OPACITY AND GERMAN GLIDE FORMATION[*]

T. A. Hall
Indiana University

German Glide Formation converts /i/ to [j] before vowels, e.g., *Spanien* /ʃpaːniən/ → [ʃpaːnjən] 'Spain', but the rule is consistently blocked in neologisms containing the suffix *–esk*, e.g., *hippiesk* [hɪpiɛsk]/*[hɪpjɛsk]. It is argued below that these opaque examples follow from a requirement that the stem in a derived word must be identical to the unaffixed base. The base in such examples will be shown to be a free-standing morpheme as opposed to a bound root. The analysis proposed will be shown to be supported in additional examples in which Glide Formation is blocked to the [i] preceding the suffix *–aner*, but only if the suffix follows a free-standing morpheme, e.g., *Schumianer* [ʃuːmiaːnɐ] / *[ʃuːmjaːnɐ] 'adherent of Schumi (Michael Schumacher)'.

1. Introduction

As in many other languages, German has an (optional) rule of Glide Formation which converts a short, unstressed /i/ into the palatal glide [j] before a vowel. The rule applies regularly within morphemes and across vowel-initial suffixes (see 1a). Significantly, recent coinages with the suffix *–esk* like the one in (1b) illustrate that Glide Formation is blocked before this suffix, thereby rendering Glide Formation opaque on the surface.

(1) German Glide Formation and its blockage:

a.	Spani-en	[ˈʃpaːnjən] ~ [ˈʃpaːniən]	'Spain'
	Spani-er	[ˈʃpaːnjɐ] ~ [ˈʃpaːniɐ]	'Spaniard'
b.	hippi-esk	[hɪpiɛsk]	'hippiesque'

Although a number of phonological treatments have focussed on glides in examples like the ones in (1a) (see section 2 below), no linguist to my knowledge has recognized the existence of words like the one in (1b) and their significance for German Glide Formation.

In this article I take a closer look at examples like *hippiesk* in (1b), in which Glide Formation underapplies. I argue that the blockage of Glide Formation in these data is not surprising given the requirement that the stem in a derived word must be identical to the unaffixed base. For example, if Glide Formation were to apply to /hɪpi-ɛsk/ (i.e. *[hɪpjɛsk]), then the base '[hɪpj]' would not be identical to the same morpheme in isolation (i.e. [hɪpi]).

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A slightly longer version of the present paper is Hall (2008).

IUWPL6: Phonological Opacity Effects in Optimality Theory (2008), ed. by
Ashley W. Farris-Trimble and Daniel A. Dinnsen, pp. 1-15. Bloomington, IN: IULC Publications.

Consequently, I claim that German has a high-ranking Output-Output constraint (in the sense of Optimality Theory (OT)) requiring base-identity in suffixed words which must outrank the markedness constraint which motivates Glide Formation (i.e. ONSET). This proposed analysis for German is therefore similar to examples in other languages in which a phonological process underapplies in the derivational morphology in order to make the output similar to morphologically-related forms (e.g., Benua 1997; Downing et al. 2005; Kenstowicz 1996). For German the base-identity requirement will be shown to be irrelevant for the examples in (1a) because the /i/ in these examples is situated at the right edge of a bound root, which by definition cannot function as the base. By contrast, the base in words like (1b) is a free-standing stem and therefore can function as the base.

The remainder of this article is organized in the following way: Section 2 introduces the reader to the relevant facts of German Glide Formation. In that section I show that the process applies both morpheme-internally and across vowel-initial suffixes. In the latter context, Glide Formation only applies if the /i/ is the final segment in a bound root. Section 3 considers a larger set of neologisms like the one in (1b) in which Glide Formation underapplies before *–esk*. It will be demonstrated that /i/-final bases with *–esk* are free-standing stems as opposed to bound roots. The base-identity analysis of (1b) will be presented in section 4. Section 5 presents additional data illustrating the blockage of GF before another vowel-initial suffix (i.e. *–aner*) and shows how this is the expected outcome given the analysis developed for *–esk*. In section 6 I conclude.

2. German Glide Formation

As in many languages, German [j] is considered to be a realization of /i/; hence, German is a language with a rule of Glide Formation (GF), whereby (unstressed) /i/ converts to [j] in prevocalic position (see below for examples). The process is stated linearly in (2). That the input vowel is unstressed is a consequence of the fact that it is short, since short tense vowels in German are unstressed.

(2) German Glide Formation (GF):

$$/\text{i}/ \rightarrow [\text{j}] \; / \; \_\_ \; \text{V}$$

See Hall (1992, 2006, 2007), Hamann (2003), Kloeke (1982), and Wiese (1996) for analyses of German GF in various theoretical frameworks.

According to the authors cited above, GF can be motivated as an optional process applying in casual speech. Consider first the data set in (3), which illustrates that a prevocalic /i/ can surface as [j] in monomorphemic words (in a) and proper names (in b):[1]

[1] The literature on German GF recognizes a distinction between the optional [j], as in (3), and a [j] which is obligatory. An example of the latter [j] is found in the word *Union* ‘union’, which can only be pronounced [unjoːn] (*[unioːn]). As noted by Hall (2007:4) whether or not a word contains an obligatory or an optional glide is both lexically determined and speaker-dependent. Since the distinction between optional and obligatory

(3) GF in monomorphemes and proper names:

a.	Piano	[ˈpjaːno] ~ [piˈaːno]	‘piano’
	Tiara	[ˈtjaːʀa] ~ [tiˈaːʀa]	‘tiara’
	Shiatsu	[ˈʃjatsu] ~ [ʃiˈa.tsu]	‘shiatsu’
b.	Tokio	[ˈtoːkjo] ~ [ˈtoːkio]	‘Tokyo’
	Claudia	[ˈklaudja] ~ [ˈklaudia]	‘Claudia’
	Ariel	[ˈaːɐjɛl] ~ [ˈaːʀiɛl]	‘Ariel’

The [ɐ] in the final example in (3b) illustrates the process of r-Vocalization, whereby coda /ʀ/ vocalizes to [ɐ] (e.g., *Tier* [tiːɐ] ‘animal’ vs. *Tier-e* [tiːʀə] ‘animals’). See Mangold (2005) for Standard German data and Hall (1993) and Wiese (1996) for theoretical discussion.[2]

The next set of examples illustrates that GF applies optionally before a vowel-initial suffix. The morpheme boundaries assumed in (4) are indicated with a hyphen in the orthographic representation. See Wiese (1996), who assumes on the basis of similar examples that the /i/ belongs to the root and not to the suffix. I return to this point below. The words in (4) are nonnative, but this will be shown below not to be a factor for GF.

(4) GF before vowel-initial suffixes:

a.	Spani-en	[ˈʃpaːnjən] ~ [ˈʃpaːniən]	‘Spain’
	Spani-er	[ˈʃpaːnjɐ] ~ [ˈʃpaːniɐ]	‘Spaniard’
b.	Gremi-um	[ˈgʀeːmjʊm] ~ [ˈgʀeːmiʊm]	‘panel’
	Gremi-en	[ˈgʀeːmjən] ~ [ˈgʀeːmiən]	‘panels’
c.	Labi-um	[ˈlaːbjʊm] ~ [ˈlaːbiʊm]	‘labium’
	labi-al	[laˈbjaːl] ~ [labiˈaːl]	‘labial’
d.	Famili-e	[faˈmiːljə] ~ [faˈmiːliə]	‘family’
	famili-är	[famiːˈljɛːɐ] ~ [famiːliˈɛːɐ]	‘familial’

glides is peripheral to the present article, the way in which this distinction is captured theoretically will be ignored.

A note is in order concerning the dialect described in the present article: The data in section 2 have been taken from the literature on GF cited above. They also correspond to the pronunciation for Standard German (Mangold 1990), although that source does not encode the optionality between [i] and [j]. The pronunciation of the neologisms discussed in sections 3 and 5 has been confirmed with three native speakers whose pronunciation is also consistent with the data in section 2.

[2] Some speakers appear to pronounce the [i] plus vowel sequence in examples like [piaːno] in (3a) with an intervening palatal glide (e.g., [pijaːno]). The pronunciation with an epenthetic [j] is not relevant for the phonological analysis I posit below and therefore I transcribe such words without it.

There are three points concerning the phonological environment in which the output of GF occurs in (3-4). First, stress is not relevant for GF because the vowel to the right or to the left of [j] can bear prominence. For example, the words in (3a) illustrate that GF applies before a stressed tautomorphemic vowel; by contrast, the examples in (3b) show that the rule operates before an unstressed vowel. In (4a-b) we can observe that GF applies before an unstressed suffixal vowel, and that the rule also applies in the second example in (4c-d) (i.e. before a stressed suffixal vowel). Second, there are very few co-occurrence restrictions between [j] and the following vowel (see Hall 2007 for discussion). An examination of the phonetic representations in (3-4) reveals that [j] can be followed by all sorts of vowels, e.g., [ʊ ɛ ə o aː a].[3] Third, there are very few restrictions concerning the type of consonant which can precede the [j]; hence, we can see in (3-4) that the consonant to the left of [j] can be an obstruent, a nasal or a liquid.

A re-examination of the examples in (4a-d) reveals that the /i/ which undergoes GF is situated at the end of a bound root (e.g., *Spani-* and *Gremi-*). One might alternatively argue that the /i/ undergoing GF in (4) is not at the edge of the root, but instead that it is a part of the suffix (e.g., *lab-ial*). Given this alternative morphological parsing, GF could then be interpreted as a process which only applies when /i/ and the following vowel are tautomorphemic. This treatment might succeed for the examples provided in (4), but the reason the alternative parsing and re-interpretation of GF will not consistently work follows from examples like the ones in (5a-f). In this data set we see pairs of words with the same bound root which ends in /i/. In every case, the bound root is followed by vowel-initial suffixes. GF as formalized in (2) applies as predicted in the second word in each pair. The corresponding first word surfaces with [i] and not [j] because GF is systematically blocked before /iː/ (see Hall 2006).[4]

(5) GF before other vowel-initial nonnative suffixes:

a.	lini-ieren	[liniˈiːʀən]	'rule'
	Lini-e	[ˈliːnjə]	'line'
b.	Alli-ierten	[aliˈiːɐtən]	'allies'
	Alli-anz	[aˈljants]	'alliance'
c.	Initi-ierung	[initsiˈiːʀʊŋ]	'initiation'
	initi-al	[iniˈtsjaːl]	'initial'
d.	vari-ieren	[vaʀiˈiːʀən]	'vary'
	Vari-etät	[vaɐjeˈtɛːt]	'variety'

[3] One restriction is that that vowel following [j] cannot be [iː]; see below for discussion.

[4] In a narrow phonetic transcription one would include the glottal stop between the two [i]s in the first word in each pair, e.g., [liniʔˈiːʀən]. (German [ʔ] is considered to be an epenthetic segment; see Alber 2001 for a recent treatment). I ignore glottal stops because they are not relevant for the analysis I propose below.

e.	assozi-ieren	[asotsiˈiːʀən]	‘associate’
	assozi-ativ	[asotsjaˈtiːf]	‘associative’
f.	plagi-ieren	[plagiˈiːʀən]	‘plagiarize’
	Plagi-at	[plaˈgjaːt]	‘plagiarism’

The second example in each pair in (5a-f) illustrates two points. First, the /i/ which undergoes GF is the final segment in a bound root, and second GF cannot be reanalyzed so that it only applies before a tautomorphemic vowel.[5]

That nonnative suffixes of German like the ones in (4-5) attach to bound roots has been observed by previous linguists (e.g., Wiese 1996). In (6) I have provided a more extensive list of vowel-initial nonnative suffixes (based on Wiese 1996:120). The examples provided confirm that the /i/ which precedes these suffixes does not stand at the right edge of a free-standing stem and that it undergoes GF as expected.[6]

(6) GF before vowel-initial nonnative suffixes:

Suffix	*-i final base*		
-a	Medi-a	[ˈmeːdja]	‘media’
-abel	vari-abel	[vaɐˈjaːbəl]	‘variable’
$-ant_N$	Provi-ant	[pʀoˈvjant]	‘supplies’
$-ant_A$	vari-ant	[vaɐˈjant]	‘variant’
-anz	Vari-anz	[vaɐˈjants]	‘variance’
-at	Stipendi-at	[ʃtipɛnˈdjaːt]	‘scholarship holder’
-ell	materi-ell	[mateɐˈjɛl]	‘material’
-ent	effizi-ent	[ɛfiˈtsjɛnt]	‘efficient’
-enz	Effizi-enz	[ɛfiˈtsjɛnts]	‘efficiency’
-o	Studi-o	[ˈʃtudjo]	‘studio’
-on	Stadi-on	[ˈʃtaːdjɔn]	‘stadium’
-os	grandi-os	[gʀanˈdjoːs]	‘terrific’
-us	Radi-us	[ˈʀaːdjʊs]	‘radius’

The claim that nonnative vowel-initial suffixes as in (4-6) do not attach to free-standing stems ending in /i/ is confirmed when one consults various reference works (e.g., Fleischer and Barz 1995; Muthmann 1988). Significantly, this finding is also supported when a larger database is considered, namely the online German-English dictionary *Projekt Deutscher Wortschatz* (henceforth PDW) from the Institut für Informatik at the University of Leipzig (www.wortschatz.uni-leipzig.de). The website claims to have approximately 150,000 Ger-

[5] In (5) and below I only provide phonetic representations for the pronunciation with [j] and omit the optional pronunciation with [i].
[6] My claim that nonnative suffixes attach to bound roots will be modified in sections 3 and 5 in order to account for recent neologisms.

man words and can be used as a backwards dictionary. According to that source the hypothesis is confirmed.

In contrast to vowel-initial nonnative suffixes, the native suffixes in (7) can attach to a free-standing stem which ends in a vowel. However, according to the sources listed above none of the native suffixes in (7) can attach to a base ending in a short (i.e. unstressed) /i/. This point is illustrated with the suffixed example in (7a-b):

(7) Vowel-initial native suffixes:

Suffix	*vowel-final base*		
a. -er	Erzieh-er	[eːɐˈtsiːɐ]	‘educator’
	erzieh	[eːɐˈtsiː]	‘educate (imperative sg.)’
b. -ung	Zieh-ung	[ˈtsiːʊŋ]	‘drawing’
	zieh	[tsiː]	‘draw (imperative sg.)’
c. -ig	bö-ig	[ˈbøːɪç]	‘gusty’
	Bö(e)	[ˈbøː]	‘gust’
d. -isch	algebra-isch	[algeˈbʀaːɪʃ]	‘algebraic’
	Algebra	[ˈalgebʀa]	‘algebra’

3. The suffix –*esk*

According to the handbooks (e.g., Drosdowski 1995:531; Fleischer and Barz 1995:269), and backwards dictionaries (e.g., Muthmann 1988), German has but a handful of words with the nonnative suffix –*esk* (cf. French –*esque*; ‘in the manner or style of’), three of which are listed in (8). The etymological information in the final column has been drawn from Drosdowski (1989) and Pfeifer (1995). The suffix –*esk* in (8) and in all other examples listed below is stressed.

(8) Words containing –*esk*:

Example		*Date first attested*
grot-esk	‘grotesque’	16th century
pittor-esk	‘picturesque’	18th century
ballad-esk	‘balladesk’	19th century

In contrast to the grammars listed above, other sources list a significant number of neologisms containing –*esk*. I concentrate below on PDW and Hoppe (2007).[7]

The PDW database lists a number of new coinages with –*esk*, four of which are listed in (9).

[7] A recent treatment of –*esk* can also be found in Mills (2006).

(9) Neologisms with *–esk* (according to PDW):

	Date first attested in PDW	
clintonesk	1994	(Base: Clinton)
hollywoodesk	1996	(Base: Hollywood)
karikaturesk	2002	(Base: Karikatur)
schwarzeneggeresk	1994	(Base: Schwarzenegger)

The bulk of the neologisms in PDW and in Hoppe (2007) are similar to the ones in (9) in the sense that *–esk* attaches to a free-standing stem. Both sources recognize that there are also new formations in which the final vowel of the base deletes (e.g., Hoppe 2007 has *Goethesk* (first attested in 1999), in which the final schwa of the base *Goethe* (proper name) has been deleted). I posit a formal treatment of vowel deletion in such examples; see note 8 below for some observations.

The examples in (10), like the ones in (9), are neologisms with *–esk*. The date first attested in the final column is from PDW with the exception of the final two items, which have been drawn from Hoppe's (2007) corpus. As in (9), the suffix *–esk* in (10) attaches to a free-standing stem (see the first column). The two data sets differ in that the neologisms (10) have a base which ends in /i/. The important point is that GF is blocked in these examples. This is a very robust generalization which is confirmed by the judgments of three native speakers. According to all three the words in (10) are unfamiliar, but introspection reveals that GF is inconceivable (e.g., *[hɪpjɛsk]).[8]

(10) GF blocked before *–esk*:

Base	*Derived word*		*Date first attested*
Hippie	hippiesk	[hɪpiɛsk]	1998
Zombie	zombiesk	[tsɔmbiɛsk]	1993
Schumi	schumiesk	[ʃumiɛsk]	1995
Fellini	felliniesk	[fɛliniɛsk]	1995
Kinski	kinskiesk	[kɪnskiɛsk]	1997
Gorki	gorkiesk	[gɔɐkiɛsk]	1988
Woody	woodyesk	[vʊdiɛsk]	1993
Dandy	dandyesk	[dɛndiɛsk]	1999
Debussy	debussyesk	[debysiɛsk]	1996
Kennedy	kennedyesk	[kɛnɛdiɛsk]	2000
Yuppie	yuppieesk	[jʊpiɛsk]	1990
Dali	daliesk	[daliɛsk]	1980

[8] Hoppe (2007) lists a few examples of recent neologisms in which the final [i] of the stem is deleted before *–esk*, e.g., *botticellesk* (1982; base: *Botticelli*), *paganinesk* (1985; base; *Paganini*). I speculate that the [i] in these examples does not surface before *–esk* because the base in combination with the suffix would be too long (i.e. five syllables). Problematic for this interpretation is the deletion of [i] in a word like *rossinesk* (1964; base: *Rossini*) because this example has a base consisting of three syllables which contrasts with the trisyllabic base in the final two examples in (10). I therefore assume that some lexical marking is required to account for the deletion of the final vowel of the base in certain examples.

Significantly, neither PDW nor Hoppe (2007) lists words of the form /....i-ɛsk/, in which the [i] is at the right edge of a bound root. I return to this point in section 5.

As I noted above, none of the works cited above dealing with German GF has discussed examples with *–esk* like the ones in (10). The question I pursue below is why GF is blocked from applying to the stem-final [i] in these words. Note that the blockage of GF cannot be attributed to phonological factors. For example, the fact that *–esk* is stressed cannot be the reason for the underapplication of GF because GF applies before other stressed suffixes, e.g., *–abel*, *–ant*, *–ant*, *–anz*, *–at*, *–os*, *–ell*, *–ent* and *–enz* (see 6 for examples). Note too that the vowel in *–ell*, *–ent* and *–enz* is identical to the vowel in *–esk*.

One could attempt to argue that GF is blocked in (10) because these words are simply too new and that GF only applies in familiar words. While I do not deny that frequency can affect the application of phonological processes in general, frequency cannot be the correct explanation for the underapplication of GF in (10). First, restricting GF to frequent words is not tenable because GF can apply to rare words as well. Two examples from the PDW database are *extrakraniell* ‘extracranial’ and *Lobelie* ‘lobelia’, which can be pronounced with [j], i.e. [ɛkstʀakʀanjɛl] and [lobeːljə]. Second, an explanation based on frequency cannot explain all of the additional examples discussed below in section 5.[9]

4. Analysis

In this section I posit a basic OT analysis for GF (in 4.1) followed by a treatment for the underapplication of GF before *–esk* (in 4.2). The latter context will be argued to require a constraint ensuring the identity of the stem in a morphologically derived word with the base.

4.1 The canonical pattern

Earlier work on German (e.g., Hall 1992:173ff.; Hamann 2003; Kloeke 1982:38) assumes underlying representations for words like the ones in (3-6) with the short vowel /i/. Two of these words are repeated in (11) below for convenience. I follow the uncontroversial view that [i] and [j] are featurally identical and that these two segments differ only in terms of syllable structure.

(11) Underlying and surface representations for [j]:

Spanien	/ʃpaːniən/	[ʃpaːnjən]	‘Spain’
Gremium	/gʀeːmiʊm/	[gʀeːmjʊm]	‘panel’

My assumption is that all vowels in underlying representations like the ones in (11) are moraic; hence, short vowels like /i/ contain a single mora and long vowels like /iː/ contain two.

[9] One could conceivably argue that GF fails in (10) because the [i] in these examples bears secondary stress. This approach suffers from the lack of independent evidence that the [i] in a word like *hippiesk* bears more stress than the [i] in an example like *labial* from (4). See Wiese (1996), who denies altogether that vowels of German can be secondarily stressed.

Following Hall (2006), I hold that the phonetic forms in (11) with [j] are a consequence of the interaction between ONSET (see 12a) and MAX-μ (see 12b). The language-specific ranking which ensures that GF is optimal is presented in (12c):

(12) Constraints and rankings for the canonical pattern:

a. ONSET: Syllables are not vowel initial

b. MAX-μ: A mora in the input corresponds to a mora in the output.

c. ONSET » MAX-μ

The constraint MAX-μ militates against the change from a vowel (i.e. /i/) to a glide (i.e. [j]). Thus, if the moraic segment /i/ becomes the (nonmoraic) [j] then what is involved is the deletion of an underlying mora in order to satisfy ONSET.

The tableau in (13) shows how the optimal form with a glide is selected for the word *Spanien,* which is representative of the items in (3).

(13)

/ʃpaːni-ən/ 'Spain'	ONSET	MAX-μ
a. [ʃpaː.ni.ən]	*!	
b. ☞ [ʃpaː.njən]		*

In this tableau we can observe that the non-optimal candidate (13a) with hiatus loses out to the winner in (13b) because it violates the highest ranked constraint ONSET.[10]

In my treatment in (13) and below I am assuming the validity of Richness of the Base, even though the analysis I posit below does not crucially require it. Thus, in (13) and below I have inputs with /i/, but an input with /j/ (e.g., /ʃpaːnjən/) would also be possible because it would yield the same output.

4.2 Base-identity

I argue that the underapplication of GF before *–esk* in (10) can most insightfully be understood by adopting the Output-Output constraint referred to in the literature as BASE-IDENTITY in (14). This version of the constraint has been drawn from Raffelsiefen (1996) in her treatment of English derivational morphology.

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[10] In a more complete analysis one would need to include candidates which violate DEP-IO (no epenthesis) and MAX-IO (no deletion), e.g., [ʃpaː.ni.ʔən], [ʃpaː.nən]. Since neither of these two forms are correct, DEP-IO and MAX-IO must outrank MAX-μ. A candidate with an epenthetic [j] (e.g., [ʃpaː.ni.jən]; recall note 3) is ruled out because of an independent constraint penalizing ambisyllabic structures. (I am assuming that the [ij] sequence in such examples is represented phonologically as a moraic [i] which is simultaneously linked to the following onset).

I also ignore the way in which the optionality of GF is captured formally in the analysis in (13) because it is peripheral to the issue I discuss below.

(14) BASE-IDENT: The stem of the derived word must be identical to the base.

Other versions of the same constraint can be found in the literature, e.g., the one employed in Kager's (1999:261) analysis of English truncation. As we will see below, BASE-IDENT makes an analysis possible which accounts for the underapplication of GF by considering the surface representation as opposed to earlier levels in a derivation.

The constraint in (14) makes crucial reference to a 'base'. Following Kager (1999:281-282) and other authors, I assume that the base has the following properties: (a) it is a surface form, (b) it is a free morpheme (i.e. a word), as opposed to a bound morpheme, (c) it is compositionally related to its derived counterpart (i.e. the affixed form), meaning that the base contains a proper subset of the grammatical (i.e. morphological) features of the derived form. In the case of the words in (10) containing *–esk*, the base is simply the unsuffixed stem. For example, the word *hippiesk* [hɪpiɛsk] has the base *Hippie* [hɪpi]. Note that the base in this example satisfies the three criteria for basehood in (a)-(c) above.

In (15) we can observe the evaluation for *hippiesk*. In derived words like this one reference needs to be made to the base; the input is not crucial. Candidate (15a) is the one that one would expect to be correct if GF were to apply, but candidate (15b) is selected instead:

(15)

/hɪpi-ɛsk/ Base: [hɪpi]	BASE-IDENT	ONSET	MAX-μ
a. [hɪpjɛsk]	*!		*
b. ☞ [hɪpiɛsk]		*	

BASE-IDENT is the crucial constraint in this tableau, since it eliminates from consideration the GF candidate in (15a). The reason (15a) is not optimal is that it violates BASE-IDENT because the base [hɪpi] is not identical to the four segments [hɪpj] in [hɪpjɛsk].

Given the definition of 'base' above, GF will never be blocked from applying in the suffixed examples in (4-6) because none of these words has a base, as defined above. Consider the evaluation for *Spanien* in (9), which is representative:

(16)

/ʃpaːni-ən/ 'Spain' Base : -------	BASE-IDENT	ONSET	MAX-μ
a. [ʃpaː.ni.ən]		*!	
b. ☞ [ʃpaː.njən]			*

The crucial point in this example is that *–en* attaches to a bound-root, which by definition cannot serve as the base. For this reason, BASE-IDENT cannot penalize (16b), so that this candidate is selected over (16a).[11]

[11] An noted in section 2, one could alternatively argue that the /i/ in this and similar words belongs to the suffix, i.e. /ʃpaːn-iən/. Note that the analysis presented in (16) will correctly select (16a) regardless of whether or not the input is /ʃpaːni-ən/ or /ʃpaːn-iən/.

A natural question to ask is why base-identity effects only manifest themselves in the examples in (10) (e.g., *hippiesk*) but not in the ones in (9) (e.g., *bondesk*). Put differently, given the base *Bond* [bɔnt] for the latter word, why is it that the correct pronunciation for the derived word is [bɔndɛsk] (in violation of BASE-IDENT) as opposed to [bɔntɛsk]?

It is important to stress that BASE-IDENT is a constraint that can be freely ranked with respect to the other constraints. In (15) it is ranked ahead of the constraint that is necessary to capture GF (i.e. ONSET), but there is no a priori reason to assume that BASE-IDENT will always dominate the constraints necessary to capture the canonical phonological pattern. In fact, the phonological processes described in (10) (e.g., Coda Devoicing, r-Vocalization) do not illustrate base-identity effects at all; hence the constraint BASE-IDENT is ranked lower than the markedness and faithfulness constraints which trigger these processes. This point is illustrated in the example *bondesk*, in which *VDOB-CODA penalizes obstruents in a coda and IDENT-VC the change from an input /d/ to an output [t]:

(17)

/bɔnd-ɛsk/ Base : [bɔnt]	*VDOB-CODA	IDENT-VC	BASE-IDENT	ONSET
a. [bɔn.tɛsk]		*!		
b. ☞ [bɔn.dɛsk]			*	
c. [bɔnt.ɛsk]		*!		*
d. [bɔnd.ɛsk]	*!		*	*

Assuming that Coda Devoicing is captured with the ranking *VDOB-CODA » IDENT-VC, the correct output in (17b) can be obtained by ranking BASE-IDENT lower than *VDOB-CODA and IDENT-VC.

There is an alternative to the analysis presented in (17). One could argue that BASE-IDENT as stated in (14) is simply too general and that the correct constraint makes reference to moras (i.e. 'A mora in the base must have a corresponding mora in a derived word'). Given this specific BASE-IDENT constraint (i.e. BASE-IDENT-μ), there would be a very different explanation for why there are no base-identity effects in an example like *bondesk* in (17): Since BASE-IDENT-μ by definitions only refers to moras, it need not be crucially ranked with the constraints VDOB-CODA and IDENT-VC in (17). I leave these two options described above open for further research.

5. Discussion

The analysis presented in the preceding section makes the two predictions in (18a-b) which refer to input /…iV…/ sequences in which the /i/ and the vowel are separated by a morpheme boundary:

(18) Two predictions:

a. In: $/....i/_{Root}$ $/V.../_{Suffix}$, GF should apply to /i/.

b. In: $/....i/_{Stem}$ $/V.../_{Suffix}$, GF should not apply to /i/.

Prediction (18a) says that if an [i] is situated at the right edge of a bound root (henceforth 'root') and if a vowel-initial suffix follows, then GF is predicted to convert this [i] into [j]. By contrast, prediction (18b) says that if an [i] is at the right edge of a free-standing stem (henceforth 'stem') and if a vowel-initial suffix follows, then GF should not apply to this [i]. Both predictions are borne out by the data discussed in the preceding section.

The two predictions in (18) can be tested by considering additional examples of *–esk* formations not discussed by Hoppe (2007) (nor any other published source to my knowledge). I mentioned earlier after (10) that no source lists words of the form /…i-ɛsk/, in which the /i/ ends in a bound root. In fact, as indicated in (19a-d), it is possible to create neologisms of this structure. The first example in each pair is a word of the form /…i-ɛsk/, in which the /i/ is at the right edge of a bound root and the second word contains the same root with a different vowel-initial suffix. The important point is that all three informants accept these neologisms and concur that GF is possible.

(19) GF applies before *–esk*:

a.	kaliforni-esk	[kalifɔɐnjɛsk]	
	Kaliforni-en	[kalifɔɐnjən]	'California'
b.	albani-esk	[albaːnjɛsk]	
	Albani-en	[albaːnjən]	'Albania'
c.	australi-esk	[austʀaːljɛsk]	
	Australi-en	[austʀaːljən]	'Australia'
d.	spani-esk	[ʃpaːnjɛsk]	
	Spani-en	[ʃpaːnjən]	'Spain'

The data in (19), together with the examples in (10), therefore support the two predictions in (18): The application of GF in the *–esk* formations in (19) supports (18a) and the blockage of the same process in (10) supports (18b).[12]

The two predictions in (18) derive additional support when we consider the behavior of another vowel-initial nonnative suffix, namely *–aner* 'adherent of' or 'inhabitant of'. Consider the examples in the second column of (20), which consist of the base in the first column (typically a proper name) followed by *–aner*. An examination of the final column reveals that

[12] I am aware of one example which is apparently problematic for the prediction (18a), namely the word *mafi-esk* (with the corresponding base *Mafia* 'mafia'). (I would like to thank Bernd Wiese for drawing this example to my attention). All informants agree that *mafi-esk* is pronounced [mafiɛsk] and not [mafjɛsk]. Since '[mafi]' is a bound root, one would expect GF to apply (in accordance with prediction 18a), just like the *–esk* formations in (19). One possibility is that *mafi-esk* is simply an idiosyncratic exception. Another option is that [mafiɛsk] is the correct pronunciation because the *i* in the base *Mafia* is pronounced exceptionally as [i] and not as [j]. Thus, if [mafia] (and not [mafja]) is correct, then one would expect the morphologically-related word to be pronounced [mafiɛsk]. I leave these questions open for further study.

the phonetic representation is opaque because the base ends in [i] and yet GF fails to affect this segment. The final three examples in (20) have been drawn from PDW (first attested in 2006, 2005 and 2005 respectively). The first four examples can be easily found on the internet.

(20) GF blocked before *–aner*:

Base	*Derived word*	
Schumi	Schumianer	[ʃuːmiˈaːnɐ]
Klinsi	Klinsianer	[klɪnsiˈaːnɐ]
Woody	Woodyaner	[vʊdiˈaːnɐ]
Gaudi	Gaudianer	[gadiˈaːnɐ]
Verdi	Verdianer	[vɛɐdiˈaːnɐ]
Audi	Audianer	[audiˈaːnɐ]
Fidschi	Fidschianer	[fɪdʒiˈaːnɐ]

The underapplication of GF in (20) confirms prediction (18b); hence, all of the examples in (20) have an explanation like the one given in (15) above for words like *hippiesk*.

Additional examples with *–aner* show that GF can affect a preceding [i] if that [i] ends in a root. Consider the pairs of words in (21a-b). The first word in each pair ends in *–en* and the second one ends in *–aner*. Significantly, GF affects the [i] before both suffixes.

(21) GF before *–en* and *–aner*:

a.	Brasili-en	[bʀaˈziːljən]	'Brasil'
	Brasili-aner	[bʀaziˈljaːnɐ]	'Brasilian'
b.	Bolivi-en	[boˈliːvjən]	'Bolivia'
	Bolivi-aner	[bolivjˈaːnɐ]	'Bolivian'

The examples in (21) support prediction (18a): GF applies because the [i] is not situated at the right edge of a stem. The examples in (20) and (21) together are therefore important because they show both the regular application of GF ([bʀaziˈljaːnɐ]) and its blockage ([ʃuːmiˈaːnɐ]) before the same suffix.[13]

6. Conclusion

In this article I examined neologisms like *hippiesk*, which contain [i] before the suffix *–esk*. It was demonstrated that the regular phonological process of Glide Formation underapplies in

[13] According to an alternative morphological parsing for the examples in (21), the suffixes begin with /i/, e.g., /bʀaziːl-iən/ and /bʀazil-iaːnɐ/. Note that neither (18a) nor (18b) would be relevant in this case because both predictions refer to input sequences in which a morpheme boundary intervenes between the /i/ and the following vowel.

such examples. The blockage of Glide Formation in words like *hippiesk* was argued to follow because the stem in the suffixed form (i.e. '[hɪpj]' in [hɪpjɛsk]) would not be identical to the unsuffixed base (i.e. *Hippie* [hɪpi]). My analysis requires a high-ranking constraint requiring base-identity in suffixed words which must outrank the markedness constraint ONSET. The proposed analysis for German is therefore similar to examples in other languages in which a phonological process underapplies in the derivational morphology in order to make the output similar to morphologically-related forms. The analysis was shown to be supported with two additional data sets. First, Glide Formation applies as predicted in *–esk* formations in which the /i/ is at the right edge of a bound root (e.g., *kaliforni-esk* with [j]). Second, Glide Formation is blocked from applying to the [i] before an additional suffix, namely *–aner*, e.g., *Schumianer* [ʃuːmiˈaːnɐ].

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