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G-Spirantization and Lateral Ambivalence in Northern German Dialects

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In the Kiel German regional variety (KG), /g/ undergoes spirantization after vowels and /ʀ/ but not after /l/. KG contrasts with data provided by Wiese (1996) for a dialect that he calls Northern Colloquial Speech (NCS), in which /g/ spirantizes not only after vowels and /ʀ/, but also after /l/. I argue that G-Spirantization in both regional varieties is an example of an assimilation which spreads [+continuant] from a vowel or /ʀ/ in KG (and /l/ in NCS) to a following coda /g/. The difference between the /…lg/ environment in the two dialects can be explained by lateral ambivalence, as described in detail by Mielke (2005).[*]

1. Introduction.

In Kiel German (henceforth KG), a regional variety of Modern Standard German (MSG) spoken in Kiel, word final [g] alternates with a dorsal fricative [x] or [ç] after vowels and /ʀ/, but no alternation occurs after [l]. I argue that an assimilation of [+continuant] from a vowel or /ʀ/, which I call G-SPIRANTIZATION, can account for the change from /g/ to a dorsal fricative. G-spirantization fails to apply after /l/ because that segment is [–continuant]. In order to account for the occurrence of *g*-spirantization after /l/ in Northern Colloquial Speech (henceforth NCS, Wiese 1996), I adopt Mielke's (2005) model of lateral ambivalence. According to Mielke, /l/ can be [+continuant] in some languages and [–continuant] in others. I extend Mielke's claim to dialects of German and argue that KG /l/ is [–continuant] and NCS /l/ is [+continuant].

This paper is structured as follows. Section 2 presents a detailed account of the environment for KG *g*-spirantization and the corres-

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ponding rule.[1] In section 3, I provide an analysis of *g*-spirantization in NCS and argue that Wiese's analysis of *g*-spirantization cannot explain the KG facts. Section 4 contains a discussion of lateral ambivalence. I argue that, as a consequence of my analysis, only one rule of *g*-spirantization is needed to explain both the KG and NCS data. Thus, the two regional varieties of German, KG and NCS, differ in the way they define a phonological feature. This paper concludes in section 5.

2. G-Spirantization in KG.

2.1. KG G-Spirantization After Vowels.

According to *g*-spirantization, KG [g] surfaces as a dorsal fricative in syllable-final position after vowels, as illustrated by the data in 1.[2]

(1) KG /g/ after vowels

	Citation	UR	KG	
a.	Verlag	/fɛʀlaːg/	[fɛɐ̯.laːx]	'publishing company'
	Verlage	/fɛʀlaːg-ə/	[fɛɐ̯.laː.gə]	'publishing company' pl.
b.	Flug	/fluːg/	[fluːx]	'flight'
	Flüge	/fluːg-ə/	[flyː.gə]	'flight' pl.
c.	Herzog	/hɛʀt͡soːg/	[hɛɐ̯.t͡soːx]	'duke'
	Herzöge	/hɛʀt͡soːg-ə/	[hɛɐ̯.t͡søːgə]	'duke' pl.
d.	Weg	/veːg/	[veːç]	'path'
	Wege	/veːg-ə/	[veː.gə]	'path' pl.
e.	Krieg	/kʀiːg/	[kʀiːç]	'war'
	Kriege	/kʀiːg-ə/	[kʀiː.gə]	'war' pl.

[1] The data for this analysis were collected over a two-year period in Kiel from 15 informants. As such, these data cannot be generalized to any broader area of Schleswig-Holstein. To the best of my knowledge, the data from KG have not been discussed in published work.

[2] Some of the examples in 1 exhibit umlaut in the plural forms. Umlaut is a separate process, which is not relevant for my analysis. See Wiese 1996 and the references therein for a more detailed discussion of German umlaut.

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f.	Teig	/tɑ͡ɪg/	[tɑ͡ɪç]	‘dough’
	Teige	/tɑ͡ɪg-ə/	[tɑ͡ɪ.gə]	‘dough’ pl.

The data in 1 show that word final KG /g/ surfaces as [x] after a back vowel and as [ç] after a front vowel. In word-medial position, *g*-spirantization does not apply and /g/ remains [g]. Note that the /g/ in words such as *Teig* /tɑ͡ɪg/ [tɑ͡ɪç] ‘dough’ undergoes changes other than *g*-spirantization, namely, fronting (from a velar to a palatal) and devoicing. These changes can be accomplished via dorsal fricative assimilation and final devoicing, as discussed by Hall (1989, 1992), Wiese (1996), and Robinson (2001) for other dialects of German.

The data in 2 are instructive because they shed light on the directionality of the [g]~[x/ç] alternations in 1. More specifically, the examples in 1 must have an underlying /g/. A rule turning an underlying dorsal fricative /x/ into [g] would incorrectly predict that the dorsal fricative in 2b would be pronounced as [g].[3]

(2) Underlying dorsal fricative in KG

	Citation	UR	KG	
a.	Dach	/dax/	[dax]	‘roof’
b.	Dächer	/dax-ʁ/	[dɛ.çɐ]	‘roof’ pl.

The [g]~[x/ç] alternations in 1 can be accounted for with the rule in 3.[4]

[3] In words with underlying dorsal fricatives, I follow Robinson (2001) and consider /x/ the phoneme. It would be conceivable to adopt the position of phonologists such as Hall (1989) and Wurzel (1980), who argue that /ç/ is underlying. However, neither approach offers a distinct advantage over the other for the current analysis.

[4] It would be conceivable to analyze the KG data in an output-oriented framework, such as Optimality Theory. See, for example, the analyses of *g*-spirantization by Ito & Mester (2001, 2003), who focus on NCS, and Robinson (2001), who examines both MSG and NCS. Since the goal of this paper is to provide an account of /l/ and the natural classes with which /l/ patterns in NCS and KG, an OT account does not seem to provide any distinct advantage over a rule-based approach.

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(3) KG *g*-spirantization

$$\begin{bmatrix} -\text{sonorant} \\ +\text{voice} \\ \text{DOR} \end{bmatrix} \rightarrow \quad \overset{\text{Coda}}{\underset{|}{}} \; [+\text{continuant}]/[+\text{continuant}]___$$

The rule in 3 states that a voiced dorsal obstruent, /g/, situated in the coda, becomes a [+continuant] segment when the /g/ occurs after any [+continuant] sound (that is, a vowel). In other words, there is an assimilation of [+continuant] at work.[5]

2.2. The Realization of /g/ After Liquids.
Syllable-final /g/ can follow a consonant if the consonant is a liquid. The data in 4 show that the liquid before /g/ can be /ʀ/.[6] These examples show instances of coda /ʀ/ surfacing as [ɐ], a process known as *r*-vocalization in the literature. The reader should refer to Kloeke 1982, Hall 1992, and Wiese 1996 for a comprehensive analysis of *r*-vocalization in other dialects of German.

(4) KG /g/ occurs after /ʀ/

	Citation	UR	KG	
a.	Burg	/bʊʀg/	[bɔ̯ɪç]	‘castle’
	Burgen	/bʊʀg-ən/	[bʊɐ̯.gən]	‘castle’ pl.
b.	Zwerg	/t͡svɛʀg/	[t͡svɛɐ̯ç]	‘dwarf’
	Zwerge	/t͡svɛʀg-ə/	[t͡svɛɐ̯.gə]	‘dwarf’ pl.

[5] Some linguists (see Iverson & Salmons 1999, Jessen & Ringen 2002 and the references cited therein) have argued that [spread glottis], rather than [voice], is the distinctive feature for German. If [spread glottis] were distinctive, then the input to *g*-spirantization would be a dorsal stop unmarked for laryngeal features. However, I consider the [spread glottis] vs. [voice] debate peripheral to the current analysis and thus follow Hall (1989, 1992), Wiese (1996), and Robinson (2001), who in their analyses of *g*-spirantization have used [voice] as the distinctive feature in German.

[6] The KG data in 4a exhibit a stem vowel alternation between /ʊʀ/~[ɔ̯ɪ], which is not addressed in this paper.

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c.	Berg	/bɛʀg/	[bɛɐ̯ç]	‘mountain’
	Berge	/bɛʀg-ə/	[bɛɐ̯.gə]	‘mountain’ pl.

When a coda /g/ is situated after /ʀ/, the /g/ undergoes *g*-spirantization and surfaces as [ç]. However, a /g/ in the onset of a syllable does not undergo *g*-spirantization and the surface form is [g].

The data in 5 illustrate that the liquid preceding /g/ can also be /l/.

(5) KG /g/ occurs after /l/

	Citation	UR	KG	
a.	Balg	/balg/	[balk]	‘bellows’
	Bälge	/balg-ə/	[bɛl.gə]	‘bellows’ pl.
b.	Erfolg	/ɛʀfɔlg/	[ɛɐ̯.fɔlk]	‘success’
	Erfolge	/ɛʀfɔlg-ə/	[ɛɐ̯.fɔl.gə]	‘success’ pl.

The singular forms in 5 show /g/ after /l/ in the syllable coda, in which case *g*-spirantization does not apply and /g/ undergoes final devoicing to [k].

The reason /g/ cannot be spirantized after /l/ follows from the definition of [continuant] I adopt here. According to that definition, the feature value [–continuant] captures the natural class of segments which have “a complete blockage of the airstream in the mid-sagittal region of the oral tract” (Wiese 1996:24), a trait shared by stops and /l/ (and nasals), but not by /ʀ/ (see also Halle & Clements 1983:33, Harris 1989:40–41).

3. G-Spirantization in NCS.

In NCS, /g/ is realized as a dorsal fricative in syllable final position. The data in 6 are representative.

(6) Surface forms of /g/ in NCS (from Wiese 1996:206)

	UR	NCS	Pl. Alternate	
a.	/køːnɪg/	[køː.nɪç]	[køː.nɪ.gə]	‘king’
b.	/t͡aɪg/	[t͡aɪç]	[t͡aɪ.gə]	‘dough’
c.	/veːg/	[veːç]	[veː.gə]	‘path’
d.	/taːg/	[taːx]	[taː.gə]	‘day’
e.	/talg/	[talç]	[tal.gə]	‘tallow’
f.	/zaʀg/	[zaʀç]	[zɛɐ̯.gə]	‘coffin’

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The examples in 6 illustrate that any syllable-final /g/ surfaces as [x/ç] regardless of the preceding segment. NCS /g/ can follow front vowels, as in 6a–c, back vowels, as in 6d, or the liquids /l ʀ/, as in 6e,f.

At first blush, it seems that the NCS forms in 6 can be accounted for with a rule of *g*-spirantization, much like the one in 3. Yet, the /g/ in 6e would not be predicted to undergo g-spirantization if /l/ is [–continuant]. Wiese (1996:207) makes note of this potential problem and proposes a solution: *g*-spirantization is not an assimilation, as in 3, but rather a feature-filling rule. According to Wiese's proposal, /g/ is underspecified for the feature [continuant], and *g*-spirantization adds the specification [+continuant] to a syllable-final /g/. For transparency, I present Wiese's rule below.

(7) G-spirantization (Wiese 1996:207)

$$[\text{continuant}] \rightarrow [+\text{continuant}] \,/\, \left[\begin{array}{l} \underline{\quad\quad} \\ -\text{son} \\ +\text{voice} \\ \text{DOR} \end{array}\right] \sigma$$

According to the rule in 7, a voiced dorsal obstruent will become [+continuant] when the sound is situated at the end of a syllable. The output of the rule is a dorsal fricative. Since this rule does not apply to initial or medial /g/, a default rule applies to these sounds and adds the feature [–continuant], resulting in the surface form [g].

Although the rule in 7 can account for the NCS data, it makes incorrect predictions about a subset of the KG data.[7] Specifically, the rule incorrectly predicts that words with the sequence /…lg/, as the singular forms in 5, should exhibit *g*-spirantization. Hence, an alternative is necessary. One possibility would be to modify 7 by adding a condition such as "except after /l/ in certain dialects." Such a condition would be less than preferable on a number of grounds. First, the condition is awkward—it seems to be an ad-hoc patch to a deficient rule. Additionally, the condition does not capture the generalization that certain natural classes trigger *g*-spirantization, while other natural classes do not. To

[7] To be fair, Wiese did not have the KG data when he proposed his analysis of NCS. Nonetheless, an analysis of NCS (Wiese 1996:206) should be able to account for the regional variety spoken in Kiel.

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conclude, it looks as if Wiese's rule can accurately account for the NCS data, but not the KG data.

4. Lateral Ambivalence.

According to Mielke (2005:186), who conducted a survey of 561 languages, laterals are "swing continuants" that in some languages pattern with [+continuant] segments and in other languages pattern with [–continuant] segments. As such, laterals are "expected to come and go more freely than stauncher 'base' continuants and non-continuants" (Mielke 2005:186). An example of lateral ambivalence in action can be seen in Basque (Mielke 2005:179), where nasals and laterals—but not rhotics—function together as the trigger of a rule of place assimilation. Rhotics, on the other hand, do not undergo place assimilation. Accordingly, Basque laterals pattern with the natural class of [–continuant] segments. By contrast, there is evidence that /l/ is [+continuant] in Finnish (Mielke 2005:180). Specifically, Finnish /s l r/ trigger the total assimilation of a following /n/ when the /n/ is suffix-initial. For example, a sequence of /…l-n…/ would surface as […l-l…]. In contrast, /t/ is assimilated to a following suffix-initial /n/. For example, underlying /…t-n…/ would surface as […n-n…]. Thus, the conclusion can be drawn that Finnish /l/ patterns with [+continuant] segments.

I contend that if one appeals to the notion of lateral ambivalence (Mielke 2005), the data from both NCS and KG can be accounted for with a single rule of *g*-spirantization that requires no special condition, underspecification, or extra rules. The difference between KG and NCS lies in the status of /l/ as [±continuant]. It was argued above that KG /l/ is [–continuant] and, therefore, does not satisfy the structural description of *g*-spirantization. The result is that the /g/ in any coda /…lg/ sequence would surface as a stop. In NCS, I propose that /l/ is [+continuant] (contra Wiese 1996). Since a [+continuant] segment acts as a trigger of *g*-spirantization, a sequence of coda /…lg/ occurs phonetically as […lç].

The proposed analysis has two advantages over Wiese's approach. First, having only one rule of *g*-spirantization results in the rule being formulated as an assimilation. An assimilation is more natural and restrictive than the rule put forth by Wiese, who requires two rules (*g*-spirantization and a default rule) that add the correct coefficients to an underspecified [continuant] feature for /g/. An approach such as Wiese's causes one to wonder what sort of restrictions there are on rules if

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features can simply be added or changed at will. Ideally, the formulation of rules should be as constrained as possible.

Second, my analysis can capture the data from two dialects with a single rule. The difference between KG and NCS lies not in the rule, but in the continuancy of /l/, a phenomenon which is independently motivated, and for which there is substantial cross-linguistic support. Finally, my analysis is able to capture the segments that trigger *g*-spirantization as the natural class of [+continuant] segments, something that Wiese's analysis cannot do. This gives my analysis more predictive power—any [+continuant] segment should trigger *g*-spirantization. Following Wiese's analysis, it is unclear what prediction is being made.

To conclude, it is worth mentioning some considerations about the possible causes of lateral ambivalence, as discussed by Mielke (2005). One possibility (which I reject) is that [+continuant] /l/ and [–continuant] /l/ are actually characterized by different phonetic realizations (Mielke 2005:190). Thus, it should be possible to see differences in the articulation of [l] in NCS and KG. Such a variable articulation would result in NCS and KG /l/ patterning differently in the phonology. The problem, as Mielke notes, is that there is no cross-linguistic evidence for a systematic correlation between different articulations of [l] and the phonological patterning of /l/. Hence, it would be necessary to know (in any language) how /l/ patterns in order to determine its status as [±continuant], the result being that the phonological patterning predicts the features, rather than the other way around. Additionally, to my knowledge there is no evidence that NCS /l/ and KG /l/ have different phonetic realizations, which makes a phonetic explanation very unlikely.

A phonological alternative is that current feature theories are deficient, in which case [continuant] should be split up into two features, [continuant classic] and [continuant mid-sagittal] (Mielke 2005:191). For [continuant classic], a plus value would indicate that the sound has unrestricted airflow through part of the oral cavity. Fricatives, laterals, and /R/ have a plus value for [continuant classic], while stops have a minus value. Sounds specified with a plus value for [continuant mid-sagittal] would have unrestricted airflow through the mid-sagittal portion of the oral cavity. Thus, laterals and stops are specified as [–continuant mid-sagittal], while fricatives are specified as [+continuant mid-sagittal]. To summarize, then, laterals would bear the features [+continuant

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classic, –continuant mid-sagittal] and would pattern with both stops and classic continuants sounds.

Note that this phonological approach does not imply a phonetic difference between KG /l/ and NCS /l/. The downside to positing new continuant features is that the predictive ability of the individual features is weakened (Mielke 2005:193). Additionally, it seems that KG /l/ and NCS /l/ would still need to have different specifications for [continuant classic] and [continuant mid-sagittal], or there would have to be two rules of spirantization. Otherwise, it would be difficult to explain the variable patterning of /l/ in the two dialects.

A third alternative proposed by Mielke (2005:193) is that a language (or a dialect, in the case of NCS and KG) has only one feature, either [continuant classic] or [continuant mid-sagittal]. A learner of a particular dialect aquires that dialect's [continuant] feature through exposure to the target language. In languages with [continuant classic], /l/ would be expected to pattern with fricatives and /ʀ/, the sounds traditionally considered [+continuant]. In contrast, /l/ should pattern with [–continuant] stops in languages with [continuant mid-sagittal].

According to this view, it seems that a language can only have one or the other version of the [continuant] feature, but not both. However, Mielke (2005:187-188) documents cases in Hungarian and Catalan where, within the language, /l/ patterns with [+continuant] and [–continuant] segments. In Hungarian, the patterning of /l/ seems to be speaker dependent in that for some speakers, /l/ can trigger palatalization (patterning with /t d n/), but for other speakers, /l/ does not trigger palatalization (patterning instead with /s z r/). In Catalan, /b d g/ spirantize when they follow [+continuant] segments (vowels, glides, liquids, and fricatives), whereas preceding stops and nasals do not trigger spirantization. Catalan laterals pattern with the [+continuant] segments by triggering the spirantization of /b g/. At the same time, laterals fail to trigger spirantization in /d/, as do the [–continuant] stops and nasals. Given these facts from Hungarian and Catalan, it seems that a language could not be restricted to only one of the two features [continuant classic] or [continuant mid-sagittal] unless the feature is allowed to have a variable coefficient.

Finally, I leave open the question of how to best explain cross-linguistic lateral ambivalence within distinctive feature theory. This is especially problematic in languages such as Hungarian and Catalan,

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where /l/ patterns with both [+continuant] and [-continuant] segments within the same language. Lateral ambivalence as seen in the KG and NCS data, however, can be explained by stating that KG /l/ is specified as [–continuant] and NCS /l/ is [+continuant], while at the same time making no claims about the phonetic realization of /l/ in either dialect. To summarize, [continuant] is distinctive in KG and NCS, as it serves to distinguish stops from fricatives, but /l/ has different coefficients for [continuant] in the two regional varieties.

5. Conclusion.

In this paper, I have provided an account of *g*-spirantization in KG and NCS. I provided data showing that *g*-spirantization looks very similar in both dialects, but that there is one crucial difference: in KG there is no spirantization after /l/, while in NCS there is. I showed that the KG data can be easily explained if one assumes an assimilation of [+continuant] to a following /g/. On the surface, such an analysis does not work for NCS because /l/ is considered [–continuant] and should not trigger *g*-spirantization, an approach adopted by Wiese (1996). I argue that an assimilation is indeed at work and that the important difference between KG and NCS lies in the specification of /l/ as [±continuant]. In KG, /l/ is [–continuant] and in NCS, /l/ is [+continuant]. Mielke's (2005) cross-linguistic research on lateral ambivalence supports such an analysis.

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