

Loan Word Phonology: A Case for a Non-Reductionist Approach to Grammar

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## Loan word phonology: A case for a non-reductionist approach to grammar

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### 1. Introduction

German Syllable-Final Devoicing (SFD, hereafter) is a well-studied phenomenon, but accounting for the phenomenon in both native and loan words in a unified fashion is a challenging task. Therefore, the phenomenon can serve as a test to evaluate the viability of a given theory, provided that a phonological theory must be capable of accounting for both native and loan words equally well.

In this paper, I will demonstrate that a "reductionist" theory which regards the grammar as a mechanism for "top-down" imposition of minimal rules or constraints applying to underlying forms and generating surface forms from them is not capable of offering a coherent solution to German SFD, whether derivational as in SPE (Chomsky and Halle 1968) or non-derivational as in Optimality Theory (Prince and Smolensky 1993).

I will further demonstrate that a "non-reductionist" framework such as Cognitive Grammar (Langacker 1987, 1990, to appear; Rubba 1993; Kumashiro 1999), which regards the grammar as a structured inventory of actually-occurring expressions and schemas abstracted "bottom-up" from them, can account for the German data in a natural and elegant fashion.

### 2. Dialectal contrast in loan words

Loan words in German exhibit dialectal variations, as exemplified in (1).

#### (1) Dialectal variations in loan words

SOURCE	HIGH GERMAN	NORTHERN STANDARD GERMAN
<i>magnet</i> [g]	[magne:t]	[makne:t]
<i>fragment</i> [g]	[fragment]	[frakment]

In High German, the words *magnet* and *fragment* are adopted as is without devoicing the obstruent, and [magne:t] and [fragment] are obtained, respectively.<sup>1</sup> On the other hand, in Northern Standard German, *magnet* and *fragment* are adopted as [makne:t] and [frakment], respectively. That is, the word-medial [g] in the source language undergoes SFD.

In contrast to those in (1), the words in (2) show no such dialectal variations:

#### (2) No dialectal variations in loan words

SOURCE	HIGH GERMAN	NORTHERN STANDARD GERMAN
<i>charisma</i> [z]	[çarisma]	[çarisma]
<i>Marxism</i> [z]	[marksismus]	[marksismus]

The words *charisma* and *Marxism* are adopted as [çarisma] and [marksismus], respectively, in both dialects, with the word-medial [z] undergoing SFD.

The dialectal contrast between the words in (1) and those in (2) is summarized as follows: in High German, the obstruent [g] eschews SFD while the obstruent [z] is syllabified as a coda and undergoes SFD; in Northern Standard German, on the other hand, both [g] and [z] are syllabified as codas and undergo SFD.

### 3. Analyses

#### 3.1. Previous reductionist analyses

Previous Generative Phonology analyses simply applied SFD, whether formulated as a rule or a constraint, to the forms in the source language (e.g. Hall 1992), and were unable to elegantly account for the contrasting facts without resorting to a stipulation, which is described in the table in (3):

#### (3) Stipulations on application of SFD in loan words

		High German	Northern Standard German
Source	[...gN...]	not apply	apply
	[...zN...]	apply	apply

It is necessary to have the proviso that in High German, SFD applies to word-medial [z], but not to [g] in the source. Notice that having such a stipulation is undesirable from a theory-internal perspective, since Generative Phonology seeks to employ minimum rules and/or constraints.

#### 3.2. Proposed non-reductionist analysis

Contrastively, a non-reductionist framework such as Cognitive Grammar can account for the puzzling contrasts straightforwardly. The voiced obstruent [g] in the examples in (1) retains its voicing only in High German because only in the dialect does the word-medial sequence consisting of [g] and a nasal constitute an entrenched pattern among the native vocabulary. Observe the native words in (4), which exhibit dialectal variations parallel to the loan words in (1):

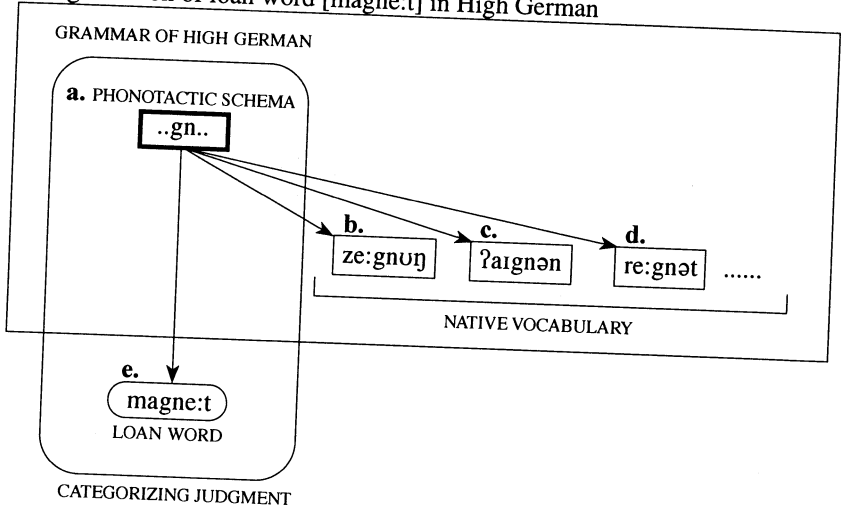
#### (4) Dialectal variations in native words

HIGH GERMAN	NORTHERN STANDARD GERMAN	
[ze:gnʊŋ]	[ze:knʊŋ]	'blessing'
[ʔaɪgnən]	[ʔaɪknən]	'to suit'

As can be observed in (4), the word-medial [g] does not undergo SFD in native words in High German, and [ze:gnʊŋ] and [ʔaɪgnən] are obtained. In the native vocabulary of Northern Standard German, the word-medial [g] undergoes SFD, and [ze:knʊŋ] and [ʔaɪknən] are obtained. That is, when a foreign word with the word-medial cluster [-gn-] is to be adopted, the cluster finds its counterpart in the native vocabulary of High German, but not in that of Northern Standard German.

This correspondence between the native and loan words is attributed to the presence of a phonotactic schema represented in (5) in the grammar of High German.

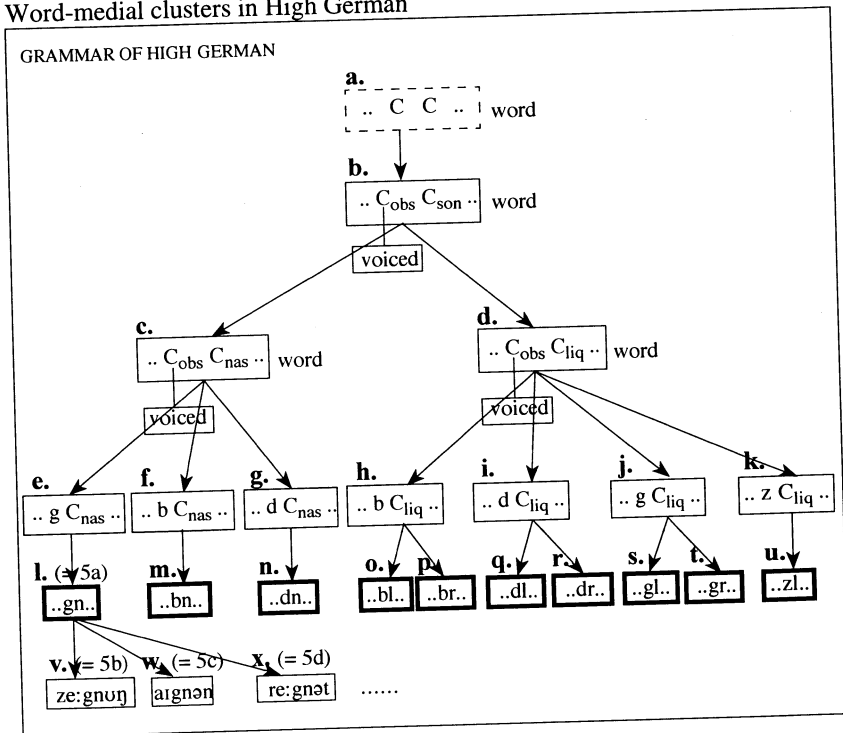
## (5) Categorization of loan word [magne:t] in High German



The phonotactic schema in (5)a is extracted from native words such as [ze:gnʊŋ] in (5)b, [ʔaɪgnən] in (5)c, and [re:gnət] 'to rain (3.sg.pres)' in (5)d, and represents the commonality among these words in a schematic fashion, i.e. the fact that words containing the cluster [-gn-] are conventional in the grammar of High German. The schema categorizes the loan word [magne:t] as an instantiation, i.e. judges the word as well-formed, and as a result, the word is included in the grammar as is, without devoicing the obstruent.<sup>2</sup>

The grammar of High German has other phonotactic schemas containing clusters that consist of a voiced obstruent and a sonorant, as described in (6).

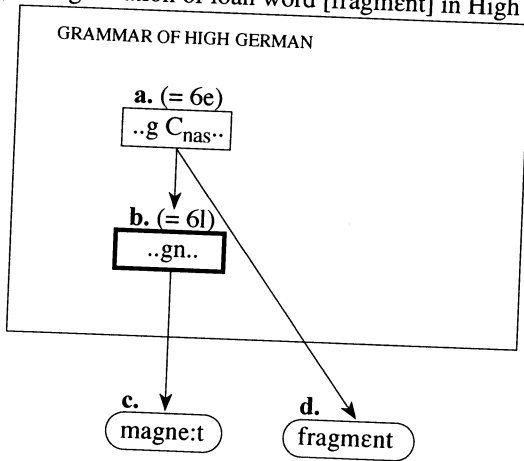
## (6) Word-medial clusters in High German



The ten schemas in (6)l–(6)u constitute phonotactics of High German. Each of these ten schemas is extracted from actually-occurring native words in the dialect, and gives rise to a more-abstract higher-level schema, i.e. (6)a–(6)k, forming a complex network.

Notice that in contrast to [magne:t], which is categorized as an instantiation by the phonotactic schema in (6)l, [fragment] is categorized by none of the phonotactic schemas, (6)l–(6)u. That is to say, the word-medial cluster [-gm-] is not found among the native vocabulary of High German, yet [fragment] is adopted as is without devoicing the obstruent. This can be explained as follows. In the network in (6), the phonotactic schema [...gn...] in (6)l gives rise to a higher-level schema in (6)e, which represents an abstracted pattern containing a cluster that consists of the obstruent [g] and a nasal. This higher-level schema categorizes the loan word [fragment] as an instantiation, as illustrated in (7).

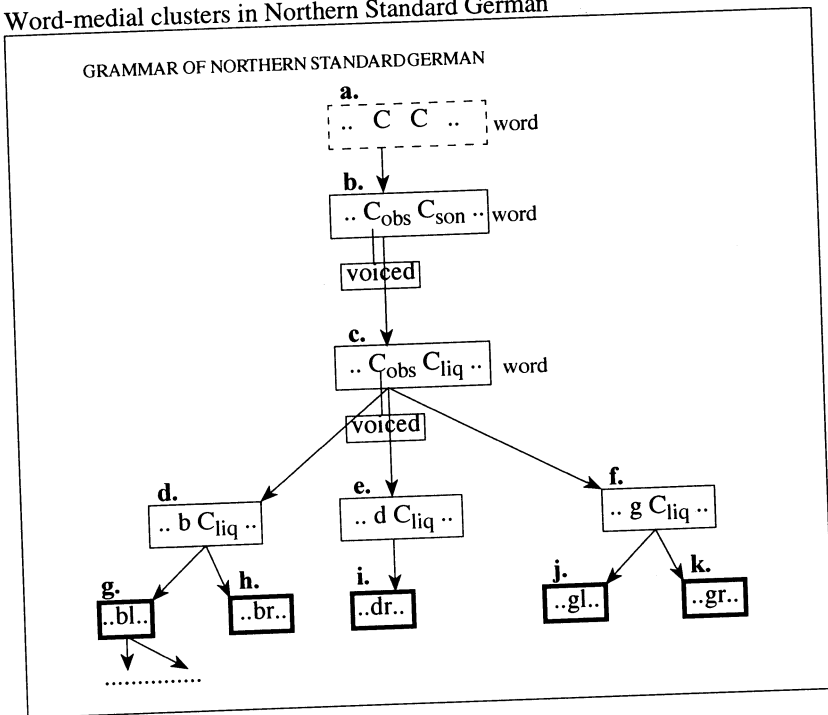
## (7) Categorization of loan word [fragment] in High German



The schema in (7)a is relatively specific, although it is not as specific as the lower-level schema in (7)b. Therefore, the cognitive distance between the expression [fragment] and the categorizing schema in (7)a (i.e. how far the expression diverges from the schema by elaboration or extension) is relatively small, and the expression is judged well-formed.<sup>3</sup> In other words, despite the lack of the corresponding cluster among the native vocabulary, [fragment] is adopted as is, without devoicing the obstruent, because its word-medial cluster [-gm-] is similar enough to the cluster [-gn-], which actually occurs in the native vocabulary.

On the other hand, the grammar of Northern Standard German does not have a phonotactic schema containing a cluster that consists of the obstruent [g] and a nasal, because such a cluster is not found among the native vocabulary. The dialect's network of phonotactic schemas containing clusters that consist of a voiced obstruent and a sonorant is illustrated in (8).

## (8) Word-medial clusters in Northern Standard German

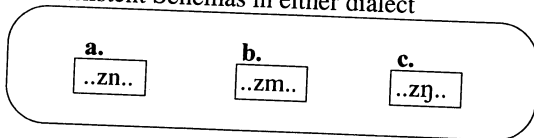


Northern Standard German has only five phonotactic schemas containing clusters that consist of a voiced obstruent and a sonorant, i.e. (8)g–k, and this is a result of the complete dominance of SFD; that is, all the clusters in (8)g–k occur tautosyllabically at syllable-onset position. More importantly, none of these five schemas have a nasal as the second segment of their clusters. Therefore, a foreign word with a cluster consisting of a voiced obstruent and a nasal is not categorized by any phonotactic schema in the grammar of the dialect, with the result that such a foreign word must have its obstruent devoiced in order to be admitted in the dialect. Therefore, the words *magnet* and *fragment* are adopted as [makne:t] and [frakment], with the word-medial obstruent devoiced.

Thus, dialectal variations in loan words are straightforwardly explained in Cognitive Grammar by treating them as resulting from categorization by accommodating phonotactic schemas, which vary from one dialect to another because they are extracted in a non-reductionist manner from the actually-occurring native vocabulary of each dialect.

Going back to the examples in (2), the reason why the obstruent [z] is devoiced in both dialects is that a word-medial cluster consisting of the obstruent [z] and a nasal is not found among the native vocabulary of either dialect. That is, accommodating phonotactic schemas such as (9)a–c do not exist in either dialect.

## (9) Non-existent Schemas in either dialect



In other words, a cluster consisting of the obstruent [z] and a nasal is not an entrenched pattern in the native vocabulary of either dialect of German. Therefore, the words *charisma* and *Marxism* are adopted as [çarısma] and [marksısismus], with a devoiced sibilant in both dialects.

Thus, the puzzling contrast between the loan words in (1) and those in (2) can be explained only by examining a structured inventory of actually-occurring native words and schemas abstracted from them, which are what Cognitive Grammar defines grammar as consisting of.

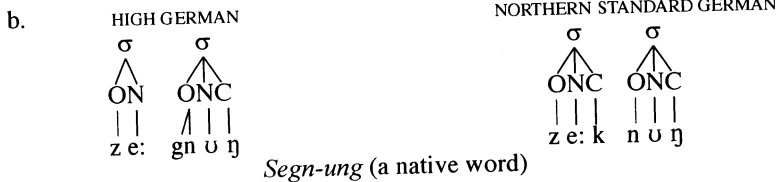
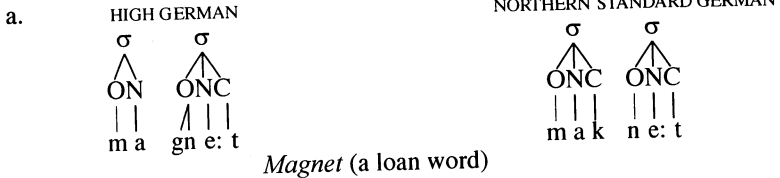
Contrastingly, Generative Phonology can explain the devoicing data by positing stipulations such as those in the table in (3). However, a different stipulation is required to deal with each type of loan word. The necessity to posit such stipulations incrementally and potentially infinitely points clearly to the fundamental flaw of the reductionist conceptualization of grammar.

#### 4. Conceptual unification of grammar

##### 4.1. Non-absoluteness of SFD

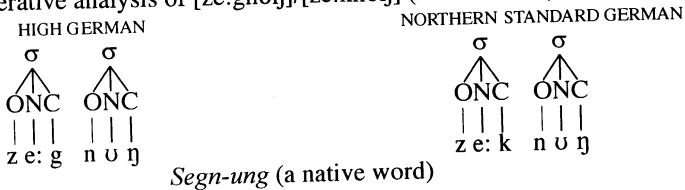
The advantages of the proposed non-reductionist analysis are not limited to the phonology of loan words, but extend to German phonology in general. Recall that in High German, SFD is not observed in the loan words given in (1) as well as the native words in (4). To the best of my knowledge, all the previous Generative analyses except Rubach (1990) claim that SFD is absolute in both High German and Northern Standard German. That is, they claim that the reason why SFD does not occur in the words given in (1) and (4) in High German is simply that the word-medial obstruents are syllabified as parts of the onsets of the following syllables, unlike Northern Standard German, where the obstruents are syllabified as codas, as illustrated in (10) (Vennemann 1972, 1978, 1982; Wurzel 1981a, 1981b; Wiese 1988, 1991, 1996; Hall 1989, 1992, 1993; Giegerich 1992; Ramers 1992; Yu 1992a, 1992b; Brockhaus 1995).

- (10) Generative analysis of [magne:t]/[makne:t] and [ze:gnuŋ]/[ze:knuŋ]



However, these syllabifications in (10) conflict with the syllabifications proposed by a pre-Generative descriptive analysis by Bithell (1952), illustrated in (11).

- (11) Pre-generative analysis of [ze:gnuŋ]/[ze:knuŋ] (Bithell 1952)



(11) shows that in High German, the word-medial obstruent [g] is syllabified as a coda without losing its voicing, defying SFD, while in Northern Standard German, it is devoiced at coda. Furthermore, this High German syllabification given in (11) conforms to the description of the 18th Century German (Voge 1978).

One might simply claim that the exceptional cases of Final Devoicing observed in the 18th century no longer hold true in Modern German. This seems the case at least with Northern Standard German: SFD has become absolute in the dialect. As for High German, however, the same claim cannot be sustained: it is possible that the same High German speaker syllabifies the voiced obstruent in question as a coda (e.g. [ze:g\$nuŋ] for *Segn-ung*) sometimes, but as an onset ([ze:\$gnuŋ]) at other times. Syllabification in German fluctuates, varying not only from one dialect to another, but also from one occasion to another with the same speaker (Brockhaus 1995:76). Nevertheless, it is undeniable that there are High German speakers who think [ze:g\$nuŋ] is what they pronounce, as can be observed in the following comment by Brockhaus (1995:75) on Rubach (1990), who bases his analysis on his recognition of the non-absoluteness of SFD in High German: "Rubach considers native speaker intuitions about syllable divisions important enough to feel the need for phonological representations to reflect them accurately (cf. *Hand.lung*, for example)".

Giegerich (1992:137) states that many speakers, including himself, never use

High German. Indeed, the High German forms with a syllable-final voiced obstruent ([ze:g\$nuŋ]) do not conform to the prevailing phonotactic pattern of the language, i.e. a voiceless obstruent at coda, and such forms are historically unstable (Hooper 1976). It is perhaps the case then that these non-obedient forms are now in the process of becoming obsolete. That is, it may be the case that SFD is in the process of becoming as entirely absolute as Word-Final Devoicing is now in the entire German language, prohibiting exceptional cases. Even if this is the case, the fact certainly calls for an explanation for why there still remain these High German speakers who think [ze:g\$nuŋ] is what they pronounce at the present time.

Therefore, I claim that the syllabifications in (11) are more truthful descriptions of the language than those in (10). That is, contrary to the claim made by previous Generative analyses, SFD is not an absolute constraint in High German: the word-medial obstruents in the loan words in (1) as well as in the native words in (4) are not devoiced, although they are syllabified as codas. I further claim that Generative reductionism, which places a high value on the generality of a rule or constraint, is responsible for this neglect of the native speakers' intuitions.

#### 4.2. Interlexical relations

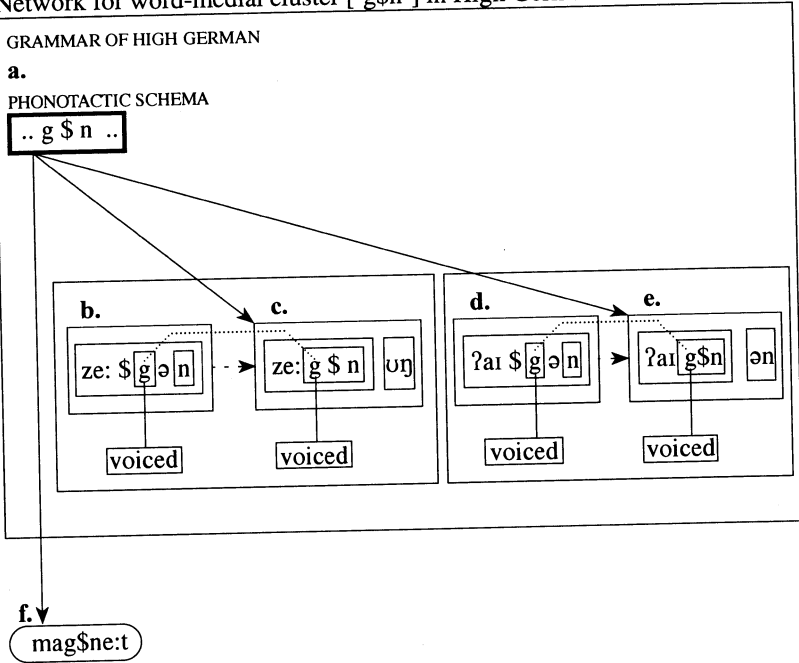
When the grammar is constructed in a non-reductionist manner, the non-occurrence of SFD in High German is not anomalous at all. Notice that for the native words *Segn-ung* [ze:g\$nuŋ] and *eign-en* [ʔaig\$ən], there exist lexically-related unsuffixed words, *Segen* [ze:gən] 'blessing' and *eigen* [ʔaigən] 'own', in which the obstruents are voiced, being at onset. Observe (12) and (13), where a dollar sign stands for a syllable boundary, and a dotted line for correspondence.

(12) Interlexical relations among native words in High German

SUFFIXED		UNSUFFIXED	
ze:g\$nuŋ	'blessing'	ze:g\$gən	'blessing'
ʔaig\$nuŋ	'to suit'	ʔaig\$gən	'own'

Dotted lines in the original diagram connect the syllable boundaries in the suffixed forms to those in the unsuffixed forms, showing the correspondence between the two forms in each pair.

## (13) Network for word-medial cluster [-g\$ŋ-] in High German



I claim that, as illustrated in the network in (13), the suffixed words [ze:gnuŋ] in (13)c and [ʔaɪgnən] in (13)e do not undergo SFD in High German so as to keep the Interlexical Relations with the unsuffixed words in (13)b and (13)d, respectively, as phonologically intact as possible. And, from these suffixed words, the phonotactic schema [-g\$ŋ-] is extracted and categorizes loan words such as [magne:t] in (13)f as instantiations. That is, in High German, the maintenance of Interlexical Relations has a higher priority than conformity to SFD.

Recently, Interlexical Relations have been intensively discussed in the Optimality Theory literature (Kenstowicz 1996, Benua 1997). However, note that Interlexical Relations are best viewed as a non-reductionist concept, because whether or not a certain word has a lexically-related word that would phonologically influence it can be determined only by examining the inventory of actually-occurring words in the language, a process that is non-reductionist. Since Optimality Theory is a reductionist theory, being one framework within Generative Grammar, Interlexical Relations are only opportunistically and arbitrarily utilized. In Cognitive Grammar, on the other hand, Interlexical Relations are a fundamental concept because the starting point for its approach to phonology is words as gestalt units (Rubba 1993), as can be observed in the formation of the networks in (6), (8), and (13). That is, only a non-reductionist framework such as Cognitive Grammar can account for German SFD in both native and loan words in a conceptually-unified manner.

## 5. Conclusion

This paper demonstrated that a non-reductionist approach such as Cognitive

Grammar can naturally and elegantly account for the puzzling phenomenon of German SFD involving loan words. The dialectal variations exhibited in the voicing of word-medial obstruents is attributed to the fact that each dialect has its own network of phonotactic schemas, which is conceivable only in a non-reductionist framework such as Cognitive Grammar, which views the grammar as a structured inventory of actually-occurring expressions and schemas abstracted from them. The proposed non-reductionist approach provides an insight into the phonology of the native vocabulary as well: SFD is not absolute in High German and yields to Interlexical Relations. It was argued that only a non-reductionist framework can accommodate Interlexical Relations in a conceptually-unified manner, as they are best viewed as a non-reductionist concept.

### Notes

<sup>1</sup> For a discussion of the syllabification of the voiced obstruents, see Section 4.1.

<sup>2</sup> In (5), this categorizing relationship of instantiation is represented by an arrow. Also, the enclosure in a rectangular box as in (5)a—d represents the word's status as a "unit", i.e. an established and conventionalized expression, in grammar, whereas enclosure in a box with round corners symbolizes its status as a non-conventionalized novel expression.

<sup>3</sup> For a detailed discussion of how a well-formedness judgement is made in Cognitive Grammar, see Principles of Uniqueness and Selection (Langacker 1990) and Well-Formedness Principles (Kumashiro 1999).

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