

BD Correspondence OT: Kenstowicz 1997, Benua 1997, Kiparsky 2000

1. Cyclic constraint evaluation, without OO constraints

(Kenstowicz Phonology 1995; cf. McCarthy NELS 1999, ROA, Kiparsky to appear, CSLI: LPM OT;):

- Assume that constraint evaluation takes place on some inner Stem constituents, prior to affixation.
- Assume that in Stem-Af₁, the input to affixation of Af₁ is the optimal candidate for Stem.
- Assume that in a multiply affixed form Stem-...Af_n-Af_{n+1}, the input to Af_{n+1} affixation is the optimal candidate for Stem-...Af_n.
- The grammar consists of a hierarchy of ranked constraints divided into markedness and correspondence
- There are only IO correspondence constraints:
 - input to cycle 1 = UR;
 - input to cycle n = optimal candidate emerging from cycle n-1 evaluation.

2. This system has a flaw: it requires that the ranking of certain IO Correspondence constraints relative to phonotactics systematically change from the first cycle to the second. At the same time, wholesale reranking is a very bad idea.

3. Example: cyclic *recall* vs. noncyclic *develop*; cyclic *peripherality* vs. noncyclic *Tatamagouchi*;

- 2nd cycle (assume that input is *cáll*, the output of the 1st cycle of evaluation)
- Ident stress I-O: correspondent syllables have identical values for [±stress]

| re-cáll | Ident stress I-O | Nonfinality |
|---------|------------------|-------------|
| re-cáll | | * |
| récáll | *!* | |

- The first cycle: suppose the UR has no stress marks, an undeniable option.

| call | Have stress | Nonfinality | Ident stress I-O |
|------|-------------|-------------|------------------|
| call | | * | * |
| call | *! | | |

- We have derived a contradiction: Ident stress IO << >> Nonfinality
- Can be solved by re-ranking between 1st and 2nd cycle
 - Nonfinality >> Ident stress IO
 - Ident stress IO >> Nonfinality
- This is true of all cases of IO Correspondence constraints that active in BD relations but inactive, because of Richness of Base considerations, in IO relations.

4. Can we avoid reranking?

Yes, if Ident IO ≠ Ident Derived IO, ie. Ident BD

5. Aside from this, this system is fairly similar to one with cyclic rule application

- **Base derivative similarity**: characterized through Ident Derived Input
- **No guarantees**: Ident Derived Input can but need not be active. If this turns out to be too weak a position, explicit statements about its high ranking can be incorporated.
- **Base priority**: guaranteed.
- **Locality (Proximate base)**: guaranteed
- **No transderivational similarity**: guaranteed.
- **No foresight**: guaranteed

The major difference between this system and cyclic application: the existence of correspondence conditions which can provide very direct statements of base derivative identity.

6. Benua's TCT system: defining a base-derivative relation

- Base: an expression containing the same lexical root as the derivative

- Base: the maximal expression properly contained in the derivative

The base of Root//...Affn//Affn+1 is Root//...Affn

- 'a licit output word form[...] both morphologically and phonologically well-formed'

7. Now we examine how the properties derived – or claimed to derive - from cyclic rule application are derived in a system that invokes Output-to-Output correspondence.

8. **Base Priority** achieved by parallel evaluation against a recursive constraint hierarchy. In practice, this means that 2 evaluations take place for every BD pair, one for B, prior, and one for D. The optimal BD pair is one that (a) maximizes the constraint satisfaction in the B and (b) optimally satisfies it in the D, subject to (a).

| | /cycl/ | OO II Id syll | SSC | *syll C | IO Id syll | | /cycl-ing/ | OO II Id syll | SSC | *syll C | IO Id syll |
|---|--------|------------------------|-----|------------|------------------|--|------------|------------------------|-----|------------|------------------|
| a | saikl | | | * | * | | a' | saikl-ŋ | *! | | |
| b | saikl | | *! | | | | b' | saikl-ŋ | | | |
| c | saikl | | | * | * | | c' | saikl-ŋ | | * | * |
| d | saikl | | *! | | | | d' | saikl-ŋ | *! | * | |

9. **Locality:** Benua achieves this by stipulating what counts as a base. However this does not in principle rule out the possibility that a remote base might also play a role, though this is not considered. In cyclic constraint evaluation, including its OT versions, this is claimed to be strictly impossible.

10. Indonesian (Cohn 1989 NLLT; Cohn & McCarthy 1993 ms; Kenstowicz 1996 Phonology)

a. Stress in non-derived words: an initial dactyl effect

10, 010, 2010, 20010, 202010, 2002010...


cári, bicára, kòperási, kòntinuási, èrodinámika àmerikànísási


b. Stress in suffixed words: still penult stress but dactyl disrupted


| | | |
|----------|------------------------|---------------------------|
| 10+s | <i>carí-kan</i> | like <i>bicára</i> |
| 10+s+s | <i>càri-kán-ña</i> | like <i>kòperási</i> |
| 010+s | <i>bicará-kan</i> | unlike <i>kòperási</i> |
| 010+s+s | <i>bicàra-ká-ña</i> | unlike <i>kòntinuási</i> |
| 2010+s | <i>bìjaksaná-an</i> | like <i>kòntinuási</i> |
| 2010+s+s | <i>bìjaksána-án-ña</i> | unlike <i>èrodinámika</i> |
| 20010+s | <i>kòntinuási-na</i> | unlike <i>èrodinámika</i> |


c. An Ident stress OO effect (bit changed from Kenstowicz)


Ident stress BD: a syllable is stressed in derivative, iff it's stressed in base

Nonfinality >> Rightmost >> Ident stress BD >> Stress 1st >> *Lapse
 *Clash 

| B= bicára | Rightmost | Ident stress BD | Stress 1st | *Lapse |
|---|-----------|-----------------|------------|--------|
| bicáran | **!* | | * | * |
|  bicarákan | * | ** | * | * |
| bìcarákan | * | ***! | | |

| B= bicára | Rightmost | Ident stress BD | Stress 1st | *Lapse |
|---|-----------|-----------------|------------|--------|
|  bicàrakánña | * | | * | |
| bicarakánña | * | *! | * | ** |
| bìcarakánña | * | *!* | | * |


| B = bijaksána | Rightmost | Ident Stress BD | Stress 1st | *Lapse |
|--|-----------|-----------------|------------|--------|
|  bijaksaná-an | * | * | | * |
| bijaksána-an | **! | | | * |
| bijàksaná-an | * | **! | * | |


| B = bijaksána | Rightmost | Ident Stress BD | Stress 1st | *Lapse |
|---|-----------|-----------------|------------|--------|
|  bijaksàna-án-ña | * | | | |
| bìjaksana-án-ña | * | *! | | ** |

Surprisingly, in Indonesian, Ident (stress) BD requires identity to remote rather than proximate base: in *bicàra-kán-ña* we're looking at *bicára*, not at *bicará-kan*. This violates Locality (proximate base) effect.


- Why is the language working this way? Because of Lapse avoidance.

Here's what would happen if we had computed Ident stress violations on the proximate base:

| B= bicarákan | *Clash | Rightmost | Ident stressBD | Stress 1 | *Lapse |
|---|--------|-----------|----------------|----------|--------|
|  bicarakánña | | * | * | * | ** |
| ⊗bicàrakánña | | * | **! | * | |
| bicarákañña | | **! | * | * | |
| bicarákánña | *! | * | * | * | |

| B = bìjaksanáan | *Clash | Rightmost | Ident stressBD | Stress 1 | *Lapse |
|--|--------|-----------|----------------|----------|--------|
|  bijaksanaán-ña | | * | * | | ** |
| ⊗bìjaksànaán-ña | | * | **! | | |

By choosing to resemble the remote rather than the proximate base, the actual stress system of Indonesian is avoiding extended ($\sigma\sigma$) Lapse violations. These are not always avoidable:

| B= kòntinuási | *Clash | Rightmost | Ident stressBD | Stress 1 | *Lapse |
|--|--------|-----------|----------------|----------|--------|
|  kòntinuasína | | * | * | | ** |
| kòntinùasína | | * | **! | | |

But they are avoidable if there is a choice between the proximate and the remote base. This suggests an analysis in which stress in a derivative is free to resemble either a remote or a proximate base (and possibly other bases in between – though no evidence for that): the preferred (all-else-being-equal) base is the proximate one, but a remote base can be chosen so as to avoid extended Lapse violations.

An analysis that has this character will need an additional constraint: Base = proximate Base¹. This constraint is inactive in Indonesian but it will play a role in other cases. The existence of this constraint is the formal reflex of the proximate base effect.

Nonfinality >> Rightmost >> Ident stress BD >> Stress 1st >> *Lapse >> B= proximate

*Clash

| bijaksana-an-ña | *Clash | Rightmost | Ident stress BD | Stress 1 | *Lapse | B = proximate |
|-----------------------------------|--------|-----------|--------------------|----------|--------|------------------|
| ✂ bijaksánaán-ña B = bijaksána | | * | * | | | * |
| bijaksánaán-ña B = bijaksánaán | | * | **! | | | |
| bijaksanaán-ña B = bijaksánaán | | * | * | | **! | |

| bicara-kan-ña | *Clash | Rightmost | Ident stress BD | Stress 1 | *Lapse | B = proximate |
|-------------------------------|--------|-----------|--------------------|----------|--------|---------------|
| ✂ bicàrakán-ña B = bicára | | * | * | * | | * |
| bicarakán-ña B = bicarákan | | * | * | * | *!* | |
| bicàrakán-ña B = bicarákan | | * | **!* | * | * | |

11. No foresight and the word-status of bases.

Cyclic application derives certain effects from the idea that computations on cycle *n* ignore what's coming up on cycle *n+1*. E.g. in *cycl-ing*, cycle 1 doesn't know that a V-initial suffix is coming.

Interestingly, all or most such cases of the No-foresight effect happen to involve a cycle 1 that's an independent word: *cycle* is an independent word. Cyclic rule application (including its OT counterparts) does not invoke this fact. Other OT approaches (Kenstowicz, Benua) claim that bases must be words.

12. Borowsky and Harvey *Phonology* 14, 1997 "Vowel length identity in Warray"

What follows is a very simplified version of their argument.

- Long V's: obligatory in all monosyllables closed by (C):
lee, buum, wiik (*CV, CVC words)
- Long V's: obligatory in the stems of all suffixed monosyllables, if the monosyllable can occur without a suffix:
gee-lik, gee-yang, wiik-lik, wiik-gu
- Short V's: obligatory in all polysyllabic stems; in all monosyllables closed by CC, in all suffixes

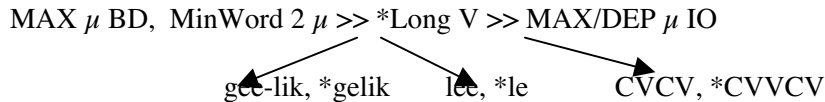
¹ "The base of any derivative is its proximate base."

buđu, baŋđi, bulk (*CVVCV, *CVCVV... stems, *CVVCC words)

- Short V's in all body part stems: these monosyllables are always either possessed or prefixed with *an-* (a body-part classifier) and never occur in isolation!

a-dum-bali-wu 'pref-eye-wide-OBL'
at-dum-jámip-ji-p '1sg Subj-eye-block-inch-PP' ('my eyes are blocked')
an-dum 'eye', *an-bam* 'head', *an-gi* 'nose'


- An O-O correspondence account (bit changed from Borowsky and Harvey's):




- Need to add constraints on affixation, something like:
 *Prefix-Prefix >> Have prefix *an-* on body-part root.

- Analyses


(a) an obligatorily prefixed CVC root, assume it's /CVVC/

| duum | Pref-to-body-part | Min Word | *Long V | MAX μ IO |
|--|-------------------|----------|---------|--------------|
| duum | *! | | | |
|  an-dum | | | | * |
| an-duum | | | *! | |


(b) a CVC root in isolation: [wiik], assume it's /wik/

| wik | Min Word | *Long V | MAX μ IO |
|--|----------|---------|--------------|
|  wiik | | * | * |
| wik | *! | | |

(c) a CVC root suffixed

| wik | MAX μ BD | Min Word | *Long V | MAX μ IO |
|--|--------------|----------|---------|--------------|
|  wiik-lik | | | * | * |
| wik-lik | *! | | | |

(d) a CVC body part incorporated: note that *Pref-pref >> Pref-to-body-part

| a duum bali wu | MAX μ BD | Min Word | *Long V | MAX μ IO |
|---|--------------|----------|---------|--------------|
|  a-dum-bali-wu | | | | * |
| a-duum-bali-wu | | | *! | |

- The cyclic constraint evaluation / rule application account:

Cycle one: CV(C): V lengthens: Min Word >> *Long V

Cycle two: affix added, but long V preserved from cycle 1.
 MAX μ BD >> *Long V

- The problem: the *no foresight* effect of cyclic application prevents one from distinguishing obligatorily affixed stems from stems that need not be affixed: they all look alike on cycle 1!

Cycle one: *dum* lengthens to *duum*: Min Word >> *Long V

Cycle two: prefix added: **an-duum*: MAX μ BD >> *Long V

- Not only body parts but also other 1 syll nouns participate in this generalization: if they do not occur in isolation, their affixed stems have short V's.

13. Cyclic constraint evaluation/rule application obtains its results from forced ignorance: cycle n processing doesn't know and can't factor in upcoming information on cycle n+1. E.g. vowel lengthens in *wiik* on cycle 1, because it doesn't know more is coming that could prevent a pointless violation of *Long V. The right analysis requires a global determination that an expression is or is not a word. If it's not a word, it can't be a base. That's why /dum/, which happens not to be a word, cannot be a base. Here is what would happen if it was:

| /dum/ | MAX μ BD | Min Word | *Long V | MAX μ IO | | | /an-dum/ | MAX μ BD | Min Word | *Long V | MAX μ IO |
|-------|--------------|----------|---------|--------------|--|----|----------|--------------|----------|---------|--------------|
| duum | | | * | * | | a' | an-duum | | | * | |
| dum | | *! | | | | b' | an-dum | | | | |

Here is what happens when /dum/ is excluded as a base:

| | /an-dum/ | MAX μ BD | Min Word | *Long V | MAX μ IO |
|---|----------|--------------|----------|---------|--------------|
| a | an-duum | | | *! | * |
| b | an-dum | | | | |

14. Word status condition on bases:

- recall *fhímna* 'we understood': the non-word /*fihim*/ is not a base.
- Harris 1983 analysis of *desdeñ*-ar (verb, 'to disdain') vs. *desden*, *desden-es* (noun; sg. and pl.). There is a cycle on *desden* (noun, sing), because it's a word; there's no cycle on *desdeñ*- (verb root) because it's not a word.