1. Swedish

The lexical gender system of Standard Swedish is characterized by a two-gender opposition. Just as in the Low German of East Friesland and, as we shall see, in Danish and Dutch, masculines and feminines merged in gender targets, the new lexical gender system consisting of an opposition between neuter and a common gender (C). There are two factors triggering the merging of masculines and feminines in Swedish, Danish, and conservative varieties of the written Norwegian standard *Bokmål* (cf. Duke 2010: 652–653). On the one hand, masculine nouns and adjectives marked by *-er* in the nominative singular lose their suffix and become unmarked, just as corresponding feminine nouns, cf. Old Swedish *fisk-er* 'fish' > *fisk*, *lang-er* 'long' > *lang*. On the other hand, both an enclitic and a free definite article come into being, based on the demonstrative pronoun. Feminine and masculine articles only differ with respect to the length of final *-n* in the nominative singular, i.e. F /n/ vs. M /nː/. Both forms merge in the course of the Middle Ages, cf. Old Swedish F *færþ-in* > Modern Swedish *färd-en* 'the tour' vs. Old Swedish M *fisk-er-inn* > *fisk-in* > Modern Swedish *fisk-en* 'the fish'. Only with respect to pronominal gender do the Mainland Scandinavian languages still hold a distinction between feminines and masculines in a referential gender opposition. The personal pronouns *hon* 'she' and *han* 'he' are only used with animates specified for sex, whereas inanimates are pronominalized with common gender *den* and neuter *det*, respectively (cf. Braunmüller 2000: 32–33). Lexical gender is now marked on the determiner, and most clearly in the singular: def. C *den,* suffixed *-en*, N *det*, suffixed *-et*, indefinite C *en*, indefinite *ett*. The definite article in the plural is *de*, regardless of gender. Only in the suffixed form is gender variation still accounted for in plural: C *-na*, N *-en* or *-a*. This means that, in comparison to older forms of Swedish, gender marking has also been reduced in the plural paradigm.

Since case marking is lost in Swedish, declensions are apparent in number marking only. Usually, a system of six classes is described for Modern Swedish (cf. Teleman, Hellberg & Andersson 1999: 62–89). Neuter nouns

Gender	F M			
	C			N
Declensions	*-ar, -or, -r*		*-er* *-Ø*	*-n*

Figure 7. The link between gender and declension in Modern Swedish

are historically marked by a zero plural form, cf. *hus–hus* 'house'. The zero class is still the main class of neuter nouns in Modern Swedish, complemented by a suffix *-n* on nouns ending in a vowel (cf. *äpple-n* 'apples'). This suffix has been reanalyzed from a definiteness marker in the late Middle Ages (cf. Kågerman 1985) and distinguishes Swedish plural marking from the other Scandinavian languages. The common gender nouns are marked by plural suffixes ending in *-r*, i.e. *-ar, -er, -or*, and *-r*. In Modern Swedish, *-er* is found on some neuter nouns, and zero marking is found on some common gender nouns as well. All other plural markers are restricted to nouns of the respective gender (see Figure 7).

Hence, gender is still a main predictor of declension classes in Modern Swedish. Compared with Standard German, gender and declension are more transparently linked. For each gender, there are specific declensions, just as in the dialect of Fribourg (which retains three genders, however). When declension information is provided, it is thus nearly always possible to predict a noun's gender in Swedish (cf. Källström 1996). In Standard German this is possible for most feminine nouns as well, but for masculine and neuter ones it is not as straightforward as in Swedish.

4.2. Danish

Danish is similar to Swedish regarding the reduction of the lexical gender system. In the marking of gender, there is one important difference: gender is totally unmarked in the plural form of determiners (*de*, or suffixed *-(e) ne* in all nouns) and thus restricted to the singular, just as in German. Regarding declension, Danish is very different from Swedish. There are only three declensions left in Modern Danish. Since no case marking exists, these are distinguished by the three main plural allomorphs: *-(e)r, -e*, and zero marking. The strong reduction of declensions is initially caused by a reduction of vowels in unstressed syllables in the Middle Ages. In contrast with Danish, Swedish was not affected by this development to a high extent. Where Swedish thus keeps four allomorphs, *-ar, -er, -or*, and

-r, all of these merge into [ɐ] in medieval Danish.[14] There is a tendency to avoid zero plurals at the same point of time, resulting in clearly marked number contrasts. Due to this tendency, what was clearly a coincidence of zero marking with neuter gender, disappears. In Old Danish, many neuter nouns are transferred to one of the other classes instead (cf. 5), which until then had been reserved for masculine and feminine ones, -(e)r and -e thus losing their capability to predict common gender.

(5) a. *land-∅ > landæ* 'countries'
     b. *swin-∅ > swinæ* 'pigs'
     c. *blath-∅ > blathæ* 'leaves'
     d. *bi-∅ > bir/bier* 'bees'
     e. *knæ-∅ > kneer* 'knees'
     (All examples from Wimmer 1868: 31–33, Brøndum-Nielsen 1935: 51–55)

At present, many other neuter nouns still have a zero plural. However, neuter gender does not coincide with this declension in such a straightforward manner as in Swedish. Some common gender nouns are also found with a zero marker in plural. Zero marking thus loses its capability to predict neuter gender, cf. (6).[15]

(6) a. Old Danish *fiskæ* > Modern Danish *fisk-∅* 'fish (pl.)', vs. Swedish *fisk–fiskar*
     b. *síldæ > sild-∅* 'herrings', vs. Swedish *sill – sillar*
     c. *stenæ > sten-∅* 'rocks', vs. Swedish *sten – stenar*
     d. *ormæ > orme/orm-∅* 'worms', vs. Swedish *orm – ormar* 'snakes'

Accordingly, gender gradually loses influence in the history of Danish declension. The conditioning of declensions is restructured on the basis of prosodic-phonological and semantic features, cf. Figure 8. Nouns ending in -r are all found with *e*-plural. Nearly all polysyllabic nouns and most

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[14] The additional marker -e (< -a) is reanalyzed from the accusative plural form of the masculine *a*-stems.
[15] This is not the case in Swedish, but seems to be the case in Norwegian as well, as an anonymous reviewer pointed out to us. Still, major dictionaries list non-zero plural forms e.g. for *fisk–fisker/-ar, stein–steiner/-ar, orm–ormer/-ar* and an alternative zero plural for *sild*, alternating with *silder* (cf. Bokmålsordboka, Nynorskordboka). Norwegian additionally keeps zero plurals for neuter nouns where Danish has suffixed forms as exemplified in (5). See Kürschner (2008: 213–220) for more examples on the gradual dissociation of neuter gender and zero plural in Danish.

Old Danish	Gender	F M		N
		C		
	Declension	-ær	-e	-Ø
Modern Danish	Declension	-er	-e	-Ø
	Gender	C	N	
	Final sound	All others	-r	
	Prosody		Monosyllabic	Monosyllabic
	Semantics	All others	Animate	

Figure 8. Loss of the link between gender and declension in Danish and restructuring of the conditioning of declensions (dashed lines indicate that gender-based distribution is weakened or lost)

of the monosyllabic ones ending in a different sound go with (*e*)*r*-plural. Monosyllabic nouns ending in a consonant are mostly found with *e*-plural if they denote an animate being, cf. *drenge* 'boys', *brude* 'brides', *bjørne* 'bears'. This semantic conditioning is also characteristic of a specific class of derivatives, namely those in *-ing/-ling*. Derivatives of this kind which denote human beings usually have *e*-plurals, cf. *udlændinge* 'foreigners', *lærlinge* 'apprentices', others form *er*-plurals, cf. *samlinger* 'collections'. The zero plural class consists mostly of neutral monosyllabics and thus still preserves the declension-gender-link, but common gender nouns are found here as well (see above), showing that the link is much less straightforward than in Swedish.

To summarize, the history of Danish exemplifies how the link between gender and declension can be weakened. This goes together with the paradigmatic reduction of the gender system. We might consider gender reduction a primary cause of the separation between declension and gender, but Swedish has shown that this does not necessarily follow. Gender, by contrast, is still the main conditioning criterion for declension in Swedish. It is striking that the loss of the gender-declension-link in Danish coincides with a strong reduction of declensions as well. Swedish, by contrast, even adds a new declension class marked by the plural suffix *-n*, thus providing two classes for neuter nouns. This increase in the number of declensions seems to stabilize the existence of the link between gender and declension in Swedish. The number of declensions might thus play a major role in determining if gender and declension are linked.

4.3. Norwegian Nynorsk

There are two written standard varieties of Norwegian, Nynorsk and Bokmål. We will only look at Nynorsk at this point, since it provides a development very different from Swedish and Danish, based on Norwegian dialects rather than continuing the written Danish language, as one could argue in the case of Bokmål. In contrast to the two neighbor languages, Nynorsk still retains three lexical genders. For example, there are still three indefinite articles (F *ei*, M *ein*, N *eit*).[16] Enger (2004: 55ff.) describes a close correlation between gender and declension. According to the author, there is a tendency to link gender and declension in a 1:1-relationship, with masculine nouns forming plurals by means of -*ar*, feminine ones by means of -*er*, and neuter nouns by means of zero marking. The two dialects of Rana and Røros are even provided as examples of dialects where the 1:1-relationship is found almost consistently (cf. Enger 2004: 60). We may compare this development with that of Alsatian described above. Both categorization systems seem to merge. When gender information is available, declension information is available as well, and vice versa. From a user perspective: even if the information on either gender or declension is unknown, it coincides with the information on the other classification system; learning one system means learning both of them. Gender and declension are closely linked in this way.

Gender	F	M	N
Declension	*-er*	*-ar*	*-∅*

Figure 9. The link between gender and declension
in Modern Nynorsk (simplified)

What happened in Nynorsk is not atypical for the Scandinavian languages. Zero plurals on neuter nouns are even common in older forms of all Germanic languages. A tendency to use the *ir*-plural for feminine nouns and the *ar*-plural for masculine ones can be consistently described both in the histories of West Nordic (Bjorvand 1972, Syrett 2002: 720), Old Swedish and Old Danish (Kürschner 2008: 214–216). Still, this tendency to build a

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[16] With respect to the free forms of definite markers, masculines and feminines are not distinguished in the singular (*den* vs. neuter *det*), and gender is totally undistinguished in the plural forms: *dei*. In suffixed forms, gender is distinguished in the singular, and only neuters vs. non-neuters are distinguished in the plural forms. In the plural forms, gender marking on associated words is thus reduced again.

1:1-relation between gender and declension is not apparent in Swedish and Danish. Instead, the gender system is reduced in these languages.

Considering the three North Germanic languages with respect to the hypothesis that the link between both classification systems depends on their complexity, two facts are striking: Nynorsk is the only language retaining the high complexity of a three-gender system. Nynorsk also reduces declensions to a much higher extent than Swedish, whereas Danish has the same number of declensions left as Nynorsk. It seems that both the number of genders and the number of declensions need to be severely reduced before the link between gender and declension is loosened in Germanic languages.

4.4. Dutch

In Dutch, masculines and feminines have merged, as in the Mainland Scandinavian languages and in the Low German dialect of East Friesland. In Modern Dutch, the definite article *de* is used for common gender nouns, and the definite article *het* is used for neuter nouns. In plural forms, *de* is used regardless of the lexical gender. The pronominal system still holds a three-gender distinction which is currently redistributed (cf. Audring 2009 and below).

Declensions are based on plural marking only. There are two type-frequent and productive declensions marked by plurals in *-s* and *-(e)n*, respectively. These plural forms are distributed according to a prosodic principle stipulating that the output must form a trochaic foot (cf. Booij 2002: 24 and van der Hulst & Kooij 1998). Thus, *-en* is attached to nouns with final syllable stress, and *-s* and *-n* are attached to nouns with penultimate syllable stress (cf. *hand-en* 'hands' vs. *bezem-s* 'brooms', *gave-n* 'gifts'). This distribution of declension classes, which is comparable to that of Low German in East Friesland, is totally irrelevant to gender. The only remnants of the former gender link are provided in the small class of 15 nouns with an *eren*-plural, all being neuter (*kinderen* 'children', *lammeren* 'lambs', etc.) and stemming from the *iz/az*-class. This class has not shown productivity in the history of Standard Dutch. Declension and gender can thus be interpreted as unlinked.

Compared with closely related German, a striking contrast is observed both with respect to the number of genders and declensions, and with respect to the fact that they are not linked in Dutch. This contrast with

Old Dutch	Gender	F	M	N
	Declension	-a/-i/-on		-Ø, -er
Early Middle Dutch	Declension	-e/-n		
				-er (15 items)
Modern Dutch	Gender	F	M (C)	N
	Declension			-eren (15 items)
		-(e)n	⋮	-s
	Prosody	Output: Trochee		

Figure 10. The loss of the link between gender and declension in Dutch (dashed line: distribution is not based on gender)

German has developed quite early in the history of Dutch, as sketched in Figure 10.[17] In the development from Old to Middle Dutch, there is a clear tendency to avoid zero plural marking. Many neuter nouns, formerly zero-marked, were therefore transferred to classes with a transparent plural marker. In contrast to German, the neutral class of *iz/az*-stems was not used for this purpose. Instead, markers from masculine and feminine classes were used. Only 15 neuter nouns still remain in the *er*-class (see above).

Feminine and masculine nouns already shared most nominative plural markers in the Old Dutch system. When vowels were reduced in unstressed suffixes, there were only two plural suffixes left. In Middle Dutch, we find nouns from all three genders divided on these two plural classes characterized by *-e* or *-n*, respectively. Only the small class of *iz/az*-stems remains specific to neuter nouns. The loss of the gender-declension link can thus be traced back to a rapid reduction in the number of declensions, which was stronger than in German, because both the *er*-marker of neuter nouns and umlaut-marking were left unused. In Middle Dutch, the *s*-plural entered the system, and the schwa plural was lost. The prosodic plural formation found today was established in the following centuries.

Interestingly, in Modern Dutch the gender system is resemanticized. Although grammatical gender has been paradigmatically reduced from

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[17] The history of the declension can be traced by looking at the nominative plural allomorphs throughout the history of Dutch in Figure 10: over the years these became the only class markers. However, in Old and Middle Dutch case allomorphs still contributed to the constitution of distinctions between declensions.

Degree of individuation	human >	animal >	bounded object/ abstract	>	specific mass	>	unspecific mass/ abstract
Personal pronoun	feminine masculine		masculine				neuter

Figure 11. The redistribution of pronominal gender mapped on the Individuation Hierarchy (adapted from Audring 2009: 127)

three to two in determiners (*het huis* 'the-N house' vs. *de tafel* 'the-C table'), the old three-gender system is still reflected in the corresponding pronouns, e.g. the personal pronouns *zij*$_F$, *hij*$_M$, *het*$_N$. These are currently in a process of redistribution, resulting in a gender system partly independent of the one reflected in determiners. For persons and higher animals, the masculine and feminine pronouns are used to refer to the specific sexes. The feminine pronoun has nearly been constricted to this semantic function, and has disappeared as a lexical gender marker. Thus, nouns with no animate reference are usually found with either masculine or neuter gender targets. In studies of spoken language corpora, Audring (2009) shows that – without respect to the noun's gender apparent from the form of the determiner – the male pronoun tends to occur with bounded objects and abstracts as well as specific masses, whereas the neuter pronoun tends to occur with some specific and unspecific masses as well as abstracts. Not only the declension system, but also the gender system is thus restructured in Dutch, with the gender targets reflecting different layers of grammaticalization (cf. Dahl 1999b), i.e., an older layer in the system reflected in the determiners, and a newer system reflected in pronominal gender.

As Audring points out, the new distribution can be projected on the conceptual hierarchy of individuation, cf. Figure 11. Comparing Dutch with varieties of Scandinavian (cf. Braunmüller 2000) or English (cf. Siemund 2008), which are also in the process of reducing or losing lexical gender, Audring (2010) also shows that the individuation hierarchy appears to be cross-linguistically relevant.

5. A typology of gender-declension constellations

The comparison of Germanic standard and dialectal varieties has shown much variation. In Figure 12 this variation is mapped on a scale ranging from association of gender and declension towards dissociation.

	Association			Dissociation
Type	1	2	3	4
Genders : declensions	1 : 1	1 : x	1 : x	1 : x
Declensions : genders	1 : 1	1 : 1	1 : 1–2 (of 3)	1 : 2 (of 2)
Varieties	Alsatian Nynorsk	Fribourg Swedish	Standard German	Low German in East Friesland Danish Dutch

Figure 12. Typology of gender-declension constellations

Total association of gender and declension (Type 1) is found when each gender corresponds with exactly one declension and each declension corresponds with exactly one gender. This type was described for Alsatian and Nynorsk. Total dissociation (Type 4) is found when each gender corresponds with several declensions, and gender can by no means be securely predicted from the declension information. We saw dissociation in the data on Low German in East Friesland, Danish, and Dutch.

In between the two types at the ends of the scale, there are two further types. We shall label them Type 2 and Type 3. Type 2 is characterized by each declension being clearly associated with only one gender, but each gender being associated with several declensions, as exemplified in the dialect of Fribourg and in Swedish. In Type 3, several declensions are associated with each gender as well. In contrast to Type 2, a declension can also occur with more than one gender. In three-gender systems, this may lead to 2: 1-gender-oppositions, as found in the Standard German Non-Feminine vs. Feminine opposition. Type 3 is rather typical for those Germanic languages which, just as German, retain high complexity in the number of genders and declensions, as, e.g., Faroese, Icelandic, Luxembourgish, and Yiddish (cf. Dammel et al. 2010b).

The typology shows that in our set of compared varieties Type 1 (total association) only occurs in three-gender systems. Type 4, on the other hand, never occurs in three-gender systems. In the set of varieties compared in this article, gender reduction is thus a necessary prerequisite for dissociation.

6. Why do gender and declension interact?

We have seen that in a large number of Germanic language varieties, gender and declension are still linked. Nevertheless, in other Germanic varieties the interaction is severely reduced or given up. Observing the history of these varieties may help us to identify if there are reasons to link gender and declension, and if there are situations in which this link becomes unnecessary. We have looked at varieties detaching gender and declension in detail, and we have identified three common features of the varieties which loosen the link between declension and gender (Type 4 in Section 5):

1. The number of genders is reduced from three to two.
2. The number of declensions is reduced to a great extent.
3. The conditioning of declension and gender is based on transparent features such as semantics, word formation affixes, or prosody.

The interaction between gender and declension thus seems to depend on the complexity of both categorization systems. Conditioning complexity is reduced along this line: in general speech, the fewer classes there are, the easier (or more transparently) they are conditioned. Gender and declension are detached from each other, and thus detached from conditioning factors which in parts of the lexicon were arbitrarily assigned. Transparency in conditioning is increased by means of the new conditioning factors, because the semantic and the formal (i.e. morphological or prosodic) properties can be deduced from the lexeme.

In addition to the loss of the link between gender and declension, we identified a further, completely different way to reduce the complexity of both classification systems. In this type, three genders remain. The number of declensions is reduced to three, and gender and declension become totally parallel (Type 1 in Section 5), i.e., each gender corresponds with exactly one declension, and each declension corresponds with exactly one gender. It is still possible in these systems to describe each gender on its own by regarding variation in associated words. It is also still possible to describe each declension by regarding variation in the morphological paradigm of the noun itself. But even if both a gender system and a declensional system remain, the lexical entries on class membership for each word may be reduced from two to one. The declension information can now be directly

inferred from the gender information, and vice versa, which means that only one entry for both declension and gender is necessary. As a consequence, we can say that in such systems gender and declension are totally parallelized – that is, the inflection of the noun and of the corresponding words are based on identical information.

Figure 13 captures how associating and dissociating strategies are used by the three- and two-gender systems. Systems keeping three gender slots only tend to parallelize the classification systems if the number of declensions is considerably lowered. Otherwise gender and declension are slightly associated (Type 2) or partly dissociated (Type 3). In both cases, gender and declension can still function as memorability enhancers for each other. Systems that keep only two gender slots tend to dissociate them completely and instead use the binary (or tertiary) formal distinctions newly available from the old gender and declension markers for marking transparent semantic or formal distinctions. Only if the number of declensions is still quite high, an association strategy is used.

Based on these observations, we will now come back to the question whether there are reasons for associating or dissociating gender and declension. In Section 2, we introduced Wurzel's (1986, 1989) idea that the enhancement of the memorability might be the driving force for the change of classification systems. Dissociating gender and declension means keeping and redistributing (and, perhaps, re-functionalizing) two classification
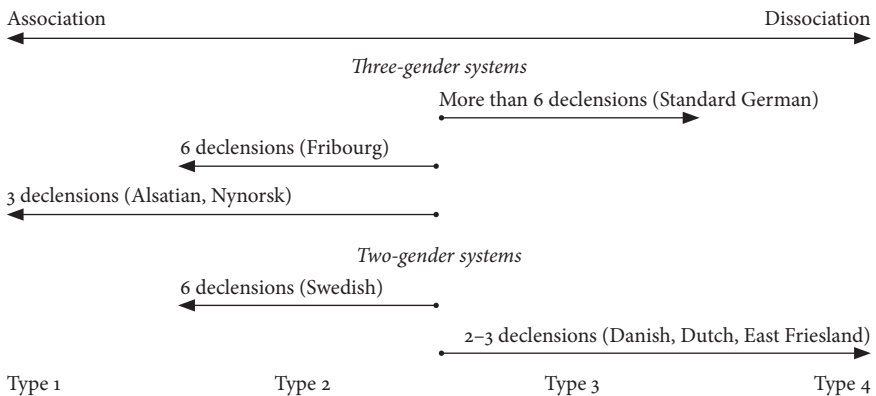
Association   Dissociation

Three-gender systems

More than 6 declensions (Standard German)

6 declensions (Fribourg)

3 declensions (Alsatian, Nynorsk)

Two-gender systems

6 declensions (Swedish)

2–3 declensions (Danish, Dutch, East Friesland)

Type 1   Type 2   Type 3   Type 4

Figure 13. Association and dissociation of gender and declension in correlation with their complexity

devices. Memorability is enhanced because the distribution is based on transparent factors. Associating them does not make it easier to memorize class membership. Still, it means keeping only one (but still partly not transparently assigned) classification device, thereby reducing storing needs. Economy in the lexicon might thus be a reason for association, whereas memorability enhancement might be a reason for dissociation.

In Section 3 we introduced the relationship between gender and declension as complementary partners in number profiling, and in Section 4, we showed that similar processes can also be observed in the other varieties to some degree. Gender is historically less and less marked in the plural paradigms of associated words, but retained in the singular paradigms. Declension, on the other hand, is reduced in the singular and profiled in the plural. Both classification systems are thus used complementarily for number marking. However, this is no reason for linking them in conditioning, since they serve singular and plural marking just as well if they are unlinked. We might therefore ask if this (secondary) use is somehow connected to memorability enhancement.

The complementary use in number marking is only threatened if one of the classification systems disappears.[18] Number marking is retained most securely when both systems provide a high number of allomorphs. The higher the number of allomorphs, the smaller the chance that one of the categorization systems is lost, i.e. number marking is threatened.[19] Therefore, good number marking is best guaranteed with a large number of classes, providing a lot of allomorphs.

However, high allomorphy implies high memorization needs. In Wurzel's (1989) concept, gender is one of several features used to simplify the memorization of a large number of declensions. We have expressed doubts on this thought in its simplistic form, since gender, just like declension, is partly non-transparently assigned to nouns and is therefore not a very reliable help. Still, when regarding systems with a high number of declen-

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[18] This is the case in English or Afrikaans with no lexical gender distinction at all. Here, number marking is mostly restricted to the plural (declension), and singular marking has been strongly reduced, even in many associated words (cf. the English article *the* which is uniform in both number values).

[19] This is not meant as a universal, and strictly agglutinating languages seem to provide a clear counter-example. Since the Germanic languages derive from highly inflectional systems characterized by strong allomorphy, and since they are all still characterized by at least some inflectional features, the claim holds for the Germanic languages.

sions and the highest available number of genders in Germanic (three), we might consider it supportive when one of the categories (either gender or declension) may sometimes be inferred from the other. In this case, linking both categorization systems in conditioning reduces the storing needs for memorizing *both* of them.

When the allomorphy is considerably reduced for whatever reason, the memorizing effect in both directions loses its necessity. Depending on the number of genders, gender and declension may be disconnected, as in Danish or Dutch, or they may be parallelized, as in Nynorsk and Alsatian. In both cases, this does not harm their complementary use in number marking. Rather, it either opens the possibility of attaching both classification systems to linguistic features which are easier to memorize (i.e. semantics, word formation affixes, segmental phonology, or prosody), or, in the second case, reducing storing needs considerably. This may even stabilize the existence of both categories when allomorphy has been reduced.

To sum up, in the sample of Germanic languages studied here, gender and declension are primarily linked in order to enhance the memorability of a high number of classes, i.e. allomorphs. A high number of allomorphs is desirable because it protects both conditioning systems from loss, and therefore guarantees that they can serve their complementary use in number marking. When the number of classes is reduced for whatever reason, the link can be given up, because the smaller number of allomorphs is more easily memorized (and therefore better preserved) through more transparent conditioning factors. Both in the Germanic languages with a high number of classes and in those with a low number of classes, gender and declension are thus used for a good marking of the highly relevant number category. Further investigation, including languages from other language families, is necessary in order to find out whether these mechanisms of complexity reduction can be generalized.

Abbreviations

C	common gender	NON-F	non-feminine gender
F	feminine gender	acc.	accusative
M	masculine gender	nom.	nominative
N	neuter gender	pl.	plural

sing.   singular   NHG   New High German
OHG   Old High German   NP   nominal phrase
MHG   Middle High German   UL   umlaut

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