ABC, consonant harmony and directionality

- ABC was originally developed to account for consonant harmony (Walker 2000, Hansson 2001a, 2010, Rose & Walker 2004)
- Hansson (2001a, 2010) notes that consonant harmony follows two main directional patterns:
  - regressive directionality — final trigger segment determines harmony regardless of morphological structure
  - cyclic or stem control — both regressive and progressive directionality are possible but only in cases where stem triggers changes on affixes
- Hansson (2001a,b, 2010), relates the regressive pattern to speech planning and points out parallels in speech errors.

Predictions for alternations and MSCs

- Alternations can be regressive (pure directionality or stem-control) or progressive (stem-control)
- Morpheme Structure Constraints (MSCs) can only be regressive, because stem control is irrelevant within roots.

<table>
<thead>
<tr>
<th>Alternations</th>
<th>MSCs</th>
</tr>
</thead>
<tbody>
<tr>
<td>regressive</td>
<td>regressive</td>
</tr>
<tr>
<td>stem control</td>
<td>regressive</td>
</tr>
</tbody>
</table>

Formalizing directionality in ABC

- Rose & Walker (2004) assume progressive directionality in addition to regressive to account for Yaka and Kikongo nasal agreement:
  i) stem-to-suffix nasal agreement (Hyman 1995)
     /nok-idi/ → [nok-ene] ‘pleuvoir’
  ii) prefixes do not trigger: ma-dáfú ‘vin de palme’ (cl. 6)
  iii) progressive MSC
     e.g. ✓m…n, ✓b…d, ✓d…m, *m…d in roots

Predictions of Rose & Walker (2004) for alternations and MSCs

- Alternations are either purely regressive (suffix-to-stem-to-prefix) or purely progressive (prefix-to-stem-to-suffix).
  o Note: stem control could be added as a separate dimension.
- MSCs mirror alternations. Because stem control is irrelevant within roots, either directionality could emerge, but not both.
Goals of this talk

- Show that previous formal approaches to directionality face typological challenges matching MSCs and alternations.
- Propose a revised typology of consonant harmony and an approach to directionality built in to targeted Ident-CC constraints (Wilson 2003, Hansson 2006).
- Discuss some of the ramifications of the proposal for extensions of ABC to other phenomena (vowel harmony, dissimilation).

Formalizing directionality in ABC: Directionality via IDENT-CC constraints

- IDENT-CXCY constraints (Rose & Walker 2004, p. 508)
  
  Let \( C_L \) be a segment in the output and \( C_R \) be any correspondent of \( C_L \) such that \( C_R \) follows \( C_L \) in the sequence of segments in the output (R>L).
  
  o Progressive directionality — \(-\text{IDENT-}C_LC_R(\text{F})\): If \( C_L \) is \([\text{F}]\), then \( C_R \) is \([\text{F}]\).
  
  o Regressive directionality — \(-\text{IDENT-CR}C_L(\text{F})\): If \( C_R \) is \([\text{F}]\), then \( C_L \) is \([\text{F}]\).

- Intended directionality can be subverted: \(-\text{IDENT-}C_LC_R(\text{F})\) can in principle be satisfied either by meeting the consequent (‘…then \( C_R \) is \([\text{F}]\)’) or by failing the antecedent (‘If \( C_L \) is \([\text{F}]\)…’). (Hansson 2001a, 2010; see also Bakovic 2001 on conditional grounding)

- To ensure directionality, it must further be assumed that
  
  i) ‘[\text{F}]’ refers to a single value; i.e., not \([\pm\text{F}]\).
  
  ii) Separate IDENT-IO(F) and IDENT-OI(F) constraints.
  
  iii) \{IDENT-IO(F), IDENT-CXCY(F)\} \gg IDENT-OI(F)

- ‘Directionality’ is essentially obtained via dominance of the harmonic feature...

<table>
<thead>
<tr>
<th>/m…d/</th>
<th>IDENT-IO(nas)</th>
<th>IDENT-C_LC_R(nas)</th>
<th>IDENT-OI(nas)</th>
</tr>
</thead>
<tbody>
<tr>
<td>disharmony</td>
<td>m…d</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>harmony</td>
<td>m…n</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>anti-harmony</td>
<td>b…d</td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>/d…m/</th>
<th>IDENT-IO(nas)</th>
<th>IDENT-C_LC_R(nas)</th>
<th>IDENT-OI(nas)</th>
</tr>
</thead>
<tbody>
<tr>
<td>disharmony</td>
<td>d…m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>harmony</td>
<td>n…m</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>anti-harmony</td>
<td>d…b</td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

- But: IDENT-OI \gg IDENT-IO makes anti-harmony in the opposite direction a bit too easy!

<table>
<thead>
<tr>
<th>/m…d/</th>
<th>IDENT-OI(nas)</th>
<th>IDENT-C_LC_R(nas)</th>
<th>IDENT-IO(nas)</th>
</tr>
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<tr>
<td>disharmony</td>
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<tr>
<td>disharmony</td>
<td>d…m</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Alternatively, IDENT-IO(αF) and IDENT-IO(–αF); Walker (2000).

2 Although Tunen (Mous 1986) appears to involve +ATR dominance, triggered by roots, suffixes and prefixes under certain conditions. See also limited +ATR prefix-triggered vowel harmony in Kina nde numerals (Hyman 2002).

3 ANCHOR-X-CC achieves directionality by specifying faithfulness to the X-most consonant in a correspondence set (see also Jurgec (2011) for a similar proposal in a non-correspondence framework). We do not explore this proposal.
Formalizing directionality in ABC: Directionality via CORR constraints

- Walker (2000) proposes that directionality is encoded in the Corr-C ↔ C constraints, both L→R (for nasal harmony) and R→L.
  - CORR-C₁↔C₂ (Walker 2000, p. 325, emphasis added)
    Given an output string of segments S, and consonants C₁∈S and C₂∈S, where C₂ follows C₁ in the sequence of segments in S, then a relation is established from C₁ to C₂, that is, C₁ and C₂ are correspondents of one another.
  - IDENT-CC(nas) (Walker 2000, p. 325, emphasis added again)
    Let C₁ and C₂ be consonants in the output, and let there be a correspondence relation from C₁ to C₂. If C₁ is [+nasal], then C₂ is [+nasal].
  - Again, despite the appeals to order in the string, directionality can be circumvented by failing the antecedent (‘If C₁ is [+nasal]’).

  - CORR-[F₁, …, Fₙ] (Hansson 2010, p. 241, emphasis in the original)
    Given an output string S and two consonants Cᵢ, Cⱼ ∈ S, where
    i) Cᵢ < Cⱼ (Cᵢ precedes Cⱼ); and
    ii) Cᵢ and Cⱼ differ at most in the set of features [F₁, …, Fₙ],
    then a correspondence mapping must be present from Cⱼ to Cᵢ (Ci←Cⱼ) such that Cᵢ is a correspondent of Cⱼ.
  - Hansson (2010, p. 255ff) notes that regressive directionality can only be ensured in the way proposed by Rose & Walker (2004).

Formalizing directionality in ABC: Targeted IDENT-CC constraints

  - IDENT[+voi]-CC (Hansson 2010, p. 257, tentative version)
    Let x and x’ be two candidate output representations, each of which contains two consonants Cᵢ and Cⱼ where Cᵢ←Cⱼ (Cᵢ is a correspondent of Cⱼ) and Cⱼ is [+voice]. Candidate x’ is preferred over x (x’≻x) iff x’ is exactly like x except that in x’, the correspondent Cᵢ is [+voice] rather than [–voice].
  - Because CORR-[F₁, …, Fₙ] makes explicit, asymmetric reference to segment order, Cᵢ precedes Cⱼ in all relevant candidates.
  - IDENT[+voi]-CC thus explicitly favors regressive harmony over disharmony, and does not favor or disfavor progressive harmony.

<table>
<thead>
<tr>
<th></th>
<th>/t...b/</th>
<th>IDENT[+voi]-CC</th>
<th>IDENT[±voi]-IO</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. disharmony</td>
<td>t...b</td>
<td>1. b &gt; a</td>
<td></td>
</tr>
<tr>
<td>b. (regressive) harmony</td>
<td>d...b</td>
<td>2. (a &gt; b)</td>
<td></td>
</tr>
<tr>
<td>c. (progressive) anti-harmony</td>
<td>t...p</td>
<td>3. a &gt; c</td>
<td></td>
</tr>
<tr>
<td>cumulative harmonic order</td>
<td></td>
<td>1. b &gt; a</td>
<td>4. b &gt; a &gt; c</td>
</tr>
</tbody>
</table>

1. IDENT[+voi]-CC favors regressive harmony over disharmony.
2. Ranking trumps the opposite preference of IDENT[±voi]-IO.
3. IDENT[±voi]-IO favors disharmony over progressive anti-harmony.
4. Taken together, regressive harmony $\succ$ disharmony $\succ$ progressive anti-harmony.

**Summary**
- Building directionality into IDENT-CC or CORR-CC constraints requires particular ranking of IDENT-IO/OI constraints to actually ensure desired directionality.
- Targeted IDENT-CC constraints appear to resolve the problem.
- But both Hansson’s and Rose & Walker’s accounts face some issues with typological predictions.

**Typology issues**
1. A few MSCs are progressive, and this unidirectionality cannot be attributed to stem control, even though it is paired with progressive stem-controlled alternations.
   | Alternations | MSCs | Attested?
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (L \rightarrow R), stem $\rightarrow$ suffix</td>
<td>(L \rightarrow R)</td>
<td>yes – Yaka nasal</td>
</tr>
</tbody>
</table>
   - Possible explanations: positional faithfulness to root-initial consonant, feature dominance (Hansson 2010, p. 158).
   - Rose & Walker (2004) account for this pattern.
2. Cases of progressive stem control paired with unidirectional regressive MSC are predicted to occur under both accounts, but do not appear to be attested.
   | Alternations | MSCs | Attested?
<table>
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<tbody>
<tr>
<td>1 (L \rightarrow R), stem $\rightarrow$ suffix</td>
<td>(L \rightarrow R)</td>
<td>yes – Yaka nasal</td>
</tr>
<tr>
<td>2 (L \rightarrow R), stem $\rightarrow$ suffix</td>
<td>(R \rightarrow L)</td>
<td>no?</td>
</tr>
</tbody>
</table>
3. Some stem-controlled alternations are paired w/ bidirectional MSCs → problem for both accounts, as they assume that MSCs and alternations should receive the same analysis.
   - Hansson (2010) does not allow progressive harmony except as stem-control
   - Rose & Walker (2004) allow progressive harmony but predict match between alternations and MSC (as in Yaka nasal) — does not predict regressive MSC as well

**Progressive stem control + bidirectional MSC**
- Koorete [–ant] (or Koyra) (Hayward 1982, Mendisu 2010)
  - Derivational suffixes with /s/ harmonize with sibilants in root (progressive stem-control): /ʔordʒ-os:o/ $\rightarrow$ [ʔordʒʊf:o] ‘he/they got big’
  - No prefixes with /s/ to test stem-controlled bidirectionality (Omotic prefixes are rare)
  - **MSC is bidirectional**: *s…j* and *ʃ…s*
- Possible explanation 1: feature dominance of [–ant]
  - Classical Arabic | Moroccan Arabic
  | za:ˈdʒ | ʒa:ʒ | ‘glass’
  | ʃams | ʃəәm | ‘sun’
  - Feature dominance is attested in MSCs, but no clear examples in alternations (Hansson 2010, p. 142); no strong evidence in Koorete for feature dominance
- Possible explanation 2: regressive directionality for both values of [±ant]
  - E.g. like Chumash (Harrington 1974, Mithun 1998)
  - $\check{\sqrt{s}}$s…s, $\check{ʃ}$…ʃ, *s…ʃ, *ʃ…s; /s…ʃ/ $\rightarrow$ [ʃ…ʃ], /ʃ…s/ $\rightarrow$ [s…s]
No evidence in Koorete for double-valued [±ant]; alternation appears to be single-valued and unidirectional, but the MSC is bidirectional.

Summary – progressive directionality

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<tr>
<th>Alternations</th>
<th>MSCs</th>
<th>Attested?</th>
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</thead>
<tbody>
<tr>
<td>L → R, stem ← suffix</td>
<td>L → R</td>
<td>yes – Yaka nasal</td>
</tr>
<tr>
<td>L → R, stem ← suffix</td>
<td>R → L</td>
<td>no?</td>
</tr>
<tr>
<td>L → R, stem ← suffix</td>
<td>bidirectional</td>
<td>yes – Koorete sibilant, Bukusu liquid (Odden 1994)</td>
</tr>
</tbody>
</table>

- By ruling out progressive directionality except in cases of stem-control, Hansson (2001a, 2010) successfully rules out any prefix → stem harmonies, but also rules out 1 & 3 and predicts 2, which does not appear to occur.
- Rose & Walker (2004) also rule out 3, but account for 1 and 2.

Regressive stem control + bidirectional MSC

  - In derivational prefixes, /k/ → [q] if root contains /q/:
    /maka-luqwan-la(l)/ → [maqalqwal] ‘s/he tired X’
  - Derivational prefixes with /q/ are i) unaffected, and ii) do not trigger harmony on root (so not [–RTR] harmony and not bidirectionality):
    /suq-kuhu-la(l)/ → [suqkuhulal] ‘it was smoked’ *[skukuhalal]
  - No derivational suffixes with /k/
  - MSC is bidirectional: (*k…q, *q…k)
  - If progressive harmony is disallowed, then [+RTR] dominance or [±RTR] regressive directionality? Both explanations are incompatible with facts from alternations.

Summary – regressive directionality

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<thead>
<tr>
<th>Alternations</th>
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<th>Attested?</th>
</tr>
</thead>
<tbody>
<tr>
<td>R → L, prefix ← stem</td>
<td>R → L</td>
<td>yes – Kera tʃʃ’</td>
</tr>
<tr>
<td>R → L, prefix ← stem</td>
<td>bidirectional</td>
<td>yes – Totonac dorsal</td>
</tr>
<tr>
<td>R → L, prefix ← stem</td>
<td>L → R</td>
<td>no</td>
</tr>
<tr>
<td>R → L, (prefix ←) stem ← suffix</td>
<td>R → L</td>
<td>yes – Slovenian sibilant (Jurgec 2011)</td>
</tr>
<tr>
<td>R → L, (prefix ←) stem ← suffix</td>
<td>bidirectional</td>
<td>no?</td>
</tr>
<tr>
<td>R → L, (prefix ←) stem ← suffix</td>
<td>L → R</td>
<td>no</td>
</tr>
</tbody>
</table>

- Both accounts predict 1, 3-6; do not predict 2
- Regressive harmony from stem to prefix is ambiguous: Pure regressive? Stem-control?

Our typological claims

- Regressive MSCs + regressive (suffix-to-stem-to-prefix) harmony is regressive.
- Progressive MSCs + progressive (stem-to-suffix) harmony is progressive.
  - ‘Pure progressive’ (prefix-to-stem-to-suffix) directionality is unattested because prefixes can’t trigger harmony on stems. (Note that the same restriction appears to be true of dominant-recessive vowel harmony systems (Bakovic 2000).)
• Bidirectional MSCs + progressive (stem-to-suffix) or regressive (stem-to-prefix) harmony is **stem control**.

**Targeted constraint evaluation** (based on Wilson 2003, Hansson 2006)

• A targeted constraint specifies
  o a *locus of violation* $\lambda$ (the targeted marked structure) and
  o a *change* $\delta$ (the proscribed repair of $\lambda$

• Assume that $\kappa$ is a non-proscribed alternative repair of $\lambda$ (in all situations to be considered here, anti-harmony).

• If $x$, $y$, and $z$ are three representations such that
  o $x$ contains an instance of $\lambda$ that is absent in both $y$ and $z$; and
  o $x$ and $y$ are identical except that $y = \delta(x)$; and
  o $x$ and $z$ are identical except that $z = \kappa(x)$; then
  o assign a violation to $x$ and a violation to $z$.

**Targeted directional IDENT-CC constraints** (NB: square brackets indicate stem boundaries)

• $\leftarrow$LEFT-IDENT-CC($\alpha F$) — for leftward harmony
  o $\lambda$: $A \rightarrow \alpha F$ C in correspondence with and preceding an $\alpha F$ C.
    ▪ Violated by $-\alpha F_i \ldots \alpha F_i$ sequences, irrespective of structure
    ▪ Satisfied by $\alpha F_i \ldots -\alpha F_i$ sequences, irrespective of structure
  o $\delta$: $-\alpha F \rightarrow \alpha F$
    ▪ Satisfied by $-\alpha F_i \ldots \alpha F_i \rightarrow \alpha F_i \ldots \alpha F_i$ changes
  o $\kappa$: $\alpha F \rightarrow -\alpha F$ — violations indicated in tableaux as <*>
    ▪ Violated by $-\alpha F_i \ldots \alpha F_i \rightarrow -\alpha F_i \ldots -\alpha F_i$ changes

• $\rightarrow$RIGHT-IDENT-CC($\alpha F$) — for rightward harmony
  o $\lambda$: $A \rightarrow -\alpha F$ C in correspondence with and following an $\alpha F$ C.
    ▪ Violated by $\alpha F_i \ldots -\alpha F_i$ sequences, irrespective of structure
    ▪ Satisfied by $-\alpha F_i \ldots \alpha F_i$ sequences, irrespective of structure
  o $\delta$: $-\alpha F \rightarrow \alpha F$
    ▪ Satisfied by $\alpha F_i \ldots -\alpha F_i \rightarrow \alpha F_i \ldots \alpha F_i$ changes
  o $\kappa$: $\alpha F \rightarrow -\alpha F$ — violations indicated in tableaux as <*>
    ▪ Violated by $\alpha F_i \ldots -\alpha F_i \rightarrow -\alpha F_i \ldots -\alpha F_i$ changes

• $\leftarrow$STEM-IDENT-CC($\alpha F$) — for stem-controlled harmony
  o $\lambda$: $A \rightarrow -\alpha F$ C in correspondence with an $\alpha F$ C **in the stem**.
    1. Violated by $[\alpha F_i] \ldots -\alpha F_i$ and $[\alpha F_i \ldots -\alpha F_i]$ sequences
    2. Violated by $-\alpha F_i \ldots [\alpha F_i]$ and $[-\alpha F_i \ldots \alpha F_i]$ sequences
    3. Satisfied by $[-\alpha F_i] \ldots \alpha F_i$ and $\alpha F_i \ldots [-\alpha F_i]$ sequences
  o $\delta$: $-\alpha F \rightarrow \alpha F$
    ▪ Satisfied by $-\alpha F_i \rightarrow \alpha F_i$ changes to either (1) or (2)
  o $\kappa$: $\alpha F \rightarrow -\alpha F$ — violations indicated in tableaux as <*>
    ▪ Violated by $\alpha F_i \rightarrow -\alpha F_i$ changes to either (1) or (2)
## Factorial typology: regressive harmony
(NB: square brackets indicate stem boundaries)

<table>
<thead>
<tr>
<th>MSC</th>
<th>/s…ʃ/</th>
<th>~LEFT(–ant)</th>
<th>ID-IO(±ant)</th>
<th>~STEM(–ant)</th>
<th>~RIGHT(–ant)</th>
</tr>
</thead>
<tbody>
<tr>
<td>disharmony</td>
<td>/s…ʃ/</td>
<td>* !</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>harmony</td>
<td>/ʃ…ʃ/</td>
<td>*</td>
<td></td>
<td>~LEFT(–ant)</td>
<td></td>
</tr>
<tr>
<td>anti-harmony</td>
<td>/s…ʃ/</td>
<td>* !</td>
<td>*</td>
<td></td>
<td>~LEFT(–ant)</td>
</tr>
</tbody>
</table>

## Factorial typology: progressive harmony
(NB: square brackets indicate stem boundaries)

<table>
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<tr>
<th>MSC</th>
<th>/ʃ…ʃ/</th>
<th>~RIGHT(–ant)</th>
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## Alternations

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</table>
Factorial typology: stem control

<table>
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<tr>
<th>MSC</th>
<th>[s...ʃ]</th>
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</tr>
<tr>
<td>anti-harmony</td>
<td>[s...ʃ]</td>
<td>&lt;*&gt; !&gt;</td>
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<td>*</td>
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<td></td>
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<td>*</td>
</tr>
<tr>
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<td>&lt;*&gt; !&gt;</td>
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<table>
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<tr>
<th>Alternations</th>
<th>[ʃ...ʃ]</th>
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Factorial typology: summary
- Regressive (leftward) harmony
  - ~LEFT-ID-CC(αF) ≫ ID-IO(±F) ≫ {~STEM-ID-CC(αF), ~RIGHT-ID-CC(αF)}
  - Both alternations and MSCs are regressive
- Progressive (rightward) harmony
  - ~RIGHT-ID-CC(αF) ≫ ID-IO(±F) ≫ {~STEM-ID-CC(αF), ~LEFT-ID-CC(αF)}
  - Both alternations and MSCs are progressive
- Stem-controlled harmony
  - ~STEM-ID-CC(αF) ≫ ID-IO(±F) ≫ {~RIGHT-ID-CC(αF), ~LEFT-ID-CC(αF)}
  - Alternations are stem-controlled; MSCs are bidirectional

Feature-value dominance
- The factorial typology presented thus far always has IDENT-IO(±F) ranked just below the highest-ranked targeted constraint that establishes directionality.
- If IDENT-IO(±F) is ranked any lower, then a conflicting lower-ranked targeted constraint can emerge to reverse the direction of single-valued harmony.
- The result is pure αF harmony — feature-value dominance, for both alternations and MSCs: {~STEM-ID-CC(αF), ~RIGHT-ID-CC(αF), ~LEFT-ID-CC(αF)} ≫ ID-IO(±F)
Factorial typology: dominance

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Is feature-value dominance attested?

- Apparently not in consonant harmony alternations (Hansson 2010), which is unlike vowel harmony (Bakovic 2000).
- If we intend to extend ABC to account for vowel harmony patterns, then why not predict it (this way or otherwise)?
- This is of course not the only difference between the overall typologies of consonant harmony and vowel harmony.

Vowel harmony

- Stem control
  - Progressive harmony [stem]→suffix — Turkish color harmony
  - Regressive harmony prefix←[stem] — Yoruba ATR harmony
  - Bidirectional: prefix←[stem]→suffix — Akan ATR harmony
- Feature-value dominance
  - Recessive (–αF) vowel targets assimilate to dominant (αF) vowel triggers, regardless of order or morphological structure.
  - Progressive if αF > –αF; regressive if –αF > αF — Kalenjin ATR harmony
  - Like consonant harmony, prefixes are rarely triggers.2

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2 Although Tunen (Mous 1986) appears to involve +ATR dominance, triggered by roots, suffixes and prefixes under certain conditions. See also limited +ATR prefix-triggered vowel harmony in Kinande numerals (Hyman 2002).
Vowel harmony continued

- Regressive directionality — the rightmost αF vowel of the word consistently triggers harmony. e.g. Karajá (Ribeiro 2003):
  - /Ø-r-ɔ-duhɔ=rɛri/ → [ɾɔʃuˈhɔrɛɾi] ‘he is cursing’
  - /Ø-r-ɔ-duhɔ=r-e/ → [ɾɔʃuˈhore] ‘he cursed’
    - Roots with [+ATR] do not condition suffix harmony, therefore it is not dominance of [+ATR] value.
    - see also Assamese, Pulaar (Mahanta 2007, Krämer 2003)
- No attested cases of ‘pure’ progressive directionality.
- Stem control is typical; bidirectionality is common — not so with consonant harmony.
- Pure regressive directionality is attested with +ATR (see Hyman (2002) on the ‘right-to-left bias in vowel harmony’); unlike consonant harmony in that feature-value dominance is attested (typically +ATR or somehow height-based).
- If ABC is extended to all vowel harmony, these differences should be accounted for.

Dissimilation

- Dissimilation also shows directional effects. Patterns of purely progressive alternations do occur, but trigger deletion rather than feature changes:
  - **Kwanyama** NC…NC dissimilation or Meinhof’s Law (Schadeberg 1987, Hyman 2003) – triggered by prefix: *ŋ-gandu → ŋ-gadu ‘crocodile’
    - cf. Yao /ku-n-dīŋga/ → [kuu-nīŋga] ‘to try me’
  - **San Francisco del Mar Huave** *s/h/…h – adjacent syllables, triggered by prefix (Kim 2008): a-pah ‘she calls’; /t-a-h-pah/ → [t-a-h-pa] ‘it was called’
- Patterns of purely regressive directionality involve feature changes:
  - **Makhuwa** deaspiration (Schadeberg 1999, 2000) – triggered by suffix
  - **Kuman** velar lateral dissimilation (Lynch 1983) – L…L → r…L – triggered by suffix
- Bennett (2013) proposes a surface correspondence approach to dissimilation — dissimilation results from **avoidance** of correspondence.
- Bennett proposes that directionality in harmony can be achieved via **ANCHOR-R-CC** (faithfulness to rightmost C) – he notes this does not work for dissimilation.

Conclusion

- Directionality is built into targeted **IDENT-CC** constraints.
- Like Rose & Walker (2004), we accept progressive harmony, and just note that prefixes have limited trigger ability.
- Targeted constraints coupled with a different typology allow a tighter match between MSCs and alternations.
- Can also be used for vowel harmony, but extending to dissimilation is difficult unless either i) consonants are still in correspondence or ii) linear sequencing rather than correspondence is employed.

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3 **ANCHOR-X-CC** achieves directionality by specifying faithfulness to the X-most consonant in a correspondence set (see also Jurgec (2011) for a similar proposal in a non-correspondence framework). We do not explore this proposal in detail here but note that as it stands, it appears to suffer from the same issues as the Rose & Walker (2004) proposal, and does not allow the flexibility of different stem control/MSC patterns that we describe here.
References