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# The small matter of the Afrikaans diminutive

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**Abstract**. The Afrikaans diminutive suffix surfaces as one of four allomorphs determined by complex prosodic and segmental interactions including stem augmentation, stem modification in form of diphthongization, and notably bidirectional place assimilation and segmental deletion. This paper presents an analysis in Harmonic Serialism (Prince & Smolensky 1993/2004, McCarthy 2000) that derives the surface allomorphs from an underlying representation /-ʲki/. The analysis departs from Wissing's (1971) rule-based treatment in rejecting phonologically-conditioned allomorphs in favor of a single underlying form which is subject to phonological derivation and in treating diphthongization as the realization of underlying palatal features following Bye (2013).

**Keywords**. Afrikaans; stem augmentation; place assimilation; directionality; diphthongization; morphophonology; Harmonic Serialism

**1. Introduction**. Afrikaans is a West Germanic language spoken in South Africa closely related to Dutch. Like the Dutch diminutive /-tjə/ (Booij 1995), the Afrikaans diminutive suffix shows a wide range of phonologically-conditioned variability with four surface allomorphs: [ki] with and without diphthongization of the final stem vowel, [iki], [pi], and [i]. The examples in Table (1) below exhibit some of the suffix's range. Words like (1a) and (1c) take the [iki] allomorph, while words like (1d) and (1e) take the [ki] allomorph and undergo diphthongization. Comparing the forms in (1b) and (1f) reveals bidirectional place assimilation: in (1b) the coda /n/ assimilates to the diminutive /k/, while in (1f), the diminutive /k/ assimilates to the coda /m/.

| | Underlying | Surface | Gloss | | Underlying | Surface | Gloss |
|---|---|---|---|---|---|---|---|
| a. | /mɑn-ʲki/ | mɑniki | 'man' | d. | /mɑt-ʲki/ | mɑjki | 'mat' |
| b. | /mɑːn-ʲki/ | mɑːjŋki | 'moon' | e. | /mɑːt-ʲki/ | mɑːjki | 'mate' |
| c. | /rɑm-ʲki/ | rɑmiki | 'ram' | f. | /rɑːm-ʲki/ | rɑːmpi | 'frame' |

Table 1: Afrikaans diminutive allomorphy

This paper presents an analysis of the Afrikaans diminutive in Harmonic Serialism (Prince & Smolensky 1993/2004, McCarthy 2000, et seq.). This is the first full analysis since Wissing's (1971) rule-based analysis of Afrikaans nominal morphology. The aim of this paper is to provide a thorough description of the data and give a phonological analysis that accounts for it.

**2. Description**. The diminutive suffix surfaces as one of four allomorphs: [ki] with and without diphthongization of the final stem vowel, [iki], [pi], and [i]. Following Bye (2013), the underlying form is taken to be /-ʲki/. The superscript *j* represents a floating palatal glide that takes the form of a high front off-glide on final stem vowels when realized. The surface form of the diminutive is predictable from the final segment and prosodic structure of the stem, modulo lexical

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exceptions. This section details which environments take which allomorph. The data are drawn from native speaker consultation and previous descriptions (Wissing 1971, Donaldson 1993).

2.1. VOWEL-FINAL STEMS. Stems that end in vowels take the [ki] allomorph. This provides evidence for the underlying segmental shape of suffix; the floating glide is discussed in Section 3.4. Examples are shown in Table (2) below. The floating palatal glide realizes on some lexically-specified stems, resulting in a final diphthong, e.g. /pɑdɑ-ʲki/ > [ˈpɑdɑjki] *[ˈpɑdɑki] 'frog' (2f). Regular stems in this category do not undergo diphthongization, e.g. /pɑː-ʲki/ > [ˈpɑːki] *[ˈpɑːjki] 'father' (2a). While all the examples in Table (2) which do diphthongize end on a final short /ɑ/, this does not reflect a phonological restriction. The vowels /ɑː/ (2a-b), /o/ (2c), and /u/ (2e) are all possible targets of diphthongization in other environments, e.g. /mɑːn-ʲki/ > [ˈmɑːjŋki] 'moon' (6a), /kɑːnon-ʲki/ > [ˈkɑːnojŋki] 'canon' (6e), /fut-ʲki/ > [ˈfujki] 'foot' (9c).

| | Underlying | Surface | Gloss | | Underlying | Surface | Gloss |
|---|---|---|---|---|---|---|---|
| a. | /pɑː-ʲki/ | ˈpɑːki | 'father' | e. | /zulu-ʲki/ | ˈzuluki | 'Zulu person' |
| b. | /mɑː-ʲki/ | ˈmɑːki | 'mother' | f. | /pɑdɑ-ʲki/ | ˈpɑdɑjki | 'frog' |
| c. | /foto-ʲki/ | ˈfotoki | 'photo' | g. | /mɑmɑ-ʲki/ | ˈmɑmɑjki | 'mom' |
| d. | /kɑfiə-ʲki/ | kɑˈfiəki | 'corner store' | h. | /kɑmərɑ-ʲki/ | ˈkɑmərɑjki | 'camera' |

Table 2: Vowel-final stems

2.2. SONORANT-FINAL STEMS. Stems that end in sonorants can be divided into two categories based on their prosodic structure: light and heavy. Light stems end on a monomoraic foot (i.e. a final syllable with a short vowel that bears stress)[1] and take the [iki] allomorph. Heavy stems end on a bimoraic foot and take [ki] with or without diphthongization or [pi]; this is phonologically determined by the stem. Afrikaans is trochaic, and stress is a reliable indicator of foot structure.

This prosodic distinction is clear in the set of prosodically minimal pairs in Table (3) below. The examples in the left column (3a-c) are light and take [iki], e.g. /mɑn-ʲki/ > [ˈmɑniki] *[ˈmɑjŋki] 'man' (3a). The examples in the right column (3d-f) are heavy and take [ki] with or without diphthongization, e.g. /mɑːn-ʲki/ > [ˈmɑːjŋki] *[ˈmɑːniki] 'moon' (3d), or [pi], e.g. /rɑːm-jki/ > [ˈrɑːmpi] 'frame' (3e). The disyllabic examples (3c) and (3f) differ in the placement of stress: [xəˈsɑŋ] 'religious song' has final stress and takes [iki] (3c) while [ˈkuənəŋ] 'king' has penultimate stress and takes [ki] (3f). This distinction is also apparent when a heavy stem takes a stress-shifting suffix like the feminine /-ən/. For example, compare /kɛlnər-ʲki/ > [ˈkælnərki] 'waiter'[2] to /kɛlnər-ən-ʲki/ > [kælnəˈrəniki] 'waitress' (4j) and /kuənəŋ-ʲki/ > [ˈkuənəŋki] 'king' (6j) to /kuənəŋ-ən-ʲki/ > [kuənəˈŋəniki] 'queen'. The feminine suffix forms a stressed monomoraic foot, shifting the otherwise heavy stems to light.

| | Underlying | Surface | Gloss | | Underlying | Surface | Gloss |
|---|---|---|---|---|---|---|---|
| a. | /mɑn-ʲki/ | ˈmɑniki | 'man' | d. | /mɑːn-ʲki/ | ˈmɑːjŋki | 'moon' |
| b. | /rɑm-ʲki/ | ˈrɑmiki | 'ram' | e. | /rɑːm-ʲki/ | ˈrɑːmpi | 'frame' |
| c. | /xəsɑŋ-ʲki/ | xəˈsɑŋiki | 'religious song' | f. | /kuənəŋ-ʲki/ | ˈkuənəŋki | 'king' |

Table 3: The effect of prosody on sonorant-final stems

[1] The short vowels /i/ and /u/ pattern ambiguously, producing variation in certain stems, e.g. /sil-ʲki/ > [ˈsiliki] ~ [ˈsilki] 'soul', and variation across otherwise identical stems, e.g. compare /dul-ʲki/ > [ˈduliki] 'goal' with /stul-ʲki/ > [ˈstulki] 'chair'. Ponelis (1993) and Donaldson (1993) argue this can be traced to the history of these two vowels.

[2] [æ] is an allophone of /ɛ/ before liquids and non-nasal dorsals.

2.2.1. LIGHT SONORANT-FINAL STEMS. Light stems that end in sonorants take the [iki] allomorph and are not subject to diphthongization, e.g. /kɑr-ʲki/ > [ˈkɑriki] *[ˈkɑrki] *[ˈkɑjrki] ‘car’ (4a). Examples are given in Table (4) below.

| | Underlying | Surface | Gloss | | Underlying | Surface | Gloss |
|---|---|---|---|---|---|---|---|
| a. | /kɑr-ʲki/ | ˈkɑriki | ‘car’ | h. | /mɑn-ʲki/ | ˈmɑniki | ‘man’ |
| b. | /stɛr-ʲki/ | ˈstæriki | ‘star’ | i. | /kɑnon-ʲki/ | kɑˈnoniki | ‘cannon’ |
| c. | /tɔr-ʲki/ | ˈtɔriki | ‘beetle’ | j. | /kɛlnər-ən-ʲki/ | kælnəˈrəniki | ‘waitress’ |
| d. | /kɔl-ʲki/ | ˈkɔliki | ‘spot/dot’ | k. | /rɑm-ʲki/ | ˈrɑmiki | ‘ram’ |
| e. | /fœl-ʲki/ | ˈfœliki | ‘foal’ | l. | /pruxrɑm-ʲki/ | pruˈxrɑmiki | ‘program’ |
| f. | /rəbɛl-ʲki/ | rəˈbæliki | ‘rebel’ | m. | /dəŋ-ʲki/ | ˈdəŋiki | ‘thing’ |
| g. | /kɔlunɛl-ʲki/ | kɔluˈnæliki | ‘colonel’ | n. | /xəsɑŋ-ʲki/ | xəˈsɑŋiki | ‘religious song’ |

Table 4: Light sonorant-final stems

2.2.2. HEAVY SONORANT-FINAL STEMS. Heavy stems that end in sonorants can be further divided into two categories based on their final segment: liquid-final stems and nasal-final stems.

Heavy stems that end in liquids take [ki] and are not subject to diphthongization, e.g. /tɑːl-ʲki/ > [ˈtɑːlki] *[ˈtɑːjlki] *[ˈtɑːliki] ‘language’ (5d). Examples are given in Table (5) below.

| | Underlying | Surface | Gloss | | Underlying | Surface | Gloss |
|---|---|---|---|---|---|---|---|
| a. | /ɦɑːr-ʲki/ | ˈɦɑːrki | ‘hair’ | d. | /tɑːl-ʲki/ | ˈtɑːlki | ‘language’ |
| b. | /dɔxtər-ʲki/ | ˈdɔxtərki | ‘daughter’ | e. | /fuəl-ʲki/ | ˈfuəlki | ‘bird’ |
| c. | /ɑltɑːr-ʲki/ | ɑlˈtɑːrki | ‘altar’ | f. | /tiəl-ʲki/ | ˈtiəlki | ‘tile’ |

Table 5: Heavy liquid-final stems

Heavy stems that end in nasals can be even further subdivided by the place of articulation of their final nasal. Stems that end in /n/ take [ki] and are subject to diphthongization. Further, the underlying /n/ surfaces as [ŋ], e.g. /mɑːn-ʲki/ > [ˈmɑːjŋki] *[ˈmɑːŋki] *[ˈmɑːniki] ‘moon’ (6a). Not all eligible stems undergo diphthongization, e.g. /biən-ʲki/ > [ˈbiəŋki] *[ˈbijŋki] ‘leg’ (6b); this is discussed in Section 2.4. Stems that end in /m/ take [pi] and are not subject to diphthongization, e.g. /rɑːm-ʲki/ > [ˈrɑːmpi] *[ˈrɑːjmpi] *[ˈrɑːmiki] ‘frame’ (6g). Finally, stems that end in /ŋ/ take [ki] and are not subject to diphthongization, e.g. /kuənəŋ-ʲki/ > [ˈkuənəŋki] *[ˈkuənəjŋki] *[ˈkuənəŋiki] ‘king’ (6j). Examples are given in Table (6) below.

| | Underlying | Surface | Gloss | | Underlying | Surface | Gloss |
|---|---|---|---|---|---|---|---|
| a. | /mɑːn-ʲki/ | ˈmɑːjŋki | ‘moon’ | g. | /rɑːm-ʲki/ | ˈrɑːmpi | ‘frame’ |
| b. | /biən-ʲki/ | ˈbiəŋki | ‘leg’ | h. | /kɔstyːm-ʲki/ | kɔsˈtyːmpi | ‘costume’ |
| c. | /tuən-ʲki/ | ˈtujŋki | ‘toe’ | i. | /prubleəm-ʲki/ | pruˈbleəmpi | ‘problem’ |
| d. | /røən-ʲki/ | ˈrøjŋki | ‘male dog’ | j. | /kuənəŋ-ʲki/ | ˈkuənəŋki | ‘king’ |
| e. | /kɑːnon-ʲki/ | ˈkɑːnojŋki | ‘canon’ | k. | /vuənəŋ-ʲki/ | ˈvuənəŋki | ‘abode’ |
| f. | /mɛridiɦɑːn-ʲki/ | mɛridiˈɦɑːjŋki | ‘meridian’ | l. | /duərəŋ-ʲki/ | ˈduərəŋki | ‘thorn’ |

Table 6: Heavy nasal-final stems

The heavy stems in Tables (5-6) either stress the final syllable, which contains a long vowel or diphthong, or have penultimate stress. Stems that underlyingly contain final sonorant-sonorant clusters belong to the latter group, surfacing with penultimate stress. In general, sonorant-sonorant clusters are disallowed and are broken up by an epenthetic vowel, e.g. /ernst/ > [ˈerəns]

‘Ernst [male first name]’. These words are distinguished in that they do not diphthongize, even those with final /n/, e.g. /kɛrn-ʲki/ > [ˈkærəŋki] *[ˈkærəjŋki] ‘center/nucleus’ (7a) (cf. 6e). Examples are given in Table (7) below.

| | Underlying | Surface | Gloss | | Underlying | Surface | Gloss |
|---|---|---|---|---|---|---|---|
| a. | /kɛrn-ʲki/ | ˈkærəŋki | ‘center/nucleus’ | c. | /sɑlm-ʲki/ | ˈsɑləmpi | ‘salmon’ |
| b. | /ɑrm-ʲki/ | ˈɑrəmpi | ‘arm’ | d. | /psɑlm-ʲki/ | pəˈsɑləmpi | ‘psalm’ |

Table 7: Stems with underlying sonorant-sonorant clusters

2.3. OBSTRUENT-FINAL STEMS. Stems that end in obstruents show similar patterns to sonorant-final stems, but without any sensitivity to prosodic structure. While sonorant-final stems can be divided into light and heavy stems, obstruent-final stems behave uniformly. This can be seen in the minimal quadruplet in Table (8) below. While the /n/-final stems in the left column (8a-b) take different allomorphs depending on their prosody, the /t/-final stems in the right column (8c-d) both take [ki] with diphthongization.

| | Underlying | Surface | Gloss | | Underlying | Surface | Gloss |
|---|---|---|---|---|---|---|---|
| a. | /mɑn-ʲki/ | ˈmɑniki | ‘man’ | c. | /mɑt-ʲki/ | ˈmɑjki | ‘mat’ |
| b. | /mɑːn-ʲki/ | ˈmɑːjŋki | ‘moon’ | d. | /mɑːt-ʲki/ | ˈmɑːjki | ‘mate’ |

Table 8: Coronal-final minimal quadruplet

In general, obstruent-final stems do not take [iki].[3] Stems that end with /t/ or /d/ take [ki] with diphthongization and lose the underlying stop, e.g. /mɑt-ʲki/ > [ˈmɑjki] *[ˈmɑki] *[ˈmɑtiki] ‘mat’ (9a). Stems that end with /s/ take [i], e.g. /ruəs-ʲki/ > [ˈruəsi] *[ˈruəski] *[ˈrujsi] ‘rose’ (9k), as do stems ending with labial and dorsal obstruents, e.g. /dɔp-ʲki/ > [ˈdɔpi] *[ˈdɔjpi] *[ˈdɔpiki] ‘bottle cap’ (9m). Examples are given in Table (9) below. It is apparent here that prosody plays no role in determining the allomorph. For example, compare the light stem /səf-ʲki/ > [ˈsəfi] *[ˈsəfiki] ‘sift’ (9o) with the heavy stem /skəif-ʲki/ > [ˈskəifi] ‘potato chip’ (9p); both take [i].

| | Underlying | Surface | Gloss | | Underlying | Surface | Gloss |
|---|---|---|---|---|---|---|---|
| a. | /mɑt-ʲki/ | ˈmɑjki | ‘mat’ | k. | /ruəs-ʲki/ | ˈruəsi | ‘rose’ |
| b. | /mɑːt-ʲki/ | ˈmɑːjki | ‘mate’ | l. | /ɑlbɑtrɔs-ʲki/ | ˈɑlbɑtrɔsi | ‘albatross’ |
| c. | /fut-ʲki/ | ˈfujki | ‘foot’ | m. | /dɔp-ʲki/ | ˈdɔpi | ‘bottle cap’ |
| d. | /buət-ʲki/ | ˈbujki | ‘boat’ | n. | /xrɑːf-ʲki/ | ˈxrɑːfi | ‘spade’ |
| e. | /biət-ʲki/ | ˈbiəki | ‘beet’ | o. | /səf-ʲki/ | ˈsəfi | ‘sift’ |
| f. | /bout-ʲki/ | ˈbouki | ‘butt’ | p. | /skəif-ʲki/ | ˈskəifi | ‘potato chip’ |
| g. | /ɦout-ʲki/ | ˈɦouki | ‘wood’ | q. | /buk-ʲki/ | ˈbuki | ‘book’ |
| h. | /xøət-ʲki/ | ˈxøjki | ‘gutter’ | r. | /flik-ʲki/ | ˈfliki | ‘movie/film’ |
| i. | /ɦud-ʲki/ | ˈɦujki | ‘hat’ | s. | /ləx-ʲki/ | ˈləxi | ‘light/lamp’ |
| j. | /drɑːd-ʲki/ | ˈdrɑːjki | ‘metal wire’ | t. | /krux-ʲki/ | ˈkruxi | ‘bar’ |

Table 9: Obstruent-final stems

Stems that end in obstruent-final clusters show a mix of the patterns seen above. Stems with final coronal stops take [ki] and lose their final stops (10a-e). Stems with liquids do not diphthongize, e.g. /ɦɑrt-ʲki/ > [ˈɦɑrki] *[ˈɦɑjrki] ‘heart’ (10a). Stems with nasals do diphthongize and

[3] /b/-final stems are exceptional, e.g. /rəb-ʲki/ > [ˈrəbiki] ‘rib’ and /rɔb-ʲki/ > [ˈrɔbiki] ‘seal’ (Wissing 1971:81). There are very few words that end in /b/ in Afrikaans.

the underlying /n/ surfaces as [ŋ], e.g. /ɦɑnt-ʲki/ > [ˈɦɑjŋki] *[ˈɦɑŋki] ‘hand’ (10d). Stems that end with /s/ take [i], e.g. /fits-ʲki/ > [ˈfitsi] ‘bicycle’ (10h), as do stems that end with labials and dorsals, e.g. /bɛrx-ʲki/ > [ˈbærxi] ‘mountain’ (10m). Examples are given in Table 10 below.

| | Underlying | Surface | Gloss | | Underlying | Surface | Gloss |
|---|---|---|---|---|---|---|---|
| a. | /ɦɑrt-ʲki/ | ˈɦɑrki | ‘heart’ | i. | /sɛrp-ʲki/ | ˈsærpi | ‘scarf’ |
| b. | /beəlt-ʲki/ | ˈbeəlki | ‘image’ | j. | /skœlp-ʲki/ | ˈskœlpi | ‘shell’ |
| c. | /lɑnt-ʲki/ | ˈlɑjŋki | ‘country’ | k. | /lɑmp-ʲki/ | ˈlɑmpi | ‘lamp’ |
| d. | /ɦɑnt-ʲki/ | ˈɦɑjŋki | ‘hand’ | l. | /fɑrk-ʲki/ | ˈfɑrki | ‘pig’ |
| e. | /ɑːnt-ʲki/ | ˈɑːjŋki | ‘evening’ | m. | /bɛrx-ʲki/ | ˈbærxi | ‘mountain’ |
| f. | /fɛrs-ʲki/ | ˈfærʃi[4] | ‘verse’ | n. | /fɑlk-ʲki/ | ˈfɑlki | ‘falcon’ |
| g. | /vɑls-ʲki/ | ˈvɑlsi | ‘roll’ | o. | /bɛlx-ʲki/ | ˈbælxi | ‘Belgian person’ |
| h. | /fits-ʲki/ | ˈfitsi | ‘bicycle’ | p. | /bɑŋk-ʲki/ | ˈbɑŋki | ‘couch’ |

Table 10: Stems with obstruent-final clusters

2.4. Diphthongization. The [ki] allomorph often cooccurs with the final vowel of the stem taking a palatal off-glide. Besides lexical exceptions, this diphthongization is limited to stems with final /n/, /t/, /d/, and /nt/, but does not apply to all such stems. Table (11) below gives examples organized by final stem vowel, many of which are repeated from previous tables.

| | Underlying | Surface | Gloss | | Underlying | Surface | Gloss |
|---|---|---|---|---|---|---|---|
| a. | /mɑːn-ʲki/ | ˈmɑːjŋki | ‘moon’ | h. | /fut-ʲki/ | ˈfujki | ‘foot’ |
| b. | /mɑt-ʲki/ | ˈmɑjki | ‘mat’ | i. | /ɦud-ʲki/ | ˈɦujki | ‘hat’ |
| c. | /kɑːnon-ʲki/ | ˈkɑːnojŋki | ‘canon’ | j. | /skun-ʲki/ | ˈskujŋki | ‘shoe’ |
| d. | /lɔnt-ʲki/ | ˈlɔjŋki | ‘fuse’ | k. | /tuən-ʲki/ | ˈtujŋki | ‘toe’ |
| e. | /kənt-ʲki/ | ˈkəjŋki | ‘child’ | l. | /buət-ʲki/ | ˈbujki | ‘boat’ |
| f. | /pœt-ʲki/ | ˈpœjki | ‘well’ | m. | /røən-ʲki/ | ˈrøjŋki | ‘male dog’ |
| g. | /prɛnt-ʲki/ | ˈprɛjŋki | ‘picture’ | n. | /xøət-ʲki/ | ˈxøjki | ‘gutter’ |

Table 11: Stems that diphthongize

As is clear from Table (11), a wide range of short and long vowels undergo diphthongization from the low /ɑː/, e.g. (11a), to the high back /u/, e.g. (11h). Even underlying diphthongs with a central off-glide surface instead with the palatal off-glide, e.g. /tuən-ʲki/ > [ˈtujŋki] *[ˈtuəŋki] ‘toe’ (11k). Stems that do not diphthongize include those with high front vowels, e.g. /lid-ʲki/ > [ˈliki] *[ˈlijki] ‘song’ (12b), diphthongs that begin with high front vowels, e.g. /biən-ʲki/ > [ˈbiəŋki] *[ˈbijŋki] ‘leg’ (12e), and diphthongs with high back off-glides, e.g. /bout-ʲki/ > [ˈbouki] *[ˈbojki] ‘butt’ (12g). Examples are given in Table (12) below.

| | Underlying | Surface | Gloss | | Underlying | Surface | Gloss |
|---|---|---|---|---|---|---|---|
| a. | /min-ʲki/ | ˈmiŋki | ‘Mien [female first name]’ | e. | /biən-ʲki/ | ˈbiəŋki | ‘leg’ |
| b. | /lid-ʲki/ | ˈliki | ‘song’ | f. | /biət-ʲki/ | ˈbiəki | ‘beet’ |
| c. | /rit-ʲki/ | ˈriki | ‘reed’ | g. | /bout-ʲki/ | ˈbouki | ‘butt’ |
| d. | /dəspyt-ʲki/ | dəsˈpyki | ‘dispute’ | h. | /ɦout-ʲki/ | ˈɦouki | ‘wood’ |

Table 12: Stems that do not diphthongize

[4] [ʃ] is an allophone of /s/ after /r/.

**3. Analysis**. From the underlying form /-ʲki/, the data above can be derived neatly in a constraint-based framework. This section presents an analysis in Harmonic Serialism (Prince & Smolensky 1993/2004, McCarthy 2000, et seq.), which makes explicit the feeding relations that hold in the derivation. In short, the diminutive attaches to a final bimoraic foot (§3.1), yielding an unmarked consonant cluster (§3.2-3.3). The floating glide realizes on the final stem vowel only if regressive place assimilation was triggered (§3.4).

3.1. STEM AUGMENTATION. Stems that take [iki] in the diminutive have final monomoraic feet, which are augmented with an epenthetic vowel [i]. Strictly speaking then, the form of the diminutive in these cases is [ki], just as it is with vowel-final stems. Following van de Weijer's (2002) analysis of epenthesis in the Dutch diminutive, this results from SFX-TO-PRWD dominating DEP.

The interaction of these constraints is shown in Tableaux (1-2) below with the prosodically minimal pair /kɔl-ʲki/ > [ˈkɔliki] 'spot/dot' (4d) and /fuəl-ʲki/ > [ˈfuəlki] 'bird' (5e), respectively. In these tableaux, prosodic word boundaries are marked with square brackets. In Tableau (1), attaching the suffix directly to the stem violates SFX-TO-PRWD because the stem does not end on a bimoraic foot and the augmented candidate is optimal. As discussed below, final sonorants do not contribute moras; weight is entirely dependent on the vowel. In Tableau (2), the stem has a diphthong and is well-formed prosodically, making augmentation unnecessary. For both inputs, the derivations converge at the next step with the floating glide unrealized (not shown here).

| kɔl-ʲki | SFX-TO-PRWD | DEP |
|---|---|---|
| a. kɔlʲki | W | L |
| → b. [kɔli]ʲki | | 1 |

Tableau 1: Stem augmentation in /kɔl-ʲki/ > [ˈkɔliki] 'spot/dot' (4d)

| [fuəl]-ʲki | SFX-TO-PRWD | DEP |
|---|---|---|
| → a. [fuəl]ʲki | | |
| b. [fuəli]ʲki | | W |

Tableau 2: No stem augmentation in /fuəl-ʲki/ > [ˈfuəlki] 'bird' (5e)

This ranking problematically also predicts that light obstruent-final stems should be augmented, which is not the case. As shown in Section 2.3, obstruent-final stems do not take [iki] diminutives. They pattern with heavy stems, the final obstruents contributing a mora that sonorants do not. This follows from final sonorants being parsed into syllable nuclei, while final obstruents are parsed as codas (Botma & van der Torre 2000, van de Weijer 2002). Though not shown here, ranking NOCODA between *PEAK/OBS and *PEAK/SON motivates this syllabification. Final obstruents host moras to satisfy WEIGHTBYPOSITION, while final sonorants, which are not in coda position, do not. Final syllables with short vowels and obstruent codas are therefore bimoraic while those with sonorants are monomoraic. This derives the difference in weight: obstruent-final stems are uniformly heavy while the sonorant-final stems depend on their vowels.

The scope of SFX-TO-PRWD extends to other suffixation. As in Dutch, Afrikaans has two regular plural suffixes: /-s/ and /-ə/. There is a parallel between those stems that are augmented in the diminutive and those that take the moraic suffix, e.g. [ˈkɔlə] 'spots/dots' and [ˈfuəls] 'birds'. While this correspondence is not exact, it does suggest a tendency for light stems to take heavier suffixes than heavy stems beyond the diminutive.

3.2. CONSONANT CLUSTER REDUCTION. As in Dutch, the diminutive cannot create a triconsonantal cluster. Stems that end in clusters trigger deletion of either the final stem consonant or the diminutive /k/. Stem-final coronal stops are deleted, taking [ki], while stems that end with /s/ or labial or dorsal obstruents trigger the diminutive /k/ to delete, taking [i].

This pattern comprises two independent principles: stem-faithfulness (McCarthy & Prince 1995) and Preservation of the Marked (de Lacy 2006). Marked segments in the stem, i.e. fricatives and non-coronals, are preferentially preserved over the diminutive dorsal, which is preferentially preserved over unmarked segments in the stem. This is captured by ranking MAX(MARKED)$_{\text{STEM}}$, which abbreviates MAX(FRICATIVE)$_{\text{STEM}}$ and MAX(LABIAL, DORSAL)$_{\text{STEM}}$, above MAX(DORSAL), which is, in turn, ranked above MAX(CORONAL)$_{\text{STEM}}$. The markedness constraint against triconsonantal clusters, *CCC, is ranked as high as MAX(MARKED)$_{\text{STEM}}$. Deletion is taken to occur in one derivational step (cf. McCarthy 2007, 2008).

The interaction of these constraints is shown in Tableaux (3-4) below with /beəlt-ʲki/ > [ˈbeəlki] ‘image’ (10b) and /vɑls-ʲki/ > [ˈvɑlsi] ‘roll’ (10g), respectively. For both inputs, the fully faithful candidates violate *CCC and are dispreferred. In Tableau (3), deleting the unmarked /t/ from the stem is preferred over deleting the diminutive /k/. In Tableau (4), because the final stem consonant is marked, it is better to delete the diminutive /k/. Both tableaux exclude candidates in which the stem /l/ has deleted. Such candidates are problematic for words with final /ts/ clusters like /fits-ʲki/ > [ˈfitsi] *[ˈfiski] ‘bicycle’ (10h), as the internal consonant is unmarked. This analysis assumes that only stem-final consonants are possible targets of deletion; internal consonants may be protected by higher-ranked faithfulness constraints. For both inputs, the derivations converge at the next step with the floating glide unrealized (not shown here).

| beəlt-ʲki | *CCC | MAX(MARKED)$_{\text{STEM}}$ | MAX(DORS) | MAX(COR)$_{\text{STEM}}$ |
|---|---|---|---|---|
| a. beəltʲki | W | | | L |
| b. beəltʲi | | | W | L |
| → c. beəlʲki | | | | 1 |

Tableau 3: Stem-final consonant deletion in /beəlt-ʲki/ > [ˈbeəlki] ‘image’ (10b)

| vɑls-ʲki | *CCC | MAX(MARKED)$_{\text{STEM}}$ | MAX(DORS) | MAX(COR)$_{\text{STEM}}$ |
|---|---|---|---|---|
| a. vɑlsʲki | W | | L | |
| → b. vɑlsʲi | | | 1 | |
| c. vɑlʲki | | W | L | |

Tableau 4: Diminutive /k/ deletion in /vɑls-ʲki/ > [ˈvɑlsi] ‘roll’ (10g)

The tableaux above also exclude candidates in which a vowel has been inserted to break up the cluster, e.g. *[ˈbeəltiʲki] for the input /beəlt-ʲki/ (3). This would motivate ranking DEP above MAX(DORSAL), but doing so is problematic for words with underlying sonorant-sonorant clusters, which trigger epenthesis, not deletion, e.g. /ɑrm/ > [ˈɑrəm] *[ɑr] ‘arm’ (7b). Splitting up the MAX constraints between sonorants and obstruents resolves the problem: deleting a sonorant is worse than inserting a vowel, which is, in turn, worse than deleting an obstruent. This gives a ranking along the lines of MAX-SONORANT >> DEP >> MAX-OBSTRUENT. Further, the constraint against sonorant-sonorant clusters must dominate *CCC. This produces derivations in which epenthesis in sonorant-sonorant clusters bleeds deletion in triconsonantal clusters, as seen in the data, e.g. /ɑrm-ʲki/ > ɑrəm-ʲki > [ˈɑrəmpi] ‘arm’ (7b), not /ɑrm-ʲki/ > ɑrm-ʲi > *[ˈɑrmi].

The scope of *CCC seems to be limited to the diminutive. Triconsonantal clusters are found within stems, e.g. [ˈbɑkstər] ‘female baker’, in compound words, e.g. [ˈbuəxskytər] ‘archer [literally bow-shooter]’, and in some /-s/ plurals, e.g. [ˈdrəŋkɑːrds] ‘drunkards’. There is a parallel process that reduces tautosyllabic obstruent clusters, e.g. /kɑst/ > [kɑs] ‘closet’, which applies before the diminutive attaches, yielding [ˈkɑsi], cf. the plural [ˈkɑstə] (Coetzee 2014).

3.3. Place assimilation. As in Dutch, the Afrikaans diminutive surfaces in homorganic clusters with stem-final nasals. While the Dutch diminutive is uniformly the target of progressive place assimilation, place assimilation is bidirectional in Afrikaans: stem-final /n/ assimilates to the diminutive /k/, surfacing as [ŋ], and the diminutive /k/ assimilates to stem-final /m/, surfacing as [p]. Assimilation obeys the same hierarchy as deletion: marked consonants in the stem take priority over the diminutive /k/, which, in turn, takes priority over unmarked consonants in the stem.[5] The interaction between *CCC and the Max constraints is paralleled by Agree(Place) and the Ident constraints. Like deletion, place assimilation is taken to be one derivational step.

The interaction between Agree(Place) and the Ident constraints is shown in Tableaux (5-6) below with /mɑːn-ʲki/ > [ˈmɑːjŋki] ‘moon’ (6a) and /rɑːm-ʲki/ > [ˈrɑːmpi] ‘frame’ (6g), respectively. For both inputs, the faithful candidates fatally violate Agree(Place). In Tableau (5), regressive assimilation of the stem /n/ is preferred. In Tableau (6), progressive assimilation of the diminutive /k/ is preferred, preserving the marked stem /m/. The output of Tableau (5) will pass through one more derivational step to diphthongize, as discussed in Section 3.4. The output of Tableau (6) will converge at the next step with the floating glide unrealized (not shown here).

| mɑːn-ʲki | Agree | Ident(Marked)$_{\text{STEM}}$ | Ident(Dors) | Ident(Cor)$_{\text{STEM}}$ |
|---|---|---|---|---|
| a. mɑːnʲki | W | | | L |
| b. mɑːnʲti | | | W | L |
| → c. mɑːŋʲki | | | | 1 |

Tableau 5: Regressive place assimilation in /mɑːn-ʲki/ > [ˈmɑːjŋki] ‘moon’ (6a)

| rɑːm-ʲki | Agree | Ident(Marked)$_{\text{STEM}}$ | Ident(Dors) | Ident(Cor)$_{\text{STEM}}$ |
|---|---|---|---|---|
| a. rɑːmʲki | W | | L | |
| → b. rɑːmʲpi | | | 1 | |
| c. rɑːŋʲki | | W | L | |

Tableau 6: Progressive place assimilation in /rɑːm-ʲki/ > [ˈrɑːmpi] ‘frame’ (6g)

Because Agree(Place) is not limited to nasal-obstruent clusters, the analysis predicts that obstruent-final stems should also trigger place assimilation. As noted above, obstruent-final stems do not undergo stem augmentation, and therefore pass through an intermediate stage with a derived obstruent-obstruent cluster. In this stage, coronal- and labial-final stems violate Agree(Place) and trigger assimilation, producing obstruent geminates. These geminates do not surface, but are instead reduced in the next derivational step to singleton obstruents, e.g. /mɑːt-ʲki/ > mɑːkʲki > mɑːʲki > [ˈmɑːjki] ‘mate’ (9b).

Including the markedness constraint *Geminate below Agree(Place) models this derivation. In turn, *Geminate dominates Uniformity, which penalizes segmental fusion. Coalescence is taken to involve two derivational steps, the first necessarily being assimilation. In the typical case, coalescence can be distinguished from plain deletion by some featural residue (Lamontagne & Rice 1995). However, there is no possible residue in this instance because the coalescence is between two voiceless obstruents, one having assimilated to the place of the other.

[5] Borowsky (2000) observes that the effect of place resembles an emergence of the unmarked effect.

Diphthongization provides evidence favoring the coalescence analysis: its distribution is predicted by stems having undergone regressive place assimilation, as discussed in detail in Section 3.4.

The interaction between these constraints is shown in Tableaux (7-8) below with /mɑt-ʲki/ > [ˈmɑjki] ‘mat’ (9a) and in Tableaux (9-10) with /ruəs-ʲki/ > [ˈruəsi] ‘rose’ (9k). In Tableau (7), the faithful candidate fatally violates AGREE(PLACE) and is dispreferred to the unfaithful candidates. The optimal candidate targets the stem-final /t/ for assimilation, preserving the diminutive /k/, and serves as the input to the next step shown in Tableau (8), where the segments fuse. Because regressive place assimilation occurred, the output of this step will go on to diphthongize before the derivation converges. The derivation in Tableaux (9-10) is nearly identical.[6] The only difference being that progressive assimilation is preferred in the first step, preserving the marked stem-final /s/. After fusion, the derivation will converge with the floating glide unrealized.

| mɑt-ʲki | AGREE | IDENT(MARKED)$_{\text{STEM}}$ | IDENT(DORS) | IDENT(COR)$_{\text{STEM}}$ | *GEMINATE |
|---|---|---|---|---|---|
| a. mɑːtʲki | W | | | L | L |
| b. mɑːtʲti | | | W | L | 1 |
| → c. mɑːkʲki | | | | 1 | 1 |

Tableau 7: Coalescence in /mɑt-ʲki/ > [ˈmɑjki] ‘mat’ (9a). Step 1: Regressive place assimilation

| mɑːkʲki | *GEMINATE | UNIFORMITY |
|---|---|---|
| a. mɑːkʲki | W | L |
| → b. mɑːʲki | | 1 |

Tableau 8: Coalescence in /mɑt-ʲki/ > [ˈmɑjki] ‘mat’ (9a). Step 2: Fusion

| ruəs-ʲki | AGREE | IDENT(MARKED)$_{\text{STEM}}$ | IDENT(DORS) | IDENT(COR)$_{\text{STEM}}$ | *GEMINATE |
|---|---|---|---|---|---|
| a. ruəsʲki | W | | L | | L |
| → b. ruəsʲsi | | | 1 | | 1 |
| c. ruəkʲki | | W | L | | 1 |

Tableau 9: Coalescence in /ruəs-ʲki/ > [ˈruəsi] ‘rose’ (9k). Step 1: Progressive place assimilation

| ruəsʲsi | *GEMINATE | UNIFORMITY |
|---|---|---|
| a. ruəsʲsi | W | L |
| → b. ruəʲsi | | 1 |

Tableau 10: Coalescence in /ruəs-ʲki/ > [ˈruəsi] ‘rose’ (9k). Step 2: Fusion

Because triconsonantal cluster reduction feeds place assimilation, AGREE(PLACE) must be ranked below MAX(DORSAL). This way the derived violation of AGREE(PLACE) does not block deletion in words with final /nt/ clusters. This ranking argument is given in Tableau (11) below with /lɑnt-ʲki/ > [ˈlɑjŋki] ‘country’ (10c).

| lɑnt-ʲki | *CCC | MAX(MARKED)$_{\text{STEM}}$ | MAX(DORS) | MAX(COR)$_{\text{STEM}}$ | AGREE |
|---|---|---|---|---|---|
| a. lɑntʲki | W | | | L | 1 |
| b. lɑntʲi | | | W | L | L |
| → c. lɑnʲki | | | | 1 | 1 |

Tableau 11: Stem-final consonant deletion in /lɑnt-ʲki/ > [ˈlɑjŋki] ‘country’ (10c)

[6] The feature [continuant] is taken as a secondary place feature (Padgett 1995).

By transitivity, UNIFORMITY and the IDENT constraints are ranked below *CCC and MAX(DORSAL) as well. If coalescence were a one-step process, there would be coalescence candidates competing with deletion candidates to resolve violations of *CCC. This is shown below in Tableau (12) with /hɑrt-ʲki/ > [ˈhɑrki] ‘heart’ (10a). The fully faithful candidate and the two plain assimilation candidates fail to satisfy *CCC and are dispreferred. Because the MAX constraints dominate the IDENT constraints, this ranking prefers the coalescence candidates over the deletion candidates, predicting *hɑr$k_{1,2}{}^{j}$i as the output at this step. This is problematic because this candidate would go on to diphthongize before the derivation converges. If UNIFORMITY is ranked below $\text{MAX(CORONAL)}_{\text{STEM}}$, it will have no effect on the outcome in Tableau (12), as the coalescence candidates tie on it. If instead it is at the same level as or above $\text{MAX(CORONAL)}_{\text{STEM}}$, it will prefer the actual output, hɑrʲ$k_2$i, marked with a frowny face ☹. However, it will also have the problematic effect of preferring deletion over coalescence for all /t/-final stems. Because regressive assimilation feeds diphthongization, no /t/-final stem will be predicted to diphthongize, which is incorrect. For these reasons, one-step coalescence is incompatible with this analysis.

| | hɑ$rt_1$-ʲ$k_2$i | *CCC | MAX(DORS) | $\text{MAX(COR)}_{\text{STEM}}$ | IDENT(DOR) | $\text{IDENT(COR)}_{\text{STEM}}$ |
|---|---|---|---|---|---|---|
| | a. hɑr$t_1{}^{j}k_2$i | W | | | | L |
| | b. hɑr$t_1{}^{j}t_2$i | W | | | W | L |
| | c. hɑr$k_1{}^{j}k_2$i | W | | | | 1 |
| | d. hɑr$t_1{}^{j}$i | | W | | | L |
| ☹ | e. hɑrʲ$k_2$i | | | W | | L |
| | f. hɑr$t_{1,2}{}^{j}$i | | | | W | L |
| → | g. hɑrʲ$k_{1,2}$i | | | | | 1 |

Tableau 12: Problematic one-step coalescence in /hɑrt-ʲki/ > *[ˈhɑjrki] ‘heart’ (10a)

As in Dutch, the place assimilation pattern is specific to the diminutive suffix. For instance, heterorganic clusters surface in compound nouns e.g. [ˈbuəmkɑs] *[ˈbuəmpɑs] ‘greenhouse [literally tree closet]’ (Wissing 1971:85). However, an intriguing parallel can be found in [ɦɛmp] ‘shirt’ (cf. [hɛmt]~[hɛmpt] in Dutch); the final stop alternates with /d/ in the plural: [ˈɦɛmdə] *[ˈɦɛmbə] ‘shirts’. If the underlying form is /ɦɛmd/, this instantiates another instance of progressive assimilation, which may be blocked in the plural by onset faithfulness (Beckman 1998).

3.4. DIPHTHONGIZATION. Only stems with final /n/, /t/, /d/, and /nt/ regularly diphthongize. These are exactly the contexts in which regressive place assimilation is analyzed to occur. This distinction is clear in the minimal pair /ɦɑrt-ʲki/ > [ˈɦɑrki] ‘heart’ (10a) and /ɦɑnt-ʲki/ > [ˈɦɑjŋki] ‘hand’ (10d). Both inputs pass through an intermediate stage where the final /t/ is deleted to satisfy *CCC. Only the latter violates AGREE(PLACE) with its derived /nk/ cluster, triggering the stem-final /n/ to undergo regressive place assimilation feeding diphthongization later in the derivation.

Because regressive place assimilation feeds diphthongization, it creates the context which allows the floating glide to realize on the stem vowel. Put another way, if place features from the affix /k/ spread into the stem, then the palatal features can as well. The glide is otherwise kept from realizing by a pressure to keep the edge between the stem and the suffix crisp (Itô & Mester 1999), i.e. association lines are disallowed from crossing that morphological boundary. Regressive place assimilation breaks the crispness of the edge by spreading place features from the affix into the stem. This opens the floodgates, so to speak, releasing the glide to realize in the stem.

Strictly speaking, spreading place features into or out of the stem breaks the crispness of the edge. However, because diphthongization is only associated with regressive assimilation, a directional variant is motivated. Crisp edges are taken to be permeable, allowing features to spread *out* of the stem, but disallowing features from spreading *into* the stem. This is represented in Figure (1) below with the outputs of Tableaux (5-6). In the figure, the right edge of the stem is shown with a square bracket. The output of Tableau (5) on the left has undergone regressive assimilation, and does not have a crisp edge, as the dashed line indicates. The glide is therefore free to realize on the stem /ɑː/. The output of Tableau (6) on the right has instead undergone progressive assimilation, leaving its edge crisp. This blocks the glide from realizing, as the *X* indicates.

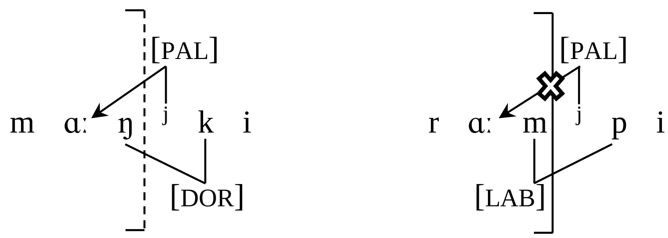


Figure 1: Permeably crisp edges in /mɑːn-ʲki/ > [ˈmɑːjŋki] ‘moon’ (6a) and /rɑːm-ʲki/ > [ˈrɑːmpi] ‘frame’ (6g)

This permeable crispness is modeled with a markedness constraint CrispEdgeIn(Stem), which is violated when any number of features spread into the stem. CrispEdgeIn(Stem) does not block regressive place assimilation and is therefore ranked as low as Ident(Coronal)$_{\text{Stem}}$. When regressive place assimilation does not occur, CrispEdgeIn(Stem) blocks the glide from realizing. Diphthongization satisfies a featural alignment constraint (Akinlabi 1996), Align(j,Stem), which is violated when the palatal features are not attached to a stem vowel. The interaction between these constraints is shown in Tableaux (13-14) below with the outputs of Tableaux (5-6), respectively. In Tableau (13), both candidates violate CrispEdgeIn(Stem), which does not count how many association lines cross the stem boundary. The optimal candidate does better on Align(j,Stem), and the diphthong is realized. In Tableau (14), diphthongization incurs a violation of CrispEdgeIn(Stem), and is blocked.

| mɑːŋʲki | CrispEdgeIn | Align(j,Stem) |
|---|---|---|
| a. mɑːŋʲki | 1 | W |
| → b. mɑːjŋki | 1 | |

Tableau 13: Diphthongization in /mɑːn-ʲki/ > [ˈmɑːjŋki] ‘moon’ (6a) (output of Tableau 5)

| rɑːmʲpi | CrispEdgeIn | Align(j,Stem) |
|---|---|---|
| → a. rɑːmʲpi | | 1 |
| b. rɑːjmpi | W | L |

Tableau 14: No diphthongization in /rɑːm-ʲki/ > [ˈrɑːmpi] ‘frame’ (6g) (output of Tableau 6)

Because the floating glide has to realize on a stem vowel, epenthetic vowels are ineligible targets by Consistency of Exponence (McCarthy & Prince 1993). This accounts for the lack of diphthongization in words like /kɛrn-ʲki/ > [ˈkærəŋki] *[ˈkærəjŋki] ‘center/nucleus’ (7a). Schwa can diphthongize, as seen in /kənt-ʲki/ > [ˈkəjŋki] ‘child’ (11e), but only as part of the stem. Realizing the floating glide on an epenthetic vowel does not improve on Align(j,Stem). The glide is assumed not to be able to realize farther into the stem, ruling out a candidate like *[ˈkæjrəŋki].

The other contexts where diphthongization is blocked are easily handled. For space, tableaux are not given. Stems with high front monophthongs or diphthongs that begin with high front vowels do not diphthongize, e.g. /rit-ʲki/ > [ˈriki] ‘reed’ (12c). A markedness constraint against a diphthong that begins with a high front vowel and contains a high front off-glide, *IJ, ranked above ALIGN(J,STEM) blocks diphthongization. Diphthongs with high back off-glides do not take the floating palatal either, e.g. /ɦout-ʲki/ > [ˈɦouki] *[ˈɦojki] ‘wood’ (12h), while central off-glides may be overwritten, e.g. /tuən-ʲki/ > [ˈtujŋki] *[ˈtuəŋki] ‘toe’ (6c). A faithfulness constraint protecting the former, IDENT(U), ranked above ALIGN(J,STEM) blocks diphthongization.

This analysis follows Bye (2013) in treating the diphthong as part of the underlying form, departing from Wissing’s (1971) analysis which derives diphthongization from the lenition of stem-final coronal stops. There is a plausible account for Wissing’s analysis in Harmonic Serialism, as McCarthy (2007, 2008) proposes that place assimilation comprises a debuccalization step followed by a place linking step. If the coronal place features are not deleted but simply delinked in the first step, they may realize later on an adjacent vowel. However, there are a handful of reasons to support locating the diphthong in the underlying form over deriving it from the stem.

Treating the glide as underlying identifies a source for the lexically-specified vowel-final stems that diphthongize, e.g. /pɑdɑ-ʲki/ > [ˈpɑdɑjki] ‘frog’ (2f). which both analyses must accommodate. Without an underlying glide, these stems require a second diphthongization rule, setting up a conspiracy. With an underlying glide, these stems simply have more permissive edges, allowing the glide to realize without regressive place assimilation first opening the door for it.

Associating the insertion of the glide with regressive place assimilation cleanly accounts for pairs like /ɦɑrt-ʲki/ > [ˈɦɑrki] ‘heart’ (10a) and /ɦɑnt-ʲki/ > [ˈɦɑjŋki] ‘hand’ (10d). Under a lenition account, these stems would first pass through a step in which the /t/ becomes a glide. This would be followed by a metathesis step that reorders the nasal-glide sequence in (10d), but fails in (10a). It is not clear that this derivation has any advantages and it requires more steps than directly inserting the glide. Further, if lenition is associated with place assimilation, diphthongization should be readily found in more assimilation contexts than just the diminutive.

Lastly, there is dialectal evidence to support an underlying glide. Southwestern varieties of Afrikaans have a palatal-initial diminutive /-ci/, which does not trigger diphthongization (Ponelis 1993:160), e.g. /ɦɑːn-ci/ > [ˈɦɑːnci] ‘rooster’ (13d). Examples are given in Table (13) below. Other than the lack of palatalization, the Southwestern system appears to resemble the variety described here, with stem-final /t/ deleting in words like /mɑːt-ci/ > [ˈmɑːci] ‘pal’ (13e) cf. /mɑːt-ʲki/ > [ˈmɑːjki] ‘mate’ (9b). The difference between the palatalizing /-ki/ varieties and the non-palatalizing /-ci/ varieties can be attributed to the affiliation of the palatal features. In the /-ci/ varieties, the palatal features are associated with the obstruent, and have no need to attach to a vowel. In the /-ki/ varieties, the palatal features are free from the obstruent and need to attach to a vowel in order to surface. An analysis that locates the palatal features underlyingly in the /-ki/ varieties maintains a closer relationship between the varieties.

| | Underlying | Surface | Gloss |
|---|---|---|---|
| a. | /tou-ci/ | ˈtouci | ‘rope’ |
| b. | /ɦɑːr-ci/ | ˈɦɑːrci | ‘hair’ |
| c. | /pɑːl-ci/ | ˈpɑːlci | ‘pole’ |
| d. | /ɦɑːn-ci/ | ˈɦɑːnci | ‘rooster’ |
| e. | /mɑːt-ci/ | ˈmɑːci | ‘pal’ |

Table 13: Southwestern Afrikaans diminutives

3.5. Summary. This section presented an analysis of the Afrikaans diminutive allomorphy in Harmonic Serialism. The necessary feeding orders between processes are captured by the relative ranking of the markedness constraints: Sfx-to-PrWd, *CCC >> Agree(Place) >> *Geminate, Align(j,Stem). Stem augmentation and cluster reduction precede place assimilation, which, in turn, precedes degemination and diphthongization. A Hasse diagram representing the constraint ranking is given in Figure 2 below. As noted above in Section 3.2, the Max constraints are specified for obstruents, and are shortened in the diagram for space.

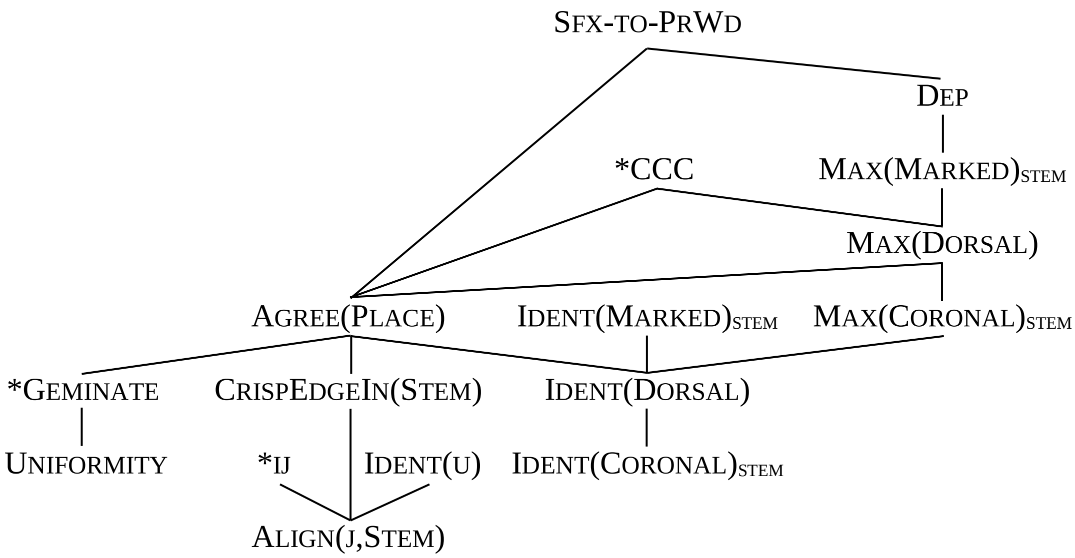


Figure 2: Hasse diagram

An illustrative full derivation is given in the Tableaux (15-17) below for /ɦɑnt-ʲki/ > [ɦɑjŋki] ‘hand’ (10d), which passes through three derivational steps: consonant cluster reduction (15), regressive place assimilation (16), and diphthongization (17).

| ɦɑnt-ʲki | *CCC | Max(Marked)$_{stem}$ | Max(Dors) | Max(Cor)$_{stem}$ | Agree |
|---|---|---|---|---|---|
| a. ɦɑntʲki | W | | | L | 1 |
| b. ɦɑntʲi | | | W | L | L |
| → c. ɦɑnʲki | | | | 1 | 1 |

Tableau 15: /ɦɑnt-ʲki/ > [ˈɦɑjŋki] ‘hand’ (10d). Step 1: Final consonant deletion

| ɦɑnʲki | Agree | Ident(Marked)$_{stem}$ | Ident(Dors) | CrispEdgeIn | Ident(Cor)$_{stem}$ |
|---|---|---|---|---|---|
| a. ɦɑnʲki | W | | | L | L |
| b. ɦɑnʲti | | | W | L | L |
| → c. ɦɑŋʲki | | | | 1 | 1 |

Tableau 16: /ɦɑnt-ʲki/ > [ˈɦɑjŋki] ‘hand’ (10d). Step 2: Regressive place assimilation

| ɦɑŋʲki | CrispEdgeIn | Align(j,Stem) |
|---|---|---|
| a. ɦɑŋʲki | 1 | W |
| → b. ɦɑjŋki | 1 | |

Tableau 17: /ɦɑnt-ʲki/ > [ˈɦɑjŋki] ‘hand’ (10d). Step 3: Diphthongization

**4. Discussion**. The diminutive is unique not only for Afrikaans but also typologically: bidirectional, even progressive, place assimilation is extremely rare. Wissing (1971) reasonably dismisses the rules that map /-ki/ onto [pi] and [i] as ad hoc. He instead analyzes the diminutive as exhibiting phonologically-conditioned allomorphy, e.g. heavy /m/-final stems take [pi] directly as their diminutive suffix without an intermediate form like /-ki/ undergoing assimilation.

While it is the case that no other suffix of Afrikaans behaves this way, there are clear parallels cross-linguistically. Although rare, progressive and bidirectional place assimilation systems are attested (see Lamont 2015 for a typological survey). The faithfulness hierarchy active in Afrikaans is also active in Nankina (Finisterre-Huon): marked consonants in the stem take priority over marked suffix consonants, which, in turn, take priority over unmarked stem consonants (Spaulding & Spaulding 1994, Lamont 2015). The Nankina system is clearly phonological as it extends to four suffixes: the first-person possessive /-na/, the second-person possessive /-ka/, the agentive /-te/, and the locative /-ŋan/. This makes a strong case for a phonological analysis of the Afrikaans diminutive, because the Nankina system is unlikely to comprise four independent but identical phonologically-conditioned allomorphy systems.

It is not problematic that the diminutive suffix behaves uniquely in Afrikaans. The phonology simply must contain lexically-indexed versions of *CCC and AGREE(PLACE) (Pater 2009), which motivate triconsonantal cluster reduction and place assimilation only with the diminutive. The eccentricity of the diminutive holds in Dutch as well as in other West Germanic languages. In Afrikaans, as Donaldson (1993:87) notes, the diminutive is used extensively, so there is no lack of opportunity for learners to acquire its complex allomorphy.

A final point in favor of a phonological analysis is that the diminutive's glide creates diphthongs that are not otherwise found in the language: [ɑj], [ɔj], and [ɛj] (Donaldson 1993:90, Bye 2013). Diphthongization is therefore not structure preserving, which is a property strongly associated with automatic phonological processes (Haspelmath & Sims 2010). Without tying the glide directly to the underlying form, it is difficult to imagine an analysis which otherwise balances the automatic nature of diphthongization with its morphological specificity.

**5. Conclusion**. The Afrikaans diminutive suffix demonstrates remarkably complex prosodic and segmental interactions which can nonetheless be reduced to a small number of generalizations. First, the stem it attaches to must be of a certain size, and is otherwise augmented. Second, it cannot create triconsonantal clusters and will trigger or undergo deletion when a stem ends in a consonant cluster. Third, it must surface in a homorganic cluster and will trigger or undergo overt or covert place assimilation to achieve this. Finally, the stem undergoes diphthongization if it was the target of place assimilation. These generalizations make the allomorphy ideal for a constraint-based framework. This paper has presented such an analysis along with a representatively thorough description of the data.

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