

Reduplicative correspondence

(1) **Summary**

- RED copies the base: the initial evidence for BR correspondence
- Does Base copy RED?
- Problems for BR correspondence
- the final evidence for BR correspondence

(2) **Javanese**

(a) Phonology

- Final rounding: a -> ɔ/ __#

Affixed
donga-ne

Unaffixed
dongɔ

- Closed syll. Laxing: V -> [-tense]/__C.

Affixed
a.bu.r-e

Unaffixed
a.bur

(b) Over application of these rules in reduplication

- dongɔ-dongɔ (*donga-dongɔ: Final Rounding overapplies)
- donga-donga-ne (*dongɔ-donga-ne: RED not PrWd)
- abu.r-abur (*abur-abur: Laxing overapplies)
- abur-abur-e (*abur-abur-e: RED not PrWd)

Two interpretations:

- Rules apply before RED: a standard cyclic effect in which input to morphology has already been phonologically processed.
- B-RED identity condition whose effects go beyond cyclic application

(3) **A condition of identity needed between RED and its source in stem** (Wilbur, 197x).

- Distinct from normal I-O correspondence?
- Or from O-O (base-derivative) correspondence of the *cycl*, *cycling* type?

Answer is yes, agreeing with Wilbur and others, incl. McCarthy and Prince 1995.

There is a form of *correspondence under adjacency*, distinct from other types.

(4) **The correspondence triangle: I, B, R**

Surface BASE and surface REDUPLICANT (R): BR

Surface BASE (B) and UR of BASE (I): I-Base (same as IO)

Surface REDUPLICANT (R) and UR of BASE (I): IR

(5) **Summary of McCarthy & Prince 1995**

- The same types of correspondence constraints map B-to-R, I-to-B, I-to-R
- But the actual constraints are distinct and can be differently ranked.
- Different rankings derive BR identity thru overapplication and other peculiarities of rule application in reduplicated constructions.
- Corr IB and Corr IR are distinct only in virtue of RED being an affix:

In general Corr I-root >> Corr I-affix

(6) **Illustration of these points**

(a) Phono (>>) Corr BR >> Corr IB, IR:

Describes overapplication at the expense of Corr IR

Javanese: *low/-# , Ident [\pm low]BR >> Ident [\pm low] IB, IR

| RED-donga | *low/_# | Ident [\pm low]BR | Ident [\pm low] IB | Ident [\pm low] IR |
|-----------------------|---------|----------------------|-----------------------|-----------------------|
| donga-donga | *! | | | |
| <u>donga</u> -donga | | *! | * | |
| ☞ <u>donga</u> -donga | | | * | * |

(b) Phono >> Corr IB (>>) IR >> Corr BR:

Describes normal application

Sanskrit: *s/r,u,k,i_ >> Ident [\pm ant] IB, IR >> Ident [\pm ant] BR

| RED _{perf} -smai-a | *s/r,u,k,i_ | Ident [\pm ant] IB | Ident [\pm ant]IR | Ident [\pm ant] BR |
|-----------------------------|-------------|-----------------------|----------------------|-----------------------|
| si-smaj-a | *! | | | |
| ☞ si- <u>ṣ</u> maj-a | | * | | * |
| ṣi- <u>ṣ</u> maj-a | | * | *! | |

Sanskrit: same ranking, RED preceded by ruki prefix

| ni-RED _{perf} -sad-a | *s/r,u,k,i_ | Ident [\pm ant] IB | Ident [\pm ant]IR | Ident [\pm ant] BR |
|-------------------------------|-------------|-----------------------|----------------------|-----------------------|
| ni-sa-sad-a | *! | | | |
| ☞ ni- <u>ṣ</u> a-sad-a | | | * | * |
| ni- <u>ṣ</u> a- <u>ṣ</u> ad-a | | *! | * | |

Ruki not blocked or overapplied to either root or RED for the sake of BR identity.

(7) **BR identity is symmetrical, so expect B to copy RED:** Malay (McP 1995)

(8) **Nasal harmony (NH):**

• The string of [-cons] **to the right** of a nasal segment is nasalized

hamā 'germ' no form like *hamo*, with oral V after nasal

waṅī 'fragrant'

aṅān 'reverie'

aṅēn 'wind, unconfirmed news'

• Laryngeal C's (h, ḷ) undergo and transmit nasalization

tahan/ mān-tahan 'withstand' -> **manahan** (nasal substitution) -> **mānāhān** (NH)

(9) **Reduplication: prefixed disyllable anchored at left edge of base**

e.g. **tahan-tahan** 'withstand-INT'

(10) Conceivable NH consequences for reduplication and their analysis

- *either* normal application: **aŋã** -> **aŋã-ãŋã**
 - NH in the output of RED
 - *NV >> *[+nas] >> Ident [\pm nas] IO>> Ident [\pm nas]BR, BD
(B = surface **aŋã**; D = reduplicated form [**aŋã-ãŋã**])
- *or* underapplication: **aŋã**-> **aŋã-aŋã** [perhaps as in Madurese]
 - NH excluded from level at which RED applies
 - Ident [\pm nas] BR, Ident [\pm nas] BD >> *NV

| | | | | |
|---------------------------|-----------------------|-----------------------|-----|-----------------------|
| I = assume aŋã B = aŋã | Ident [\pm nas] BR | Ident [\pm nas] BD | *NV | Ident [\pm nas] IB |
| aŋã-ãŋã | *! | * | | ** |
| ☞ aŋã-aŋã | | | | * |
| ãŋã-ãŋã | | *! | | ** |

- *or* aŋã -> ãŋã-ãŋã
 - Indescribable in rule terms. Neither the order (Nasal Harmony) > Redup > Nasal Harmony (*aŋã-ãŋã) nor Nasal Harmony > Redup (*aŋã-aŋã) characterizes the pattern. Heroic efforts at serial description made in McP.
 - Ident [\pm nas] BR, *NV >> Ident [\pm nas] IB, Ident [\pm nas] BD

| | | | |
|---------------------------|-----------------------|-----|-----------------------|
| I = assume aŋã B = aŋã | Ident [\pm nas] BR | *NV | Ident [\pm nas] IB |
| aŋã-ãŋã | *! | | ** |
| aŋã-aŋã | | *! | * |
| ☞ ãŋã-ãŋã | | | ** |

The paradox here for serial analyses: reduplicant induces nasalization onto base in virtue of NH and then acquires the nasality it has transmitted onto the base.

(11) The data (reported in McP 1995 after Onn 1976, not seen)

| | | |
|------|-----------|--------------------------|
| hamǝ | hãmǝ-hãmǝ | 'germ' |
| waŋĩ | wãŋĩ-wãŋĩ | 'fragrant' |
| aŋã | ãŋã-ãŋã | 'reverie, ambition' |
| aŋĕn | ãŋĕn-ãŋĕn | 'wind, unconfirmed news' |

(12) McCarthy and Prince report a number of other copyback cases

Most appear to have been misanalyzed: see Inkelas & Zoll 2000 ROA for refs.

(13) High ranked BR correspondence can generate monsters(a) A simple example: MAX BR, RED = 1μ or 1σ >> MAX IR, IB

| RED-banana | MAX seg BR | RED = 1σ | MAX IB |
|---------------|------------|-----------------|--------|
| banana-banana | | *! | |
| ban-banana | *!*** | | |
| 𑄎ban-ban | | | *** |

(b) Another example: DEP BR, RED = $[C_0u]$ >> DEP IR, IB (modelled on Marathi, as discussed by Alderete et al 1999 LI, ROA)

| [RED]-saman | DEP F BR | RED = $[C_0u]$ | DEP F IB |
|--------------|----------|----------------|----------|
| saman-saman | | *! | |
| suman-saman | *! | | |
| 𑄎suman-suman | | | * |

Fixed segment RED (minus the pathological insertion for the sake of DEP BR) occur in Sanskrit, Greek, Klamath, Agta, Tubatulabal. Not all cases can be understood as TETU effects¹.

(14) Spaelti (1997 UCSC diss; ROA)'s solution (see also Strujke UMd 2000, ROA)

ID correspondence (D = derivative, i.e. whole reduplicated form), requiring that input material always surface in some fashion in the derivative, in B or in RED or both.

| RED-banana | MAX seg ID | RED = 1σ | MAX seg BR |
|---------------|------------|-----------------|------------|
| 𑄎ban-banana | | | *** |
| banana-banana | | *! | |
| ban-ban | *!*** | | |

(15) How to rank MAX ID to both get Malay and exclude **banana* -> *ban-ban*, *suman-suman*?**(16) Inkelas and Zoll's take (inspired by Kiparsky 1999)**

- there is no OO correspondence, only IO
- hence: there is no BR correspondence and the **ban-ban** problem disappears

(15) Why isn't BR identity manifested as underapplication?

| | Ident [\pm nas] BR | *NV |
|------------|-----------------------|-----|
| aṅān-āṅān | *! | |
| 𑄎aṅān-aṅān | | * |

¹ An intriguing possibility that removes this particular problem is that all instances of fixed segmentism that do not involve TETU represent echo reduplication, where an additional condition requires that $B \neq \text{RED}$ (or some comparable string dissimilarity condition). Thus English **schm**-echo reduplication blocks when the base word begins with **schm**: try saying ***schmuck-schmuck** (as against normal **table-schmable**). If so, MAX, DEP BR are clearly subordinated to $\text{RED} \neq B$. Same holds for all examples known to me, discussed under this rubric by Alderete et al.

BR Identity conditions not attributable to cyclic application: Sanskrit.**(15) Basics**

- a. notation: e = e:, o = o:, v = w, y = j; IPA for the other segments
 b. nuclei: a, i, u, r̥, (l), ṛ [a], ṝ [a], ai [e:], ai:, au [o:], a:u
 c. verb roots: monosyllabic, typically of C₀a(:)(R)C₀ form, where R = sonorant
 d. examples: *pat, yaj, svap, smai, ma:, gam, mard, vraj, stamb^h, karṣ, vakṣ, krand, b^hranç, d^hvans,*

(16) Ablaut reviewed

- a. full grade: roots under accent keep their a
 b. zero grade: unaccented roots lose [a] if rest is syllabified without segment loss

smai -> smi-tá
mard₃ -> mṛk-tá
swap -> sup-tá

- c. full grade **a:** and zero grade **a** (for some roots) and **i** for most

d^hya: -> d^hi
k^hya: -> k^hya

- d. vocalization: when unaccented a is lost, a rime sonorant (R) becomes nucleus:

krand -> kr̥nd [krad], not *kr̥nd
smai -> smi, not *sm̥y *[se:]

- e. when rime contains no R, rightmost onset sonorant vocalizes:

swap -> sup
wrad₃ -> wṛd₃

(17) Intensive reduplication

| root | full grade | zero grade | gloss |
|------------|------------|------------|--------|
| nau/nu | nau-náu- | nau-nu- | praise |
| mard/mṛd | mar-márd | mar-mṛd | rub |
| pat/pt | pa:-pát | pa:-pt | fly |
| kri:d | kai-krí:d | kai-kri:d | play |
| dyaut/dyut | dau-dyáut | dau-dyut- | shine |
| tvaiṣ/tviṣ | tai-tváṣ | tai-tviṣ | stir |
| sparç/sprç | par-spárç | par-sprç | touch |

(17) Sketch of an analysis (ignoring GTT):

- A size-limitation constraint: RED = 1syll
- A location constraint: RED = pref
- A set of markedness constraints inducing syllabic improvement in RED:

MAX C IB >> *Complex Onset >> MAX C IR, MAX C RB

MAX C IB, Ident [\pm son] IB >> *Obstruent/Coda >> MAX C IR, BR
 MAX V, Ident [\pm low] IB, >> Nuc = a >> MAX V, Ident [\pm low] IR, BR

(18) Unusual BR correspondence effects in the intensive:

| root | full grade | zero grade | gloss |
|---|-----------------------------|----------------------------|--------|
| <i>grab^h/grb^h</i> | <i>ga:-gráb^h</i> | <i>gar-grbh</i> | seize |
| <i>vyad^h/vid^h</i> | <i>va:-vyád^h</i> | <i>vai-vid^h</i> | pierce |
| <i>svap/sup</i> | <i>sa:-sváp</i> | <i>sau-sup</i> | sleep |

The difference between full and zero grade depends on which **inflectional** affixes are added:

| root | full grade | zero grade | gloss |
|-------------|--------------------|--------------------|-------|
| <i>vaid</i> | <i>vái-vaid-mi</i> | <i>vai-vid-más</i> | see |

(24) A solution

a) Linearity BR outranks MAX seg BR

| RED-swáp | Linearity BR | MAX seg BR |
|------------|--------------|------------|
| ɪ̯sa:-swáp | | ** |
| saw-swáp | *! (a-w) | * |

| RED-sup | Linearity B-RED | MAX seg BR |
|-----------|-----------------|------------|
| ɪ̯saw-sup | | * |
| sa:-sup | | **! |

(25) **Linearity, not Ident [\pm Rh]**: final root C frequently prevocalic in the intensive:

| | |
|-----------------------------------|---------------------------------|
| (a) bau-b^hau-at | [bo:.b^ha.vat] |
| par-p^har-at | [par.p^ha.rat] |
| gan-g^han-at | [jan.g^ha.nat] |

(b) In such cases, the last root C is an onset, not a coda on the surface. Hence Ident [\pm Rh] is not satisfied. If it had been, we'd only get intensives like these.

- * [ba:.b^ha.vat]
- * [pa:.p^ha.rat]
- * [ja:.g^ha.nat]

alternating with these:

| | |
|-------------------------------|---------------------------------|
| bau-b^hau-ti | [bo:.b^ho:.ti] |
| par-p^har-ti | [par.p^har.ti] |
| gan-g^han-ti | [jan.g^han.ti] |

The right analysis:

| RED-p ^h ár-at | Linearity BR | MAX seg BR |
|-----------------------------|--------------|------------|
| ☞ par-p ^h a.r-at | | |
| pa:-p ^h a.r-at | | *! |

(26) Further supporting data:

i extensions: intensive reduplication can be extended by insertion of i between R and B.

Short i (in closed syll.)

kan-i-krand [ka.nik.rand]

ban-i-b^hranç [ba.nib^h.ranç]

dau-i-dyut [da.vid.yut]

Long i in open syll.

gar-i:-gr^hb^h [ja.ri:.gr^hb^h]

pan-i:-pan [pa.ni.pan]

kar-i:-kr [ca.ri:.kr]

(26) A generalization about intensives with and without i:

In forms with -i(:)- extension, the segment preceding -i(:)- has a quality that would be legitimate even if -i(:) was absent. If not ok without i, then not ok with i either.

| | | |
|----|---|---|
| i. | kan-krand-a... | kani-krand- .. |
| | gar-gr^hb^h-a... | gari:-gr^hb^h- ... |
| | ban-b^hranç-a... | bani-b^hranç- ... |
| | dau-dyut-a... | davi-dyut- ... |

This is the right set of paradigms.

| | | |
|------|--------------------------------|---------------------------------|
| iii. | *kar-krand- | *kari-krand- |
| | *gar-grab^h- | *gari:-grab^h- |
| | *bar-b^hranç- | *bari-b^hranç- |

The i-less forms violate Ident (\pm Rh) BR. But the forms with i do not violate the Ident (\pm Rh) BR, since r is in the onset in both cases. Here too it is Linearity BR that helps:

| RED - vyad ^h | Linearity BR | MAX C BR |
|-------------------------|--------------|----------|
| ☞ va:-vyad ^h | | ** |
| vay-vyad ^h | *! | * |
| vayi-vyad ^h | *! | * |

| RED - krand | Linearity BR | MAX C BR |
|--------------|--------------|----------|
| ☞ kani-krand | | ** |
| kari-krand | *! | ** |

Note that the losing candidates in these tableaux cannot be eliminated by Ident [\pm Rh] BR

iii. There is however a set of comparisons that still need attention.

Actual:

kan(i)-krand-

gar(i)-gr^hb^h-

ban(i)-b^hranç-

dav(i)-dyut-

But why not:

***ka(n)di-krand-a**

***ga(r)b^hi:-gr^hb^h-a**

***ba(n)çi-b^hranç-a**

***da(u)ti-dyut-a**

These don't rescue the Ident [\pm Rh] BR proposal but do suggest that the constraint on rhymes which makes the analysis work so far – specifically *Obstruent coda – has to be revised or supplemented. Here are the evaluations of these pairs given the current system:

| RED- krand | MAX C IB | *Obstruent Coda | *Complex | MAX C BR, IR |
|-------------------|----------|-----------------|----------|----------------|
| ☞ kandi-krand-a | | | * | *(B), *(I) |
| ☹ kani-krand-a | | | * | ** (B), ** (I) |
| ☹ kan-krand-a | | | * | ** (B), ** (I) |
| kad-krand-a | | *! | * | |

A simple revision that resolves this difficulty is *CC instead of *Complex constraint:

| RED- krand | MAX C I-B | *Obstruent Coda | *CC | MAX C BR, IR |
|-------------------|-----------|-----------------|------|----------------|
| kandi-krand-a | | | ***! | *(B), *(I) |
| ☞ kani-krand-a | | | ** | ** (B), ** (I) |
| ☞ kan-krand-a | | | ** | ** (B), ** (I) |
| RED- krand | MAX C I-B | *Obstruent Coda | *CC | MAX C BR, IR |
| kad-krand-a | | *! | ** | |
| krani-krand-a | | | ***! | *(B), *(I) |
| kani-kan-a | *!* | | | |

What excludes **kadi-krand-a**? The low ranked Contiguity BR (no skip) which so far did not seem active: Elements contiguous in RED have contiguous correspondents in B.

| RED- krand | MAX C I-B | *CC | MAX C BR, IR | Contiguity BR |
|-------------------|-----------|-----|----------------|-----------------|
| kadi-krand-a | | ** | ** (B), ** (I) | *(k-a) *! (a-d) |
| ☞ kani-krand-a | | ** | ** (B), ** (I) | *(k-a) |
| ☞ kan-krand-a | | ** | ** (B), ** (I) | *(k-a) |
| kadi-kad-a | **! | | | |

Significance:

- The identity of syllabic position between segments in B and R does not reduce to IO correspondence: an explicit surface oriented correspondence BR condition must be stated.
- This does not reduce to a normal case of cyclic rule application:
 - Morphemes: INTENS-Root-Tense-Person-number
 - Constituency: [[[INTENS-[Root]]-Tense]-Person-number]
 - Relevant cyclic domain: [INTENS-[Root]]- at this stage root grade is undefined
 - When the root grade is determined by tense/pers-number affix, RED is already formed.
- Therefore no attempt to deal with this case through IO correspondence conditions on syntactically motivated constituents is successful: we need whole-word information to determine surface root shape and we need surface root to determine RED shape.