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Is Vowel Harmony canonically (P)Word bound?
An Africanist perspective on vowel harmony domains

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1 Introduction

It is regularly asserted in surveys of vowel harmony systems that vowel harmony 'canonically' applies within the (P)Word. (See e.g.: Archangeli & Pulleyblank 2007, Hyman 2002, Kaisse 2016, Krämer 2003, Polgardi 2006, Rose & Walker 2011, van der Hulst & van der Weijer 1995.)

- That is, the domain is roughly the word but can be smaller than the word due to phonological conditions on harmony.

The 'word' is usually taken to refer to the phonological word, not the grammatical word, since compounds are often disharmonic.

- Indeed, vowel harmony is said to rarely cross lexical word boundaries, either within compounds or within phrases.

However, if one focuses on African languages, one gets a different perspective on how closely the domain for vowel harmony matches the (P)Word.

- As a reminder, approximately 2000/6000 (roughly 1/3) of the world's languages are spoken in Africa, and three types of vowel harmony are found in African languages: 1- ATR harmony; 2- Bantu vowel height harmony (VHH); and 3- raising harmony (in Sotho-Tswana).
- As Clements & Rialland (2008) point out, the first two types of harmony are widespread in languages spoken across the continent.

This talk will undertake a preliminary survey of vowel harmony domains from an Africanist perspective and present case studies from a variety of languages showing that it is **relatively common for vowel harmony to apply in a domain that is either larger or smaller** than the PWord.

After introducing a sub-word system of harmony, Bantu VHH, the talk will focus on ATR harmony systems that take a phrasal domain and demonstrate that:

- it is perhaps not as rare for vowel harmony to apply across word boundaries as has been asserted in the previous literature on this topic.

The talk will end by raising the question:

- if phonologists had investigated ATR harmony systems first, would we have made the generalization that vowel harmony in general is a PWord-bound phenomenon?

2 Bantu vowel height harmony (VHH): domain smaller than the PWord

I'll illustrate with the case of Chichewa (N31, Malawi), a Bantu language with a 5-vowel system:

(1) Chichewa vowel system, IPA (Downing & Mtenje 2017)

high	i	u
mid	ɛ	ɔ
low	a	

Bantu vowel height harmony (VHH) imposes a condition **on the vowels composing the stem**, such that peripheral vowels (*i, u, a*) combine only with other peripheral vowels, while the non-peripheral vowels (i.e., mid vowels *e, o*) combine with other mid vowels.

The root-initial vowel controls harmony for the rest of the stem (excluding the final vowel).

- The root-initial vowel is the locus of maximal phonemic contrast in most Bantu languages (Hyman 1999).

That is, as Hyman's (1999) survey demonstrates, "canonical" Bantu VHH is subject to morphological conditioning:

(2) "Canonical" Bantu VHH (Hyman 1999: 238)

***Morphological conditioning*:**

- It does not apply to the inflectional final vowel.
- It does not apply to prefixes.

That is, it applies roughly within the derivational stem (bolded):
[[Prefixes] [[**Root+Derivational Suffixes**] IFV]

Chichewa has all the properties of "canonical" Bantu VHH.

- Most verbal suffixes have two allomorphs, one with a high, front vowel and one with a mid, front vowel.
- The quality of the suffix is determined by the quality of the root-initial vowel.

This pattern is illustrated by the data in (3a), below. (All data cited in this section are from Downing & Mtenje 2017.)

- Peripheral root-initial vowels are followed by the peripheral suffix vowel, *i*.
- As shown in (3b), mid root-initial vowels are followed by the mid suffix vowel, *e*. (The infinitive form of the verbs is given in these data sets, as the gloss shows):

(3)

a. Peripheral root vowels – *i, u, a* – are followed by the peripheral suffix vowel, *i*

Applicative

ku-phíika	'to cook'	ku-phíkiila	'to cook for'
ku-túuma	'to send'	ku-túmiila	'to send for someone's benefit'
ku-gáawa	'to divide'	ku-gáwiila	'to share out; distribute'
ku-khúuta	'to be satisfied'	ku-khútiila	'to be satisfied with'
ku-líima	'to cultivate'	ku-límiila	'to farm for'
ku-váala	'to get dressed'	ku-váliila	'to put on'

Causative

ku-záama	'to be deep'	ku-zámíítsá	'to deepen'
ku-phwáanya	'to smash'	ku-phwányiitsa	'to cause to smash'
ku-phúnzíílá	'to learn'	ku-phúnzíítsá	'to teach'
ku-míina	'to blow one's nose'	ku-míniitsa	'to blow someone's nose'
ku-gúula	'to buy'	ku-gúliitsa	'to sell'
ku-yíimba	'to sing'	ku-yímbiitsa	'to cause to sing'

b. Mid root vowels – *e, o* – are followed by the mid suffix vowel, *e*

Applicative

ku-kóoka	'to pull out'	ku-kókeela	'to pull out for'
ku-tséeka	'to close'	ku-tsékeela	'to close for'
ku-méenya	'to hit'	ku-ményeela	'to hit someone with'
ku-góona	'to sleep'	ku-gónéélá	'to sleep on something'

Causative

ku-wóona	'to see'	ku-wóneetsa	'to show'
ku-séeka	'to laugh'	ku-sékeetsa	'to make laugh'
ku-lóowa	'to enter'	ku-lóweetsa	'to put in; make enter'
ku-yéenda	'to go'	ku-yéndeetsa	'to drive; move'

As shown in the data below (see also (3)), **prefixes and suffixes do not harmonize** with the root-initial vowel

- The subjunctive verb final vowel suffix *–é* is always mid, no matter what vowel precedes.
- Prefixal high vowels do not alternate to agree with the height of the root-initial vowel.

(4)

(a) *Final vowels are outside the harmony domain*

mu-won-eédw-é	'you should be seen (subjunctive)'	ti-namizaán-é	'we should deceive each other (subjunctive)'
ndi-khululuk-iík-é	'I should be pardonable (subjunctive)'		
liimb-a	'be tough (imperative)'	mu-liímb-é	'you should be tough (subjunctive)'

(b) *Prefixes are outside the harmony domain*

mu-ku-péeza	'you are finding'	ndi-ku-góona	'I am sleeping'
mu-ku-phíika	'you are cooking'	ndi-ku-túuma	'I am sending'

To sum up:

- Chichewa Bantu VHH harmony is (derivational) Stem-bound, **not word-bound**:
    - Inflectional affixes are outside the domain of progressive harmony.
- As Downing (1999; also Downing & Mtenje 2017) argues in detail, the Stem ≠ Phonological Word in Chichewa and other Bantu languages.

3 Kinande phrasal ATR harmony

A more complex case of Bantu VHH comes from Kinande (D42, DRC), a language I have been analysing in collaboration with Martin Krämer (Downing & Krämer 2017). The original data is from Mutaka (1990, 1995, 2007).

I begin with an introductory sketch of Kinande morphology, its vowel inventory and ATR vowel harmony (VH), drawn mainly from the presentation in Archangeli &Pulleyblank (2002; A&P). (See, too, Schlindwein 1987; Mutaka 1990, 1995, 2007; Hyman 2002; Kenstowicz 2009.)

3.1 Morphology

Kinande nominals have a morphologically complex structure:

(5) Kinande/Bantu nominal word structure (A&P 2002: 141)

augment $_{\text{Word}}$[dim./augmentative prefixes $_{\text{Macro-stem}}$[class prefixes $_{\text{Stem}}$[$_{\text{Root}}$ ...] ...]]]

3.2 Vowel inventory

Kinande has a typical, for Bantu languages, 7-vowel phoneme inventory (A&P 2002, Hyman 2002, Kenstowicz 2009):

- Only high vowels (Vs) are contrastive for [ATR]
- Non-high Vs are not [ATR]

(6) Kinande vowel phonemes

i	u
ɪ	ʊ
ɛ	ɔ
	a

The nominal forms in (7) illustrate these phonemic contrasts.

- N.B.: Infinitives are nominals, beginning with the noun class prefix /ɛ-rɪ-/.

(7) Nominal forms : '[' indicates the Root (A&P: 148); we do not transcribe vowel length

a.	+high, ATR	ɛ-rì-[líb-a	'to cover'
		ɛ-rí-[húk-a	'to cook'
b.	+high, not ATR	ɛ-rɪ-[lɪ́m-a	'to cultivate'
		ɛ-rɪ-[hʊ́m-a	'to beat'
c.	–high, not ATR	ɛ-rɪ-[hɛ́k-a	'to carry'
		ɛ-rɪ-[kár-a	'to force'
		ɛ-rɪ́-[bɔ́h-a	'to tie'

3.3 ATR Vowel harmony (VH) within words

However, ATR VH derives an ATR contrast for all vowels on the surface, as Gick et al.'s (2006) phonetic study shows:

(8) Kinande surface vowel inventory

Advanced	i, e, ə, o, u
Retracted	ɪ, ɛ, a, ɔ, ʊ

This is illustrated by the data in (9). Note that:

- Infinitive shows UR [ATR] of root-initial V
- The applicative suffix harmonizes for [ATR] with an immediately adjacent root vowel = **progressive ATR VH**. This is illustrated in (9d-f).
    - Prefix vowels are not affected by progressive ATR VH
    - The example in (9g) (Mutaka 1995: 49) shows that progressive harmony is blocked by [a].
- The causative and the agentive suffixes are [ATR] and trigger ATR VH on all preceding Vs in the word = **regressive ATR VH**

(9) ATR VH within words (A&P; Mutaka 1990, 2007; Kenstowicz 2009)

	Infinitive	Applicative	Causative	Agentive	Gloss
a.	ɛ-rɪ-hɛ́k-a	ɛ-rɪ-hɛ́k-ɛ́r-a	e-ri-hek-es-i-a	o-mu-hék-i	'carry'
b.	ɛ-rɪ-lɔ́g-a	ɛ-rɪ-lɔg- ɛ́r-a	e-ri-log-es-i-a	o-mu-lój-i	'bewitch'
c.	ɛ-rí-hák-a	ɛ-rí-hak-ír-a	e-rí-hak-is-i-a	o-mú-hák-i	'smear'
	ɛ-rí-tʊ́m-a	ɛ-rí-tʊm-ír-a	e-rí-tum-is-i-a		'send'
d.	e-ri-hímb-a	e-ri-himb-ír-a	e-ri-himb-is-í-a	o-mu-hímb-i	'build'
e.	e-rí-húm-a	e-rí-hum-ír-a	e-rí-hum-is-í-a	o-mú-húm-i	'move'

3.4 Phrasal ATR Vowel harmony (PVH)

Kinande anticipatory **(regressive) ATR** harmony (PVH) **can apply, not only across stem boundaries, but also** across morphological word boundaries **within the DP**.

Syntactic restriction: As Mutaka (1995) demonstrates, however, **PVH only applies in DPs**.
- Notice in the data in (10) that the examples where PVH applies are DPs consisting of a noun+modifier;
- Notice that PVH can affect the entire noun preceding the triggering modifier.

(10) Kinande variable PVH again, in DPs (Mutaka 1995:52)

a. ɛ̀-mí-tí mí-kù:hì 'short trees'
ɛ̀-mí-t*í* mí-kù:hì
ɛ̀-m*í-tí* mí-kù:hì
è-mí-tí mí-kù:hì

b. ɛ-βɪ-tsʊngʊ́ βí-kù:hì 'short potatoes'
ɛ-βɪ-tsʊng*ú* βí-kù:hì
ɛ-βɪ-ts*ungú* βí-kù:hì
e-βi-tsungú βí-kù:hì

PVH is not found in phrases consisting of a verb+noun or a noun+verb.
- Note that PVH stops at the first syllable of the second word, the one containing the triggering vowel.
- The first word is not affected, *even if* the phonological conditions discussed in the next section are met, i.e.:
  - gliding applies to resolve vowel hiatus, as in (11a),
  - or if the first word ends in a high V, as in (11b):

(11) PVH not found in non-DPs (Mutaka 1995: 54)

a. ʊ́-hʊ́m-ɛ 'hit' ɛ-kí-síki 'log' → ʊ́-hʊ́m-j ɛ/ekí-síki 'hit the log'
ʊ́-m-bɛ 'give me' ɛ-kí-síki 'log' → ʊ́-m-bj ɛ/ekí-síki 'give me the log'
ɛ-rɪ-hɛr-a 'to plant' ɛ-kí-síki 'log' → ɛ-rɪ-hɛr ɛ/ekí-síki 'to plant the log'

b. ɛ-kɪ-tsʊngʊ 'potato' ki-némundí-húk-u-a '(it) will be cooked'
→ ɛ-kɪ-tsʊngʊ ki-némundí-húk-u-a 'the potato will be cooked'

There are other conditions on phrasal VH which I won't take up here. **The importance of this data** is to show that:

- Regressive ATR harmony can apply **across lexical word** boundaries;
    - **VH is not prosodic word-bound**.
    - **And it can target more than one syllable, affecting the entire preceding word**.
- The domain is syntactically conditioned; we don't just find phonologized local co-articulation that is blind to the morpho-syntactic context. (See Downing & Krämer for discussion.)

4 Other African phrasal ATR harmonies

Kinande is not the only language where ATR can trigger harmony across lexical word boundaries.

As Kaisse (2016) shows in her recent survey of postlexical processes, there are a number of (West) African languages where **regressive ATR harmony can affect a preceding lexical word**.

- In several of these cases only the final syllable of the word preceding the trigger is affected.

Kaisse (2016) lists the following languages as exhibiting phrasal regressive ATR VH:

- **Akan** and other **Kwa** languages (Akanlig-Pare & Asante 2016, Casali 2002, Dolphyne 1988, Kügler 2015, Obeng 1995);
- **Vata** (Kru; Kaye 1982; Hyman 2002, Kimper 2011).

We can add to her list:

- **Luo** (W. Nilotic; Swenson 2015)
- and **Gua** (Kwa; Obiri-Yeboah & Rose 2018).

Gua data from Obiri-Yeboah & Rose (2018) is cited to illustrate.

- Notice that ATR VH applies regressively across word boundaries **within minimally binary phonological phrases:**

(12) Gua ATR VH (Obiri-Yeboah & Rose 2018)

Four words – harmony between words 1 and 2, and 3 and 4

(4)

a.
Sω ← ω Vω Oω
mí sìsí sɔ̀ átɕɔ̀
my sister bought hoe
'My sister bought a hoe'

b.
Sω ω Vω ← Oω
àɲɛ́ à kɪ́tè bókìtì
man DET held bucket
'A man held a bucket'

c.
Sω ← Vω Oω ω
àɲé kúbì ɜ́dʑè à
man cut firewood DET
'A man cut the firewood'

d.
Sω Vω Oω ← ω
àɲɛ́ kɪ́tɛ̀ ɔ̀kɔ́tó dùúdùbí
man held crab tiny
'A man held a tiny crab'

e.
Sω ← ω ω Vω
mí gbéì kɔ́ɔ̀ hʊ́mɪ̀
my dog red rested
'my red dog rested'

e.
Sω ω ω ← Vω
mɪ́ ɔ̀kɔ́tɔ́ kóò hè
my crab red fell
'my red crab fell'

Four words – no harmony between words 2 and 3

(5)

a.
Sω Vω |← Oω ω
àɲɛ́ kɪ́tɛ̀ bókìtì kɔ́ɔ̀
man held bucket red
'A man held a red bucket'

b.
Sω ω |← Vω Oω
àɲɛ́ à kúbì ɜ́dʒè
man DET cut firewood
'The man cut firewood'

c.
Sω ω | ← ω Vω
mɪ́ ɔ̀kɔ́tɔ́ dùúdùbí hè
my crab tiny fell
'my tiny crab fell'

<u>To sum up this section</u>:

- **Regressive ATR vowel harmony can cross word boundaries** – at least minimally – in a number of unrelated African languages.
- The domain is, at least in some languages, prosodically and syntactically conditioned.
    - If the source of the process is local co-articulation, notice that it does not apply blindly, ignoring context.

5 Somali phrasal ATR harmony

Somali (Cushitic) is often cited (Kaisse 2016, Krämer 2003:24, Txanson 2010) as a language where vowel harmony applies within a clause, based on work by Andrzejewski (1955) and Hall et al. (1974).

In a Somali prosody project with Morgan Nilsson, we have tried to re-elicit clausal harmony, working with two native speakers of Somali. This part of the talk reports on our research project.

5.1 Background on the vowel system of Somali

As shown in the vowel chart below (Krämer 2003: 19), Somali vowels contrast +/- ATR:

(13) The Somali vowel system

+ATR set	-ATR set	
i, ü	ɪ	ʊ
e, ö	ɛ	ɔ
æ		a

[+ATR] vowels are all front; [-ATR] vowels show a front-back contrast.

- ATR is a lexical contrast, and there are numerous (near) minimal pairs.

Our phonetic study so far confirms that back [-ATR] vowels are fronted in a harmony context (so F2 is the main correlate of the distinction), while front [-ATR] vowels are raised in a harmony context (so F1 is the main correlate of the distinction.)

(See Edmondson et al. (2003), Kimper et al. (2016) for recent studies of the phonetics of Somali vowels.)

[+ATR] vowels are described as 'heavy' by traditional Somali grammarians, while the [-ATR] are 'light'. Our aural impression is that heaviness refers to a pharyngeal quality.

- As Casali (2008) notes, it is fairly common for [+ATR] vowels to have an additional laryngeal or pharyngeal quality, and 'heaviness' is a descriptive way of getting at that quality.
  - Edmondson et al.'s (2003) phonetic study of Somali vowels proposes that heaviness is due to a lax supraglottal cavity.

It is not so common for [+ATR] vowels to be fronted.

- However, pharyngeal vowels are fronted in many languages of the Caucasus, according to Moisik et al. (2012). They cite Comrie's (2005) observation that having the pharynx as an articulator "leaves most of the tongue free to do other things, including the production of more fronted vowel qualities."
- Krämer (2003) suggests that since [+ATR] implies fronting/advancement of the tongue root, it is perhaps unsurprising that the [+ATR] vowels are fronted – though Casali (2008) lists no other ATR harmony systems like this.

5.2 Domain of vowel harmony

As noted in previous studies (Andrzejewski 1955, Armstrong 1964, Saeed 1993), Somali **words agree for ATR**.

1- When suffixes are added to nouns, many suffixes alternate in their ATR quality to agree with the noun; umlaut indicates [+ATR] vowels, making harmony domain visually salient:

(14)

a. MO16.2619: hüngű̈rigääs 'that gullet'	cf. MO16:2638:	rággaas 'those men'
b. MO16.2743: gế̈ëdkää 'that tree'	cf. MO16.2749:	dádkaa 'those people
c. MO15.814: nïrí̈g	cf. MO15.1070:	nïrgő 'camel foal(s)'
d. AEA24.159: naág 'woman'	cf. MO15.1711:	naagó 'women'

2- Some heavy (+ATR) suffixes trigger ATR agreement on their base:

(15)

MO15.4110: Shéeg! 'Tell it!' cf. MO15.4116: shëëg**ḯd** 't(the act of) telling'
MO15.4137: Hél! 'Find it!' cf. MO15.4140: hël**ḯd** '(the act of) finding'

Beyond the grammatical word, one also finds regressive harmony from a verb to preceding particles within what Somali grammarians call **the verbal complex** (Zholkovskij 1979: 10).

These particles are arguably clitic-like and are **parsed with the verb into a Phonological Word**, as they immediately precede the verb and no other lexical categories can intervene between them and the verb:

(16) VH within the verbal complex

a. Indefinite subject pronoun, la
Wáa lä böödää. 'One jumps.' cf. Wáa la cunaa. 'One eats it.'
b. Ma (negation)
MO19.3812: Odaý mấ ïhï. 'I'm not an old man.'
Cf. MO19.3860: Odaý má aha. 'He's not an old man.'
c. Soo 'motion here'
MO19.2420: söő ïïbső 'buy it' cf. MO19.2442: soó gado 'buy it'

Harmony can also be found across lexical word boundaries and is consistently regressive.
- In our data (contrary to findings in Andrzejewski (1955) & Armstrong (1964)) **lexical categories do not trigger harmony on following** auxiliaries or other function words:
- As Hyman (2002) notes, ATR vowel harmony is, in fact, most commonly regressive:

(17)

a. Baa focus marker
MO15.2851: Mä dű̈l baa? 'Is it a nostril?' * Mä dű̈l bää?
MO15.2872: Mä gế̈ëd baa? 'Is it a tree?'
b. Auxiliary verbs: Doonaa (future tense)
MO15.4251: Waan hế̈lï doonaa. 'I will find it' * Waan hế̈lï döönää
MO15.4263: Waan shëế̈gï doonaa. 'I will tell it.'

Regressive ATR harmony provides evidence that Somali has phrasal harmony

- Harmony can extend beyond the verbal complex or predicate nominals to preceding function words that are arguably not clitic-like, even over longer stretches:

(18)

a. Waa 'statement'

MO15.2606: Waa báal. 'It's a feather.' Cf. MO15.2624: Wää wä̋äx. 'It's a quarter.'

b. Waa + clitic subj.pronoun

MO15.3737: Wään ä̋ädäyää. 'I am going.' Cf. MO15.3775: Waan árkayaa. 'I am seeing it.'

c. Subj. pron. + má 'Q'

MO19.3958: Tänï mä dö̋ön baa? 'Is this a boat?'

Cf. MO19.1985: Tani ma gabár baa? 'Is this a girl?'

Furthermore, **harmony can affect lexical words**.

- Adjectives can *optionally* trigger harmony on a preceding noun

(19) N+adjective

MO18.253: mëë̋l fő̈g 'a distant place' cf. meél 'place'

But: MO18.351: súuq mädöw 'black market' and meél dhöw 'a close by place'

- Regressive – but not progressive – harmony is systematically found within compounds

(20) Compounds

a. [+ATR] spreading to the left - regressive

MO19.682: rëër-mägä̋äl 'city folk' cf. MO18.690: reér 'family'

Cf. NP, not compound: MO19.863: reér Mäxämüüd 'Mahamud's family'

MO19.1029: bäd-wë̋yn 'ocean (lit. big sea)'

cf. MO19.1048: bád 'sea'

OM19.1138: dhägäx-mä̋döw 'flintstone (lit. black stone)'

Cf. OM19.1155: dhágax 'stone'

MO19.1451: äf-Ämxä̋ärï 'Amharic language'

Cf. MO19.1550: af-Sawaaxíli 'Swahili language'

b. No spreading to the right - progressive

MO19.655: lïbääx-badéed 'shark (lit. lion of the sea')

MO19.910: häbëën-bár 'midnight'

But can harmony affect all the words in a clause, as claimed in previous literature, like Andrzejewski (1955) and Hall et al. (1974)? – see examples in (21):

(21) Somali clause harmony

a. Hall et al. (1974: 261; cited in Krämer 2003)
i. bɛ:ra ʔʊsʊb ba: lɔ: bɛ:raɪ
'new gardens were cultivated for them.'
Cf.
ii. be:ræ ʔüsüb bæ: lö: sæ me:yei
'New gardens were made for them.'

b. Andrzejewski (1955; cited in Txanson 2010)
be:r-ti: mæ sö: i:bsæ-tæj
'Have you bought the garden?'

We are not yet confident of this.

- Speech rate is noted (e.g., by Andrzejewski 1955) as important in triggering long distance harmony. At a normal speech rate, it is common to get disharmonic stretches – note -ATR words, italicized:

(22)

a. MO16.1239: Bërbër̋ä *ayúu* tëgäyää. 'He is going to Berbera.'
b. MO16.1249: Bërbër̋ä *buu* tëgäyää. 'He is going to Berbera.'

- Longer harmonic stretches often have more than one source of [+ATR] – bolded; this isn't always clearly noted in previous work.

(23)

a. MO16.1217: Wü̋xüü **äädäy Bërbë̋r**a. 'He went to Berbera.'
b. MO15.3639: Wüü **wë̋yn yähäy**. 'He is big.'

- Plus, we are beginning to suspect that Armstrong (1964: 156) is correct in proposing that there is a process of fronting and raising harmony triggered by [i] and [j] that is distinct from ATR harmony.
    - This process can apply across lexical word boundaries, as shown in (24).

(24) MO17.1410: Müü̋sää **yïmïd**. 'Musa has arrived.' (cf. Muúsa)

<u>To sum up</u>:
While the domain of ATR harmony in Somali is seldom as large as a clause in our data, **regressive ATR harmony** is attested across lexical word boundaries:
- within compounds;
- between lexical categories and preceding function words;
- between an adjective and preceding noun (optionally).

Fronting/raising harmony also applies across lexical word boundaries.

These properties taken together show that **Somali vowel harmony is not lexical word-bound**.

6 Discussion and concluding remarks

In this final section, I would like to critically review some points that Kaisse (2016) makes in her survey of postlexical processes, in the light of the data presented here.

- I am focusing on Kaisse (2016) because it is the only work I know which surveys postlexical vowel harmony in the context of postlexical phonological processes in general. This work has the further virtue of making strong claims about the possibilities.
- I should point out that she discusses all of the cases taken up here and puts a different spin on their significance.

She concludes her survey by proposing that:

"Maybe in general, postlexical processes are strictly local and usually involve adjacent segments. They are often young processes and start life as natural local effects. Iterative processes are more phonologized [and m]ay very occasionally make it into the next syllable but rarely farther."
"[…]most phonologized processes start life as natural local effects which are sensitive not to grammatical information but to temporal adjacency. (Kiparsky 1982 et. seq.)
"[…] Iterative processes, such as vowel harmony, consonant harmony, and metrical stress assignment, are more phonologized and rarely postlexical. "

The data presented here calls each of these points into question:

- Postlexical regressive ATR harmony is not strictly local: it can affect more than one syllable, at least in Somali and Kinande.
- All of the ATR harmony cases presented – both word-internal Bantu VHH and the phrasal processes – are sensitive to grammatical information. This shows they must be well phonologized. (See Downing & Krämer 2017 for further discussion of this point.)
- There is therefore no support from this data that phonologized vowel harmony processes are "rarely postlexical."

I am more in agreement with one of Kaisse's (2016) interim proposals, namely,

- that if vowel harmony appears to typically not be postlexical, then that is most likely **due to underreporting**.

<u>Potential sources of underreporting</u>:

- Traditional field workers (I stand accused) typically elicit words and paradigms. Phrasal phonological phenomena, in general, are almost certainly underreported.
- Traditional field workers are typically not native speakers of the language. Some ATR contrasts are notoriously hard to hear, as Casali (2008) observes, and this can add to mis- and under-reporting. The cases of phrasal harmony that have been identified were almost all first reported by native speaker linguists or linguists (like Andrzejewski and Casali) who worked on a language over a long period of time.
    - There are very few phonetic studies of ATR harmony systems, and all the phonetic studies I know of also look only at harmony within words. Phrases are not included in the data set.

In short, we need more phonetic and phonological studies of more ATR harmony systems, actively involving native speakers as analysts/consultants, which include more phrasal data.

I'll conclude by giving my answer to the question I started with:

- If phonologists – and phoneticians – had investigated ATR harmony systems first, would we have made the generalization that vowel harmony in general is a PWord-bound phenomenon?

As we've seen, things are more complicated than this, especially in ATR harmony systems.

- I hope you leave this talk sharing my doubts about whether the generalization that vowel harmony is PWord bound is cross-linguistically valid.
- I hope you leave this talk agreeing that we need more thorough studies of phrasal phonology (and phonetics) before we can make strong generalizations about what is or is not a typical long distance, postlexical process.

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