

# Identity and consonant correspondence

Workshop on Replicative processes

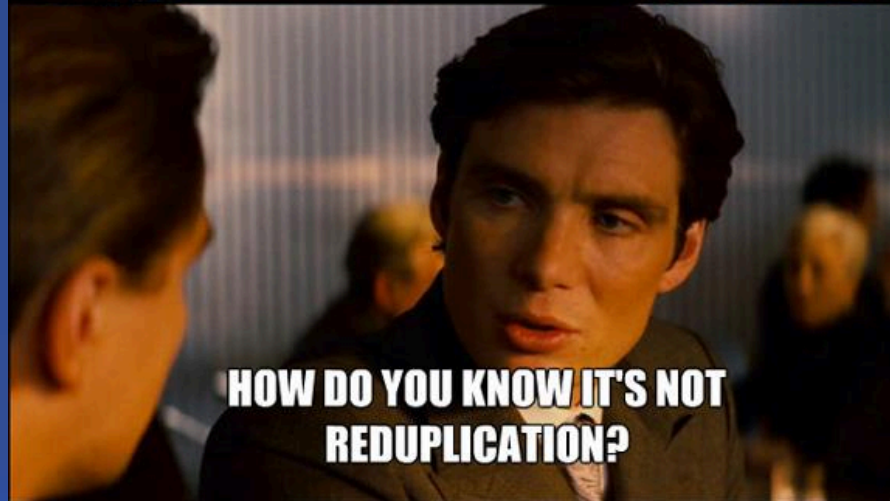
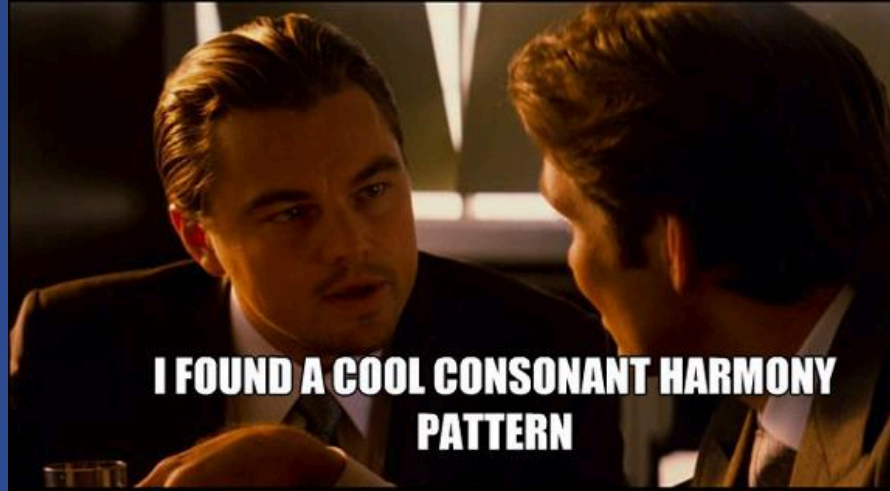
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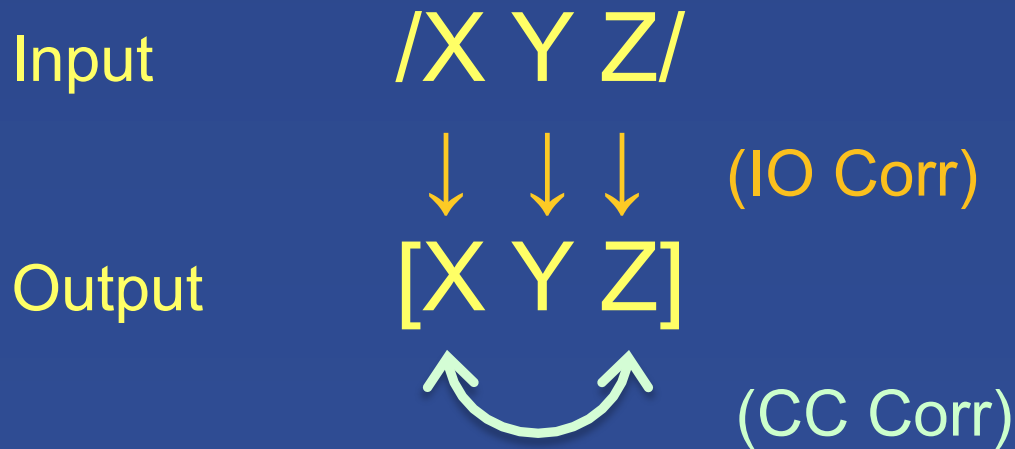
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# Background



- A flurry of recent work draws on the theory of Agreement By Correspondence (ABC)
  - Long-distance consonant agreement (Walker 2000; Rose & Walker 2004; Hansson 2001/2010)
  - Vowel harmony (Walker 2009, 2011; Rhomeux 2012, Lionnet 2014)
  - Tonal patterns (Shih 2012, Inkelas & Shih 2014)
  - Dissimilation (Bennett 2015, Roberts 2011, Inkelas & Shih 2014) (ergo ‘ABCD’)

# A Question

- What is the relationship between ABCD(E)s and re(du)plication?
  - Between the theoretical machinery involved
  - Between the empirical phenomena they target
- Intuitive bases for a connection abound
- Bigger-picture question: do all replicative patterns have a unified explanation?
  - Today's comparison: two kinds of replication, both at PF
  - If there's a unified theory, then ABC should on some level be the same as reduplication

# Structure of the talk

- §1 Background on ABC(D) theory
- §2 A quick example from Sundanese
- §3  $ABCD \leftrightarrow RED$ : similarities
- §4  $ABCD \not\leftrightarrow RED$ : differences
- §5 Summary & conclusions
  
- Preview of conclusions: there's some kind of connection, but it's not clear that these are really the same mechanism

Laying out the theory

**ABC(D), defined**

# An overview of ABCD

- ABCD consists of 3 essential pieces
  1. Some Correspondence Relation in the output
  2. CORR constraints: ‘if similar → then correspond’
  3. CC-Limiter constraints: ‘if correspond → then .....’
    - e.g. CC-IDENT: ‘if correspond → then agree for [F]’
  
- Different implementations differ in some details of the form of these 3 pieces
  - Formulation I’ll presume today is Bennett (2015), which is based heavily on Rose & Walker (2004)
  - Aside: formulation assumed for B-R theory is roughly McCarthy & Prince (1993, 1994, 1995, etc.)

# The Correspondence Relation

- Equivalence relation over surface consonants
  - Consonants are partitioned into classes
  - Members of the same class are ‘in correspondence with’ each other
- Example from Sundanese: c=ar=uriga ‘suspicious (pl.)’

Surface form: ca.ru.ri.ga

Consonants: 

c	r	r	g
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Partitions: {1} {2} {3}



# CORR constraints

- CORR constraint schema: CORR-D-[ $\alpha F$ ]
  - ‘if two [ $\alpha F$ ] consonants are in the same D, then they correspond’
  - Takes two arguments: a domain, and a feature specification
  - Ex: CORR-Stem-[-voi, -cont]
  
- These connect the SCorr relation to similarity
  - Assign violations *to* pairs of similar output Cs (shared features)
  - Assign violations *for* being similar and not in the same partition
  
- Satisfiable in two ways:
 

■ Similarity <i>and</i> correspondence	<u>CORR-[-voi, -cont]</u> ✓ [t...p], $\mathcal{R}:\{t\ p\}$
■ Dissimilarity, with or w/o correspondence	✓ [t...w], $\mathcal{R}:\{t\}\{w\}$ ✓ [t...w], $\mathcal{R}:\{t\ w\}$

# Limits on correspondence

- CORR constraints alone cannot affect I-O mappings unless there are further strings attached
- CC-Limiter constraints attach those restrictions
  - Form: if correspond  $\rightarrow$  then **something** (else, \*)
  - Assign violations to pairs of corresponding Cs
  - Assign violations for not meeting some further requirement (set as the content of individual constraints)
- Most notable in the literature: CC-IDENT(F)
- Others can be structural in nature
  - CC-EDGE-(D): no correspondence across (D)omain edge

# An aside on generality

- This formalization of ABC is specific to consonants, but the general idea needn't be so narrow
- A not-so-crazy idea: morphological agreement, conditioned by shared syntactic features?
- Ex: Zulu semantic gender agreement? (Doke 1937)
 

▪ inkomazi	en-de-kazi		injakazi	e-bomvu-kazi
9.cow.fem	Cl9-tall-fem		9.dog.fem	Cl9-red-fem
‘a tall female cow’			‘a red female dog’	
- Sketch of an ABCD-style analysis:
  - spellout of ⟨-(k)azi⟩ introduces a diacritic feature [female]
  - N & A undergo regular agreement; they share all  $\varphi$  values
  - Corresp. driven by shared  $\varphi$  → agreement for [female]

ABC in action

**An example: Sundanese**

# Sundanese: the facts

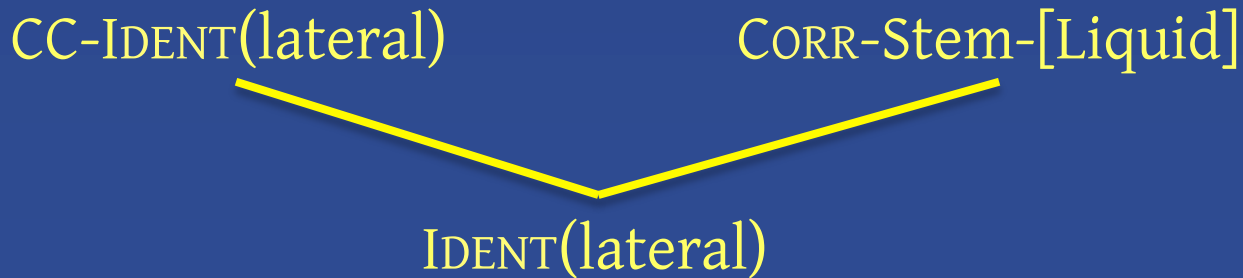
- Gnztñ: complex alternations with pl. infix /ar/
  - $r \rightarrow l$  assimilation after l (l=ar=...  $\rightarrow$  l=al=...)
  - $r \rightarrow l$  dissimilation before r (C=ar=...r  $\rightarrow$  C=al=...r)
  - L-assimilation only in CVC; R-dissimilation fails in CVC
- Data: (mostly Cohn 1992)
  - k=ar=usut ‘messy’ (affix is /ar/)
  - l=al=əga ‘wide’ (L-assimilation)
  - ŋ=al=umbara ‘go abroad’ (R-dissimilation)
  - h=al=ormat ‘respect’
  - c=ar=uriga ‘suspicious’ (Dissimilation blocked
  - r=ar=ahit ‘wounded’ btw. adjacent onsets)

↑ Dissimilation fails where it bleeds assimilation

# Sundanese: ABCD interpretation

- Correspondence is required for liquids, and rhotics
- Correspondence is only allowed between onsets of adjacent syllables
  - Locality condition: adjacent syllables
  - Structural parallelism: only onset-to-onset
- L-assimilation: agreement between liquids that correspond
- R-dissimilation: where two [r]s aren't allowed to correspond, one stops being an [r]

# Sundanese: ranking for assim.



Not depicted: structural limits on correspondence

Input: l=ar=itik Output: l=a.l=i.tik	CC-IDENT (lateral)	CORR-Stem- [Liquid]	IDENT (lateral)
☞ $l_1=a.l_1=i.tik$ $\mathcal{R}: \{l\} \{t\} \{k\}$	0	0	1
~ $l_1=a.r_1=i.tik$ $\mathcal{R}: \{l\} \{r\} \{t\} \{k\}$	W (0~1!)		L (1~0)
~ $l_1=a.r_2=i.tik$ $\mathcal{R}: \{\emptyset\} \{r\} \{t\} \{k\}$		W (0~1!)	

# Sundanese: dissimilation

- An appealing characteristic of ABCD: dissimilation emerges from the same mechanism too
  - CORR constraints only assign violations to similar Cs; If Cs stop being similar, they *don't need to correspond*
  - Dissimilation is another way to satisfy correspondence limits
- The other constraints for Sundanese r-dissim:
  - CORR-stem-[rhotic]: correspondence between [r]s
  - CC-SYLLADJ: correspondents must be syllable-adjacent
  - CC-SROLE: correspondents must be in the same structural position in the syllable
- Effect: two [r]s must correspond. If they can't, then one can't be an [r] → changes to [l].



# Sundanese recap

- Complex pattern: r~l dissimilation *and* assimilation
- ABC treatment of the assimilation:  
Cs that are similar in one respect (liquidity),  
have to agree for something else (laterality),  
to satisfy a limit on correspondence
- ABC+D treatment of dissimilation:  
Cs that are similar in some respect (rhoticity),  
lose that similarity, if they can't satisfy limits on  
correspondence

Why ABC is deeply connected to reduplication

**Similarities to re(du)plication**

# Other takes on Sundanese

- Rigg (1862:viii): ‘the initial consonants L and R in adjectives are also frequently duplicated to form a plural. This duplicated consonant is then followed by the vowel *a*...’
- Intuition: /ar/ is really a reduplicant, with fixed segmentism (Hansson 2001; Suzuki 1998, 1999)
  - → For Hansson, governed by B-R correspondence, and not the Correspondence of ABC; different properties
- Why *not*?
  - Reduplicants *can* have fixed segments (Alderete et al. 1999). Why couldn’t *all* of the segments happen to be fixed?
  - Staroverov (2014): C-epenthesis happens by splitting Vs, sometimes in entirely unfaithful ways.  
Ex. Washo: /l-a:du-a/ → [la:duja] ‘in my hand’

# Formal structure parallels

- The C of ABCD has B-R correspondence as its closest relative
  - Both hold over segments in the same output form
- Segments at both ‘ends’ of the correspondence linkage are changeable
  - ABCD → harmony can go right-to-left, or left-to-right
  - BR → over-application, back-copying, etc.
  - cf IO: Input-Output mismatches aren’t fixable by changing the *input* to match a desired output
- Also, recurring constraint schemas:
  - Rose & Walker (2004): SROLE-CC, IDENT-CC
  - McCarthy & Prince (1993): STROLE, BR-IDENT

# Reductio ad replicatio

- When mechanisms of ABCD are simplified, it becomes more narrowly replicative
- Gallagher & Coon (2009): ABC for total identity
  - Proposal: corresp-esque ‘linking’, and an IDENTITY constr.
  - Consequence: collapses all CC-IDENT constraints together
  - Effect: ABC-type harmony only produces duplicated Cs
- McCarthy (2010): ‘ABC without CORR constraints’
  - Proposal: instead of CORR-[ $\alpha$ F], just one MAX-CC constraint
  - Consequence: collapses all CORR constraints together
  - Effect: Correspondence is opportunistic copying  
cf. ‘aggressive reduplication’ (Zuraw 2002)

# Empirical overlap: harmony?

- Harmony not always clearly distinguishable from reduplication - especially on finer specifics
- Ex: OshiNdonga nasal harmony (R&W 2004, Fivaz 1986)
  - Gnztn: /l/ → [n] after nasals in preceding syllable
  - pep-el-a      ‘blow towards’      (appl. is /-Vl-/)
  - kam-en-a      ‘press for’      (harmony; \*kam-el-a)
  - nik-il-a      ‘season for’      (distance limited)
- Reduplication allows longer-distance harmony?
  - t<sup>h</sup>it-ulul-a      ‘unblock’      (reversive -VlVl-)
  - kun-unun-a      ‘sow seeds again’      (long-distance harm?)

# Empirical overlap: dissimilation?

- How does dissimilation relate to reduplication?
- Sundanese: r-dissimilation fails in reduplication
  - Many lexical exceptions are pseudo-reduplicated
  - Ex: rara ‘braid’, ragrag ‘fall’, rorompok ‘house’ (Cohn 1992)
- Sanskrit: alternations only in reduplications
  - Grassman’s Law: static restriction, only one aspirate per root
  - Alternations observed only in reduplication (Anderson 1970)
- Chol: Identity Effects (MacEachern 1999; Gallagher & Coon 2009)
  - ‘Identical-or-else-dissimilated’ (Suzuki 1999)
  - Only one ejective per root – *unless* they are identical

# Empirical overlap: iconicity?

- Reduplication is commonly tied with certain iconic grammatical functions
  - plurality, distributivity
  - abundance, iterativity
  
- Similar iconicity is reported for some cases of consonant harmony
  
- Wiyot diminutives and augmentatives (Teeter 1959)
  - *tawî·paʔliʔ*            ‘rope’
  - *tʃawî·paʔroʔ-atʃk*    ‘heavy cable’    (*t* → *tʃ* in aug.)
  - *tsawî·paʔroʔ-ots*    ‘twine’            (*t* → *ts* in dim.)



Reasons to think ABCD is fundamentally not actually replicative

# Dissimilarities

# Formal differences: $\mathcal{R}$ elation

- B-R correspondence: *from* Base to RED
  - parallels I-O correspondence: status of something as part of 'Base' is not changeable (e.g. no deciding to copy less of base)
  - If C-C correspondents are all on the same level of representation, what is the 'to'/'from'?
- 1-to-1-ness: cardinality of correspondent sets
  - B-R correspondence is typically 1-to-1, or based thereon
  - C-C correspondence can (and must) have groups of >2 correspondents (e.g. Chumash  $\text{ʃapit}^{\text{h}}\text{olufwaʃ}$ )
- Number of  $\mathcal{R}$ elations?
  - BR: distinct relations for each reduplicant
  - CC: not so clear that multiple relations are necessary

# Formal differences: constraints

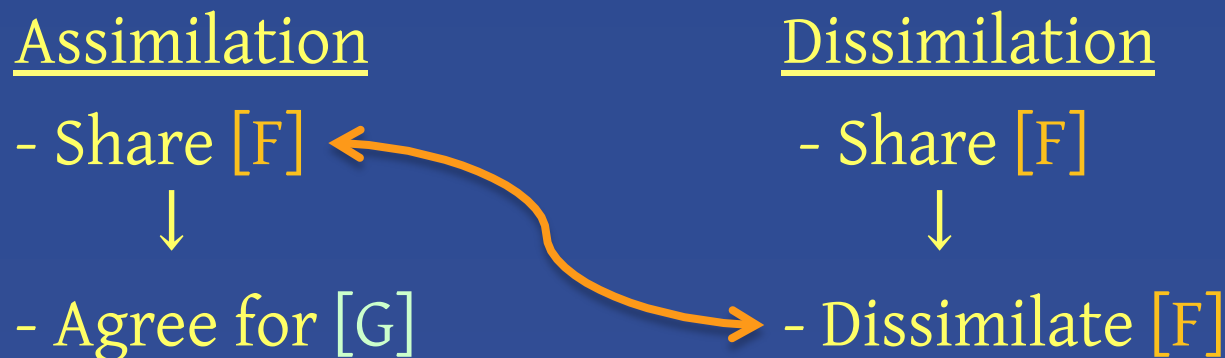
- Role of quantity is different
  - BR-MAX & BR-DEP are well-established
  - CC-DEP: ‘if Cs correspond, then no insertion’ (???)
- Doman edge effects
  - Bennett (2015) proposes a family of CC-EDGE constraints
  - BR-EDGE constraints?
- Features referred to by \_\_-IDENT-[F]?
  - Not all features can be shared by consonant harmony
  - Does this parallel the typology of potential B-R (dis)agreements?
  - Do CC-IDENT and BR-IDENT constraints pick out the same set of [F]s?

# Empirical scope: disreplication?

- ABCD produces assimilation, but also dissimilation
- Is there an analogue for the BR relationship?
- Hapology? (attested; intuitively mirrors redup.)
  - Not obviously derivable from BR constraints without making them refer to more than B & R
  - If BR constraints *do* refer to similar Cs outside of REDs, then they start to approximate ABCD (cf. Zuraw 2002)
- ‘Imbrication’ in Xhosa:
  - libal+ile → -libele      ‘forgot (perf.)’
  - Coalescence of two /l/s; explainable from ABCD?

# A typological mismatch

- **Mismatch:** ABCD predicts an unintuitive relationship between assimilation & dissimilation



- The theory doesn't predict a mirror-image parallelism
- This seems to be closer to the typological reality than a mirror-image null hypothesis

And conclusions?

# Summary

# Recap

- Deep parallels between ABCD and reduplication
- Deep differences between ABCD and reduplication
- Some are formalism-specific
- Some aren't – at least not obviously
- Some of each might follow from differences in level of representation
  - BR and IO are mappings between different levels
  - CC correspondence is all within one level

# Conclusions

- Is ABCD fundamentally a sub-type of re(du)plication?
  - ABC: sort of looks like it
  - D: not so much
- The D is a good result!
  - but it has no obvious analogue in reduplication
- Empirical conclusions await more detailed evidence on the range of possible ABCDEs – and the typology of replication in phonology



Thank you!