

## Evidence for *sk* in German as a Complex Segment

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This squib provides evidence from the superlative in support of Wiese's (1996) position that *s* (sibilant) + stop sequences in German behave as complex segments. With the exception of the sequence /sk/, the consonants that require schwa epenthesis before the superlative suffix are all coronal obstruents: *nettest-* ['nɛtəst] 'nicest', *süßest-* ['zy:səst] 'sweetest', *frischest-* ['frɪʃəst] 'freshest', *brüskest-* ['brʏskəst] 'most abrupt'. If one assumes that the sequence /sk/ is a single, complex segment with the feature [coronal] as well as [dorsal], the formation of the superlative can be accounted for with a simple rule of schwa epenthesis.\*

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### 1. Introduction.

Like the representation of affricates, the representation of *s* (sibilant) + consonant (sC) clusters is a topic that has seen much debate in the cross-linguistic literature (see Lin 2011 and Goad 2011 for critiques of various types of proposals). The status of affricates and sC clusters has also been a topic of discussion in accounts of the phonology of German. Mono- as well as bisegmental analyses have been proposed for the affricates [pf], [ts], and [tʃ] (see Ramers & Vater 1992:85–91 for a survey of arguments that have been put forth for both positions). The analyses of sC clusters are varied as well. Goad & Rose (2004) argue that all sC clusters in German are appendix-initial (*s* is extrasyllabic, an appendix to the syllable). Hall (1992) takes the position that only *s* + obstruent clusters are appendix initial; sC clusters with rising sonority are structured as branching onsets.<sup>1</sup> Wiese (1996:42–43; 265–268) argues for a different

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<sup>1</sup> In a subsequent work, Hall (2002) argues against extrasyllabic consonants in German.

analysis of *s* + stop clusters, treating them not as clusters, but as complex segments.

In this squib, I provide evidence in support of Wiese's position that *s* + stop sequences in German behave as complex segments. Wiese offers several arguments in favor of this analysis, only two of which deal directly with German. Reduplication in Gothic and Germanic alliteration demonstrate only that *sp*, *st*, and *sk* behave as single units in "historical precursors of German" (Wiese 1996:43). The evidence I provide comes from the German superlative and involves one *s* + stop sequence, namely, *sk*. I first discuss the distribution of *sk* in German, since this forms the basis for Wiese's arguments and is relevant for assessing the importance of *sk* in the formation of the superlative. I then discuss the superlative and the evidence it provides for treating *sk* as a complex segment in German.<sup>2</sup>

## 2. The Distribution of *sk* in German.

The sequence /*sk*/, like the affricate /*pf*/, can appear in word-initial position before /*l*/, a position otherwise limited to a single consonant.

(1) / <i>bl</i> /	<i>blau</i>	[blaʊ]	'blue'	
	/p <i>l</i> /	<i>Platz</i>	[plats]	'place'
	/g <i>l</i> /	<i>Glück</i>	[glyk]	'luck'
	/k <i>l</i> /	<i>klein</i>	[klaɪ̯n]	'small'
	/f <i>l</i> /	<i>flach</i>	[flax]	'flat'
	/ʃ <i>l</i> /	<i>Schlag</i>	[ʃla:k]	'blow'

(2) / <i>pf</i> /	<i>Pflanze</i>	['pflantsə]	'plant'
/sk <i>l</i> /	<i>Sklave</i>	['skla:və]	'slave'

The ability of /*pf*/ to occur word-initially before /*l*/ is explained by treating it as a unit equivalent to a single consonant. Because /*sk*/ behaves like /*pf*/ in this respect, Wiese argues that it too should be treated as a single unit, a complex segment (Wiese 1996:43). This is a specific case of an *s* + stop sequence with characteristics similar to those of an

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<sup>2</sup> A somewhat simplified version of the analysis of the superlative presented here appears in Fagan 2019, which focuses on teaching the superlative.

affricate. More generally, *s* + stops behave like affricates in that both can typically occur in syllable-initial as well as syllable-final position.<sup>3</sup>

- |          |                 |         |         |                |           |            |
|----------|-----------------|---------|---------|----------------|-----------|------------|
| (3) /ts/ | <i>Zahn</i>     | [tsa:n] | ‘tooth’ | <i>Sitz</i>    | [zɪts]    | ‘seat’     |
| /pf/     | <i>Pfund</i>    | [pfɔnt] | ‘pound’ | <i>Kopf</i>    | [kɔpf]    | ‘head’     |
| /tʃ/     | <i>Tschüss!</i> | [tʃʏs]  | ‘Bye!’  | <i>Quatsch</i> | [kvatʃ]   | ‘nonsense’ |
| (4) /ʃp/ | <i>Spaß</i>     | [ʃpa:s] | ‘fun’   |                |           |            |
| /ʃt/     | <i>Stein</i>    | [ʃtaɪn] | ‘stone’ | <i>Gischt</i>  | [gɪʃt]    | ‘spray’    |
| /sk/     | <i>Skat</i>     | [ska:t] | ‘skat’  | <i>Kiosk</i>   | [ˈki:ɔsk] | ‘kiosk’    |

If affricates are treated as single units on the basis of these distributional facts, then *s* + stop sequences should be as well.

Wiese also argues that an account of the phonology of German would be complicated if stops and fricatives were allowed to occupy a single prosodic position, but only in the order stop-fricative, not fricative-stop. The existence of affricates, stop-fricative combinations, leads one to expect analogous fricative-stop combinations.

Although /sk/ is found in syllable-final as well as syllable-initial position, in syllable-final position it is limited to words formed with the suffix *-esk* and a handful of other words that have been borrowed into German from various languages (Muthmann 2001:418).

- |        |                    |               |                       |
|--------|--------------------|---------------|-----------------------|
| (5) a. | <i>grotesk</i>     | [groˈtesk]    | ‘grotesque’           |
|        | <i>pittoresk</i>   | [pɪtoˈresk]   | ‘picturesque’         |
|        | <i>kafkaesk</i>    | [kafkaˈesk]   | ‘Kafkaesque’          |
| b.     | <i>Compactdisk</i> | [ˈkɔmpektɪsk] | ‘compact disc’        |
|        | <i>Obelisk</i>     | [obeˈlɪsk]    | ‘obelisk’             |
|        | <i>Basilisk</i>    | [baziˈlɪsk]   | ‘basilisk’            |
|        | <i>Kiosk</i>       | [ˈki:ɔsk]     | ‘kiosk’               |
|        | <i>Propusk</i>     | [ˈpro:posk]   | ‘identification card’ |
|        | <i>brüsk</i>       | [brysk]       | ‘abrupt’              |

<sup>3</sup> Note that /ʃp/ does not occur in syllable-final position in German. Wiese (1996:265) sees no principled explanation for this gap. I too am not aware of any explanation.

Nevertheless, /sk/ cannot be treated as a peripheral sequence of sounds in the phonology of German.

The sequence /sk/ is much more common than its counterpart with /ʃ/, which is extremely rare. /ʃk/ occurs in only three words, in word-initial position in the place names *Schkeuditz* [ˈʃkɔɪdɪts] and *Schkopau* [ˈʃko:pau], and in word-final position in the surname *Waschk* [vaʃk] (Wiese 1996:266–267). The sequence /sk/, by contrast, is one of three *s* + stop sequences in German that “occur with high frequency,” the other two being /ʃp/ and /ʃt/ (Wiese 1996:42). Furthermore, its membership in this set is not accidental. Hall (1992:76–80) and Wiese (1996:267–268), for example, explain the unmarked combinations as governed by a rule of dissimilation. Finally, the lower frequency of /sk/ in comparison to /ʃp/ and /ʃt/ can be explained by considering the history of /sk/.<sup>4</sup> Old High German (OHG) /sk/ merged into /ʃ/ (<sch>) in Middle High German (MHG): OHG *skif* ‘ship’ > MHG *schif*; OHG *fisc* ‘fish’ > MHG *visch*. The /sk/ sequence in Modern German is thus relatively young, occurring in words borrowed into the language after the MHG period.

### 3. The Superlative Suffix.

The superlative in German is formed by adding the suffix *-st* [st] to the stem of an adjective; in some cases a longer suffix, *-est* [əst], is required: *kleinst-* [klaɪnst] ‘smallest’, *lautest-* [ˈlaʊtəst] ‘loudest’.<sup>5</sup> Although it is clear that the stem-final sounds of an adjective play a role in determining if *-e-* is required before *-st*, a characterization of these sounds that is both accurate and concise is not to be found in standard grammars of German. Eisenberg 2013, Durrell & Hammer 2017, and Wöllstein 2016 are representative of standard accounts. All three provide information on variation, describing environments in which *-e-* is optional before the superlative ending as well as environments in which it is required. In the

<sup>4</sup> A quick comparison of the amount of space in the Duden pronunciation dictionary (Mangold 2005) for words beginning with /ʃp/, /ʃt/, and /sk/ demonstrates that /sk/ occurs much less frequently than /ʃp/ and /ʃt/.

<sup>5</sup> A number of primarily monosyllabic adjectives with the stem vowels *a*, *o*, and *u* also umlaut these vowels in the superlative (*längst-* [lɛŋst] ‘longest’, *gröbst-* [grø:pst] ‘coarsest’, *dümmst-* [dʏmst] ‘dummiest’); several adjectives have irregular superlative forms (*gut* [gu:t] ‘good’, *best-* [bɛst] ‘best’; *viel* [fi:l] ‘much’, *meist-* [maɪst] ‘most’).

following discussion, I consider only those environments in which *-e-* is required.

According to Eisenberg (2013:176), adjectives that end in a schwa syllable do not add *-e-* before the *-st* suffix (*heiterst-* /'hɛɪtərst/ ['hɛɪtəst] 'brightest', *ebenst-* ['e:bənst] 'flattest', *dunkelst-* ['dʊŋkəlst] 'darkest'); those that end in a coronal obstruent do, although *-e-* is optional following [ʃ] (*zartest-* ['tsaɪtəst] 'tenderest', *blindest-* ['blɪndəst] 'blindest', *süßest-* ['zy:səst] 'sweetest'; but *raschst-* [raʃst]/*raschest-* ['rafəst] 'quickest', *frischst-* [frɪʃst]/*frischest-* ['frɪʃəst] 'freshest'). Eisenberg's account predicts that an adjective like *brüsk* [brʏsk] 'abrupt' will not require *-e-*, since it does not end in a coronal obstruent. However, *brüsk* requires *-e-*, as do all adjectives ending with the suffix *-esk*: *brüskest-* ['brʏskəst] 'most abrupt', *groteskest-* [gro'tɛskəst] 'most grotesque'. Eisenberg's analysis also fails to account for adjectives that end in *-isch*, which never occur with *-e-*: *komischst-* ['ko:mɪʃst] 'strangest' (Wöllstein 2016:374). Although he claims that *-e-* is optional after [ʃ] in monosyllabic adjectives such as *rasch* [raʃ] 'quick' and *frisch* [frɪʃ] 'fresh', I take the position that *-e-* is required in this environment. According to Wöllstein (2016:374), adjectives ending in [ʃ] (with the exception of those ending in *-isch*) predominantly exhibit the superlative variant with *-e-*.<sup>6</sup>

Durrell & Hammer's account is accurate, but not succinct (2017:162): Adjectives whose stem ends in *-haft*, *-s*, *-sk*, *-ß*, *-x*, and *-z* always have *-est*; those with a stem ending in *-d*, *-t*, and *-sch* usually add *-est*, but longer words ending in these consonants have the ending *-st* if the last syllable is unstressed.<sup>7</sup> By considering stress, Durrell & Hammer

<sup>6</sup> A search of the FOLK corpus (Forschungs- und Lehrkorpus gesprochenes Deutsch; 2003–2017) of the database of spoken German at the Institut für Deutsche Sprache (IDS) yields results that support Wöllstein's observations. The only monosyllabic adjective in the corpus that ends in [ʃ] and appears in the superlative is *hübsch* [hypʃ] 'pretty'; all three superlative tokens occur with *-e-*, *hübschest-* ['hypʃəst] 'prettiest'. The bisyllabic *süddeutsch* ['zy:tdɔɪtʃ] 'southern German' does not appear with *-e-* in the superlative: *süddeutschst-* ['zy:tdɔɪtʃst] 'most southern German'. All other adjectives that end in [ʃ] contain the suffix *-isch* and never occur with *-e-*: *demokratischst-* [demo'kra:tɪʃst] 'most democratic', *logischst-* ['lo:ɡɪʃst] 'most logical', *praktischst-* ['praktɪʃst] 'most practical', etc.

<sup>7</sup> In German orthography, <ß> = /s/, <x> = /ks/, <z> = /ts/, and <sch> = /ʃ/.

are able to account for superlatives of adjectives that end in a schwa syllable as well as those that end in *-isch*. Both types of adjectives end in unstressed syllables and therefore do not add schwa before *-st*: *'spannendst-* ['ʃpanəntst] 'most exciting', *'komischst-* ['ko:mɪʃst] 'strangest'. By including *-sk* in their list of stem endings that require *-e-*, they can also account for superlatives such as *brüskest-* ['brʏskəst] 'most abrupt'. However, they provide no generalization about the stem-final sounds that require the epenthesis of *-e-*, listing instead the orthographic symbols that represent these sounds. In addition, they must include the suffix *-haft* in what is otherwise a list of consonant symbols in order to account for the presence of *-e-* in an adjective like *boshafte-* ['bo:ʃaftəst] 'nastiest' but its absence in one such as *gefürchtet-* [gə'fʏçtətst] 'most dreaded'.

Wöllstein's (2016:373–374) account is similar to Durrell & Hammer's, but differs in several important details. According to Wöllstein, an adjective requires the superlative suffix *-est* if its final syllable contains a full vowel and it ends in *-d*, *-t*, *-sk*, or an *s*-sound; adjectives that end in *-sch* also require *-est*, exceptions being those formed with the suffix *-isch* (*frischest-* ['frɪʃəst] 'freshest', but *fantastischst-* [fan'tastɪʃst] 'most fantastic'). By considering vowels as well as consonants, Wöllstein is able to account for adjectives formed with the suffix *-haft* without having to mention the suffix explicitly: *-haft* requires *-est* because it contains a full vowel and ends in *-t*. However, Wöllstein is forced to treat the suffix *-isch* as an exception, since it contains a full vowel and ends in *-sch*, yet does not require *-e-*. Like Durrell & Hammer, Wöllstein provides no generalization that unites the consonant sounds that require the epenthesis of *-e-*.

There are two crucial questions that these grammars fail to address: i) What is the difference between the suffixes *-haft* and *-isch*? Both contain a full vowel and end in a consonant that typically requires epenthesis of *-e-*, but only *-haft*, not *-isch*, occurs with *-e-*, and ii) What feature unites all the consonant sounds that require epenthesis of *-e-*?

The difference between *-haft* and *-isch* is one of stress. The suffix *-haft* bears secondary stress (Giegerich 1985:109); the suffix *-isch* is unstressed. Thus, an analysis of the superlative must take secondary stress into account: Adjectives that end in an unstressed syllable never require the epenthesis of *-e-*.

(6) <i>'komischst-</i>	[ˈko:mɪʃst]	‘strangest’
<i>'spannendst-</i>	[ˈʃpanəntst]	‘most exciting’
<i>ge'fürchtetst-</i>	[gəˈfʏɔçtətst]	‘most dreaded’

Those that end in a stressed syllable, with either primary or secondary stress, require *-e-* if they also end in a particular consonant or combination of consonants.

(7) a. <i>'frischest-</i>	[ˈfrɪʃəst]	‘freshest’
<i>'sanftest-</i>	[ˈzɑftəst]	‘mildest’
<i>virtu'osest-</i>	[vɪɔˈtʏo:zəst]	‘most virtuoso’
b. <i>'un,deutschest-</i>	[ˈʊn,dɔɪtʃəst]	‘most un-German’
<i>'bos,haftest-</i>	[ˈbo:s,haftəst]	‘nastiest’
<i>'lieb,losest-</i>	[ˈli:p,lo:zəst]	‘most unkind’

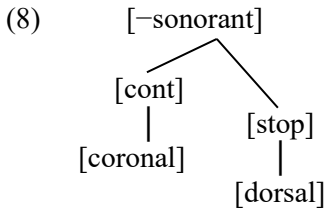
This leads to the second question posed above: What feature do all of these consonants have in common?

The difficulty in characterizing the consonants that require epenthesis of *-e-* is determining how to account for the sequence /sk/. This is the one sequence that poses a problem for Eisenberg’s position that adjectives ending in a coronal obstruent require *-e-*. As I argue in the preceding section, one cannot simply ignore this sequence on the grounds that it does not belong to the phonology of German. The sequence ends in /k/, which is [dorsal], yet it behaves like coronal obstruents in that it requires *-e-* in the superlative. In other words, adjectives with final *-sk* unexpectedly pattern with *nass* [nas] ‘wet’, which ends in [s], not with *dick* [dɪk] ‘fat’, which ends in [k]. The sound /k/, whether on its own at the end of an adjective or in a cluster with a preceding sonorant, does not require *-e-*: *dickst-* [dɪkst] ‘fattest’, *jeckst-* [jɛkst] ‘most foolish’, *ungelenkst-* [ˈʊngə,lɛŋkst] ‘stiffest’, *kränkst-* [krɛŋkst] ‘sickest’, *stärkst-* [ʃtɛɪkst] ‘strongest’.<sup>8</sup> Why should it be that

<sup>8</sup> According to Wöllstein (2016:374), there is sometimes variation when adjectives end in certain consonant clusters, including some sonorant + /k/ clusters: *welkst-* [vɛlkst] (*welkest-* [ˈvɛlkəst]) ‘most withered’; *schlankst-* [ʃlɔŋkst] (*schlankest-* [ˈʃlɔŋkəst]) ‘slimmest’. However, in these cases, the superlative forms without *-e-* appear to be the preferred forms. In addition, no

/sk/ requires *-e-*, yet /k/ by itself or in sonorant + /k/ clusters does not? If one assumes that /sk/ is a single, complex segment, the formation of the superlative can be accounted for quite simply.

The sequence /sk/ can be represented as in 8, where the manner features, [continuant] (marked as [coronal]) and [stop] (specified as [dorsal]), are attached to a single root node with the feature [–sonorant].



Because /sk/ has the features [coronal] and [–sonorant], it functions as a coronal obstruent in the formation of the superlative.

One can now account for the formation of the superlative with a simple rule of schwa epenthesis, assuming that the basic form of the superlative suffix is *-st*. Note that this rule is not intended as a formal analysis; it is an informal account that identifies the environments in which schwa appears in the superlative.

(9) Insert [ə] before the superlative suffix if an adjective ends in a stressed syllable and a coronal obstruent.

This rule accounts for the absence of *-e-* in the superlatives in 10, all of which are formed with adjectives that end in a coronal obstruent but whose final syllables are unstressed.

(10) /d/ 'spannendst-	[ˈʃpənəntst]	'most exciting'
/t/ ge'fürchtetst-	[gəˈfʏʁçtətst]	'most feared'
/ʃ/ 'komischst-	[ˈko:mɪʃst]	'strangest'

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variation is indicated for the adjectives listed above (*dickst-* [dɪkst] 'fattest', *jeckst-* [jɛkst] 'most foolish', etc.).



The rule also accounts for the presence of *-e-* in the superlatives in 11. These are formed with adjectives that end in a coronal obstruent and have final syllables that are stressed.

(11) /d/	'mildest-	[ 'mɪldəst]	'mildest'
/t/	'bos, haftest-	[ 'bo:s,haftəst]	'nastiest'
/z/	'lieb, losest-	[ 'li:p,lo:zəst]	'most unkind'
/s/	'nassest-	[ 'nasəst]	'wettest'
/ʃ/	'frischest	[ 'frɪʃəst]	'freshest'
/ts/	'stolzest-	[ 'ʃtɔltəsəst]	'proudest'
/tʃ/	'un, deutschest-	[ 'ʊn,dɔɪtʃəst]	'most un-German'
/ks/	'fixest-	[ 'fɪksəst]	'quickest'
/st/	'dreigestest-	[ 'draɪstəst]	'boldest'
/sk/	'brüskest-	[ 'brʏskəst]	'most abrupt'

In particular, the rule accounts for the presence of *-e-* in superlatives of adjectives that end in /sk/—if one assumes that /sk/ is a single, complex segment.

Why should both stress and the feature [coronal] play a role in the formation of the superlative? Because the conditions on the formation of the superlative are very likely ones that hold in the language in general, a formal account in an optimality-theoretic framework, for example, could address these issues. While I do not attempt such a formal analysis here, I do offer some observations.

The superlative suffix, /st/, is itself a coronal obstruent. Thus, the epenthesis of schwa prevents the occurrence of two adjacent coronal obstruents and could be viewed as a strategy to avoid a violation of the obligatory contour principle (OCP): Adjacent identical elements are prohibited (McCarthy 1988:88).<sup>9</sup> However, while the OCP elsewhere in German involves the place feature [coronal], it also involves the manner feature [stop]. In present tense verb forms, for example, schwa epenthesis applies after stems ending in coronal stops (before the suffixes /st/ and /t/).

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<sup>9</sup> As shown in the representation of /sk/ in 8, [coronal] and [dorsal] are on separate tiers, so the feature [coronal] in this segment is adjacent to the [coronal] feature of the superlative suffix.

- (12) a. *leg-st* [le:kst] ‘lay-2SG.PRS.IND’  
           *leg-t* [le:kt] ‘lay-3SG.PRS.IND’
- b. *leck-st* [lɛkst] ‘lick-2SG.PRS.IND’  
           *leck-t* [lɛkt] ‘lick-3SG.PRS.IND’
- c. *bad-est* [ˈba:dəst] ‘bathe-2SG.PRS.IND’  
           *bad-et* [ˈba:dət] ‘bathe-3SG.PRS.IND’
- d. *bet-est* [ˈbe:təst] ‘pray-2SG.PRS.IND’  
           *bet-et* [ˈbe:tət] ‘pray-3SG.PRS.IND’

However, it does not apply after coronal fricatives.<sup>10</sup>

- (13) *misch-st* [mɪʃst] ‘mix-2SG.PRS.IND’  
           *misch-t* [mɪʃt] ‘mix-3SG.PRS.IND’

As the examples in 10 demonstrate, two adjacent coronal obstruents are allowed in superlatives—schwa epenthesis is blocked—if an adjective ends in an unstressed syllable. A constraint that may play a role here is the three-syllable window restriction, which could be ranked higher than the OCP: main stress must fall on one of the last three syllables in a word (Jessen 1999:519). Because superlatives typically receive further inflection (adjective endings determined by the properties of the NP in which they occur; either /ə/, /əm/, /ən/, /ər/, or /əs/), schwa insertion in the superlative of adjectives ending in an unstressed syllable would yield forms with a stressed syllable followed by three unstressed syllables, a violation of the three-syllable window restriction.

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<sup>10</sup> If a verb ends in the fricatives /z/ or /s/, degemination applies in 2nd person singular forms (which have the suffix /st/) to block what would otherwise be surface forms with a geminate [s].

- (i) a. *reist* /raɪz-st/ [raɪst] (\*[raɪsst]) ‘travel-2SG.PRS.IND’  
           *reist* /raɪz-t/ [raɪst] ‘travel-3SG.PRS.IND’
- b. *reißt* /raɪs-st/ [raɪst] (\*[raɪsst]) ‘tear-2SG.PRS.IND’  
           *reißt* /raɪs-t/ [raɪst] ‘tear-3SG.PRS.IND’

For further discussion of schwa epenthesis and degemination in German, see Wiese 1996:229–232.

- (14) \**'spannend-est-e* \*['ʃpanəndəstə] 'most exciting'  
 \**'ge'fürchtet-est-e* \*[gə'fʏʁçtətəstə] 'most feared'  
 \**'komisch-est-e* \*['ko:mɪʃəstə] 'strangest'

The blocking of schwa epenthesis in these superlatives could therefore be driven by this restriction. However, superlatives are polymorphemic, and the restriction typically governs the placement of stress in monomorphemic words. In addition, inflected forms with three consecutive unstressed syllables are acceptable elsewhere in German, as the following inflected comparative adjective forms demonstrate (Wiese 1996:276):

- (15) *ent'scheidend-er-e* [ɛnt'ʃaɪdəndərə] 'more crucial'  
*'trocken-er-es* ['trɔkənərəs] 'drier'

Although the formation of the superlative appears to be constrained by a resistance to sequences of obstruents with the same place of articulation as well as sequences of more than two unstressed syllables, it remains to be seen whether a fully articulated formal account of the superlative will involve the OCP or the three-syllable window restriction.

#### 4. Conclusion.

The argument presented here for treating /sk/ as a complex segment in German is very similar to the arguments from reduplication in Gothic and Germanic alliteration for treating *s* + stop sequences as complex segments. In Gothic, for example, *s* + stop sequences pattern like one-member onsets in the class of verbs that form the preterit through reduplication, not like other two-member onsets. The entire *s* + stop sequence is copied, not just *s*, the first member of the sequence (Wright 1910:147–148).

- | (16) | Infinitive                     | Preterit (1/3SG) |
|------|--------------------------------|------------------|
| a.   | <i>falþan</i> 'to fold'        | faí~falþ         |
|      | <i>háitan</i> 'to call'        | haí~háit         |
| b.   | <i>fráisan</i> 'to tempt'      | faí~fráis        |
|      | <i>slēpan</i> 'to sleep'       | saí~slēp         |
| c.   | <i>ga-staldan</i> 'to possess' | ga-staí~stald    |
|      | <i>skáidan</i> 'to divide'     | skaí~skáip       |

If one assumes that *s* + stop sequences in Gothic are single, complex segments, then the process of reduplication can be accounted for in a straightforward manner: The consonantal portion of a word that is copied is simply the first C (Wiese 1996:43, van de Weijer 1996:181).

A difference between the evidence offered here and that provided by Gothic reduplication and Germanic alliteration is that it involves only one of the three common *s* + stop sequences in German, /sk/. However, the evidence from the superlative necessarily involves consonants in coda position, and only /sk/ can provide this evidence. There are no /ʃp/ sequences in coda position in German (see note 3), and the /ft/ sequence is of no help because the stop as well as the continuant is coronal. Evidence is provided by the sequence /sp/ in the adjective *krisp* [krɪsp] ‘crisp’, with superlative form *krispest* [ˈkrɪspəst] ‘crispest’, but *krisp* is a loan adjective and /sp/ is rare in German, in onset as well as coda position. Thus, the evidence provided by /sk/ is crucial. It is also compelling. If /sk/ were not treated as a complex segment, with the feature [coronal] as well as [dorsal], its behavior in the formation of the superlative would be left unexplained.

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