

Conflict resolution: Proper inclusion v. overlap

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(conflict = competition)

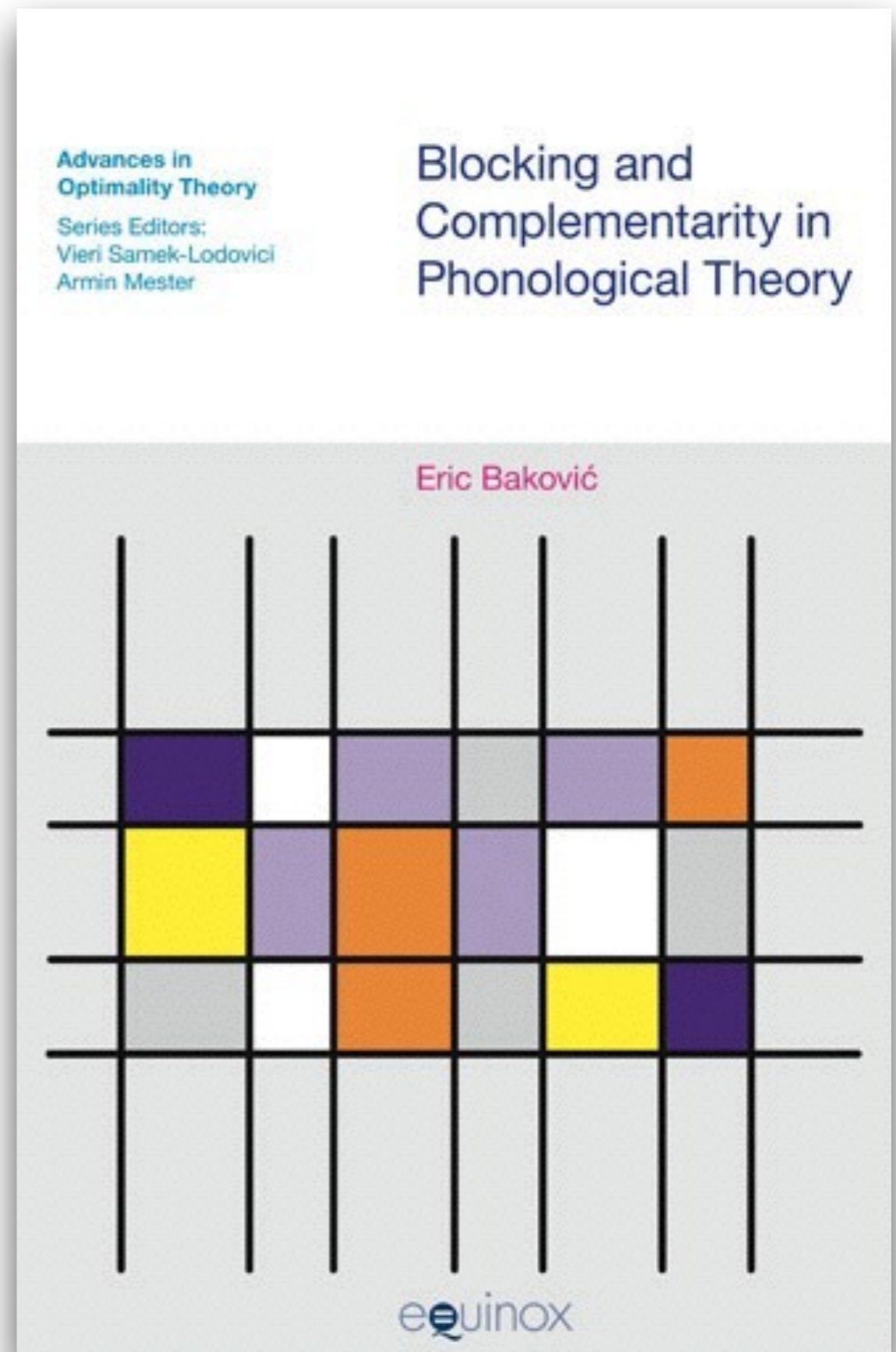
here, competition between
generalizations over (phonological) strings

the point



- Phonologists, morphologists, and other linguists have long thought that proper inclusion between structural descriptions is a (very) special thing.
 - Why? What's so special about proper inclusion?
- I argue that the celebrated distinction between **proper inclusion** and **overlap** is a spurious one.
 - All that matters is ***conflict***, and how it is resolved.

See my 2013 monograph for this same point, embedded in a larger discussion of blocking, complementarity, and the principles that are proposed to regulate these.



SPE rules and order

In rule-based generative phonology, generalizations are expressed as serially-ordered rewrite rules.

free reapplication

only ordering 😞

feeding /ABD/
 AB → AC ACD
 CD → CE ACE

bleeding /ABD/
 AB → AC ACD
 BD → BE —

counterfeeding /ABD/
 CD → CE —
 AB → AC ACD

counterbleeding /ABD/
 BD → BE ABE
 AB → AC ACE

direct mapping

free reapplication
or direct mapping

Disjunctive application

$V \longrightarrow [+stress] / - C_0 ((\check{V}C_0^1)VC_0)\#$

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$V \longrightarrow [+stress] / - C_0 \check{V}C_0^1VC_0\#$

$V \longrightarrow [+stress] / - C_0VC_0\#$

$V \longrightarrow [+stress] / - C_0VC_0\#$

Stress the antepenultimate vowel if there is one and if the penultimate vowel is short and in an open syllable (i.e. the penultimate syllable is light).

Disjunctive application

$V \longrightarrow [+stress] / - C_0 ((\check{V}C_0^1)VC_0)\#$

$V \longrightarrow [+stress] / - C_0 \check{V}C_0^1VC_0\#$

$V \longrightarrow [+stress] / - C_0VC_0\#$

*Otherwise,
stress the penultimate vowel
if there is one.*

Disjunctive application

$V \longrightarrow [+stress] / - C_0 ((\check{V}C_0^1)VC_0)\#$

$V \longrightarrow [+stress] / - C_0 \check{V}C_0^1VC_0\#$

$V \longrightarrow [+stress] / - C_0VC_0\#$

$V \longrightarrow [+stress] / - C_0\#$

Otherwise, stress the final vowel.

Disjunctive application

$V \longrightarrow [+stress] / _ C_0 \check{V} C_0^1 V C_0 \#$

$V \longrightarrow [+stress] / _ C_0 V C_0 \#$

$V \longrightarrow [+stress] / _ C_0 \#$

pa-trí-cí-á

If application of such rules were conjunctive rather than disjunctive, there could be as many as three stresses assigned to one word.

Disjunctive application

$V \longrightarrow [+stress] / - C_0 ((\check{V}C_0^1)VC_0)\#$

$V \longrightarrow [+stress] / - C_0 \check{V}C_0^1VC_0\#$

$V \longrightarrow [+stress] / - C_0VC_0\#$

$V \longrightarrow [+stress] / - C_0\#$

Note the proper inclusion relationships among these strings, capitalized upon by the parenthesis notation

Metrical stress theory

- Final syllable extrametricality (modulo exhaustivity).
- Assign a bimoraic trochee at the right edge.

pa-(trí-ci)-⟨a⟩

(ré-fi)-⟨cit⟩

re-(fě́)-⟨cit⟩

re-(féc)-⟨tus⟩

(méns)

(ré)

Conflict in SPE

Actual conflict between rewrite rules arises under two conditions: mutual feeding and mutual bleeding.

mutual feeding 1 /ABD/

AB \rightarrow AC ACD

CD \rightarrow BD ABD

mutual feeding 2 /ACD/

CD \rightarrow BD ABD

AB \rightarrow AC ACD

mutual bleeding 1 /ABD/

AB \rightarrow AC ACD

AB \rightarrow AE —

mutual bleeding 2 /ABD/

AB \rightarrow AE AED

AB \rightarrow AC —

“Duke of York”
derivations:
 $X \rightarrow Y \rightarrow X$

“Duke of Earl”
derivations:
 $X \rightarrow Y \nrightarrow Z$

Conflict in SPE

mutual feeding 1 /ABD/

AB \rightarrow AC ACD

CD \rightarrow BD ABD

mutual bleeding 1 /ABD/

AB \rightarrow AC ACD

AB \rightarrow AE —

mutual feeding 2 /ACD/

CD \rightarrow BD ABD

AB \rightarrow AC ACD

mutual bleeding 2 /ABD/

AB \rightarrow AE AED

AB \rightarrow AC —

Neither of these types of interactions appears to require anything other than ordering. And yet...

Elsewhere Condition

Two rules of the form

$$A \rightarrow B / P \text{ — } Q$$

$$C \rightarrow D / R \text{ — } S$$

are disjunctively ordered iff:

- A. the set of strings that fit PAQ is a subset of the set of strings that fit RCS , and
- B. the structural changes of the two rules are incompatible.

Kiparsky (1973)

Proper Inclusion Precedence Principle

“incompatible structural changes”
= $X \rightarrow Y$ vs. $Y \rightarrow X$

the Elsewhere Condition is thus a response to issues involving cases of mutual feeding — it *prevents* Duke of York derivations

A properly includes the structural description of B.

Koutsoudas et al. (1974)

Elsewhere Condition

“For all the cases of proper inclusion precedence considered here, the related rules are intrinsically disjunctive, since application of either rule yields a representation that fails to satisfy the structural description of the other.” (fn. 7, p. 9)

the Proper Inclusion Precedence Principle is thus a response to issues involving cases of mutual bleeding — to predict the order of rules in a Duke of Earl relationship

of the two rules are incompatible.

Kiparsky (1973)

Proper Inclusion Precedence Principle

For any representation R, which meets the structural description of each of two rules A and B, A takes applicational precedence over B with respect to R iff the structural description of A properly includes the structural description of B.

Koutsoudas et al. (1974)

Elsewhere Condition

Two rules of the form

$$A \rightarrow B / P \text{ — } Q$$

$$C \rightarrow D / R \text{ — } S$$

are disjunctively ordered iff:

- the set of strings that fit *PAQ* **is a subset of** the set of strings that fit *RCS*, and
- the structural changes of the two rules are **incompatible**.

Kiparsky (1973)

Proper Inclusion Precedence Principle

For any representation *R*, which meets the structural description of each of two rules *A* and *B*, *A* takes applicational precedence over *B* with respect to *R* iff the structural description of *A* **properly includes** the structural description of *B*.

Koutsoudas et al. (1974)

Elsewhere Condition

Two rules of the form

$$A \rightarrow B / P _ Q$$

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English

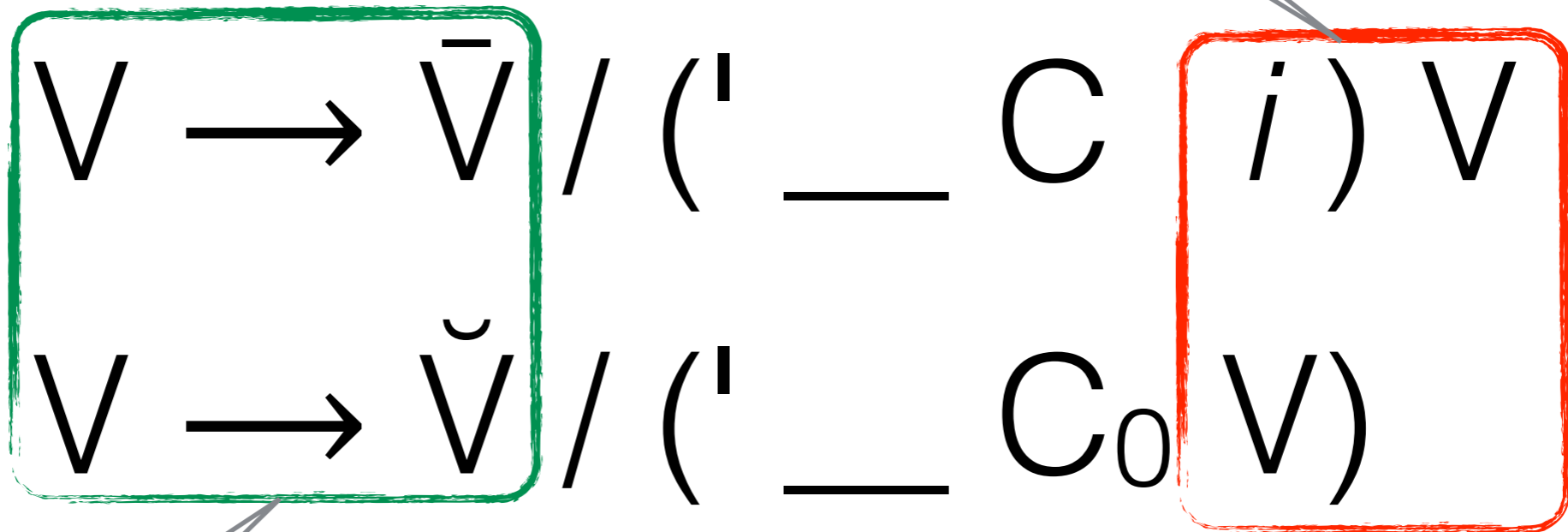
lengthening & shortening

- *CiV* Lengthening: $V \rightarrow \bar{V} / (' _ C i) V$
 - e.g. re('mēdi)<al>, ('rādi)<al>, me('lōdi)<ous>...
- Trisyllabic Shortening: $V \rightarrow \check{V} / (' _ C_0 V)$
 - e.g. ('rěme)<dy>, ('rǎdi)<cal>, ('mělo)<dy>...

English

lengthening & shortening

proper inclusion!



conflict!

English

lengthening & shortening

* = blocking by EC	('rådi)⟨al⟩	('rådi)⟨cal⟩
<i>Lengthening</i> $V \rightarrow \bar{V} / (' _ C i) V$	('rādi)⟨al⟩	—
<i>Shortening</i> $V \rightarrow \check{V} / (' _ C_0 V)$	*	('rădi)⟨cal⟩

English

lengthening & shortening

<i>Just to avoid this?</i>	('rådi)⟨al⟩	('rådi)⟨cal⟩
<i>Shortening</i> $V \rightarrow \check{V} / (' _ C_0 V)$	('rǎdi)⟨al⟩	('rǎdi)⟨cal⟩
<i>Lengthening</i> $V \rightarrow \bar{V} / (' _ C i) V$	('rādi)⟨al⟩	—

Disjunctive application is “maximized”.

Chomsky (1967: 124-125), Chomsky & Halle (1968: 63)

“[C]ertain natural economy conditions” require that there be “no ‘superfluous steps’ in derivations”.

Chomsky (1995: 220), Halle & Idsardi (1998: 1)

Nootka / Nuuchahnulth

labialization & delabialization

<i>Overlap requires Duke of York!</i>	muq	ḥaju-qi	ṭa:k ^w -fitṭ
<i>Labialization</i> [dors] → [+rd] / [+rd]	muq ^w	ḥaju-q ^w i	—
<i>Delabialization</i> [dors] → [-rd] / —] _σ	muq	—	ṭa:k-fitṭ

Whence proper inclusion?

- Proper inclusion is the one subcase of overlap for which there is only one truly possible order.
 - General $>$ Specific allows Specific to apply,
 - Specific $>$ General occults Specific.
- Proper inclusion is *asymmetrically complete*; unique among forms of overlap in that it can be non-arbitrarily used to determine which of two conflicting rules is blocked.

English'

lengthening & shortening

<i>Rules reversed</i>	('rådi)⟨al⟩	('rådi)⟨cal⟩
<i>Lengthening</i> $V \rightarrow \bar{V} / (' _ C i) V$	('rādi)⟨al⟩	—
<i>Shortening</i> $V \rightarrow \check{V} / (' _ C_0 V)$	('rǎdi)⟨al⟩	('rǎdi)⟨cal⟩


Nootka / Nuuchahnulth'


labialization & delabialization

<i>Rules reversed</i>	muq	ḥaju-qi	ṭa:k ^w -fitṭ
<i>Delabialization</i> [dors] → [-rd] / [—] _σ	muq	—	ṭa:k-fitṭ
<i>Labialization</i> [dors] → [+rd] / [+rd]	muq ^w	ḥaju-q ^w i	—

So what counts
as *conflict*?

English

$/('r\text{å}di)\langle al \rangle/$	<i>CiV</i> -LONG	SHORT	F
a.  $('r\bar{a}di)\langle al \rangle$		*	(*)
b. $('r\check{a}di)\langle al \rangle$	* !		(*)


$/('r\text{å}di)\langle cal \rangle/$	<i>CiV</i> -LONG	SHORT	F
a. $('r\bar{a}di)\langle al \rangle$		* !	(*)
b.  $('r\check{a}di)\langle al \rangle$			(*)


English'

/('rɑ̃di)⟨al⟩/	SHORT	<i>CiV</i> -LONG	F
a. ('rādi)⟨al⟩	* !		(*)
b. ☞ ('rǎdi)⟨al⟩		*	(*)


/('rɑ̃di)⟨cal⟩/	SHORT	<i>CiV</i> -LONG	F
a. ('rādi)⟨al⟩	* !		(*)
b. ☞ ('rǎdi)⟨al⟩			(*)


Nootka / Nuuchahnulth

/muq/	DELAB	LAB	F
a.  muq		*	(*)
b. muq ^w	* !		(*)

/ħaju-qi/	DELAB	LAB	F
a. ħaju-qi			(*)
b.  ħaju-q ^w i		* !	(*)

Nootka / Nuuchahnulth'

	/muq/	LAB	DELAB	F
a.	muq	* !		(*)
b.	 muq ^w		*	(*)

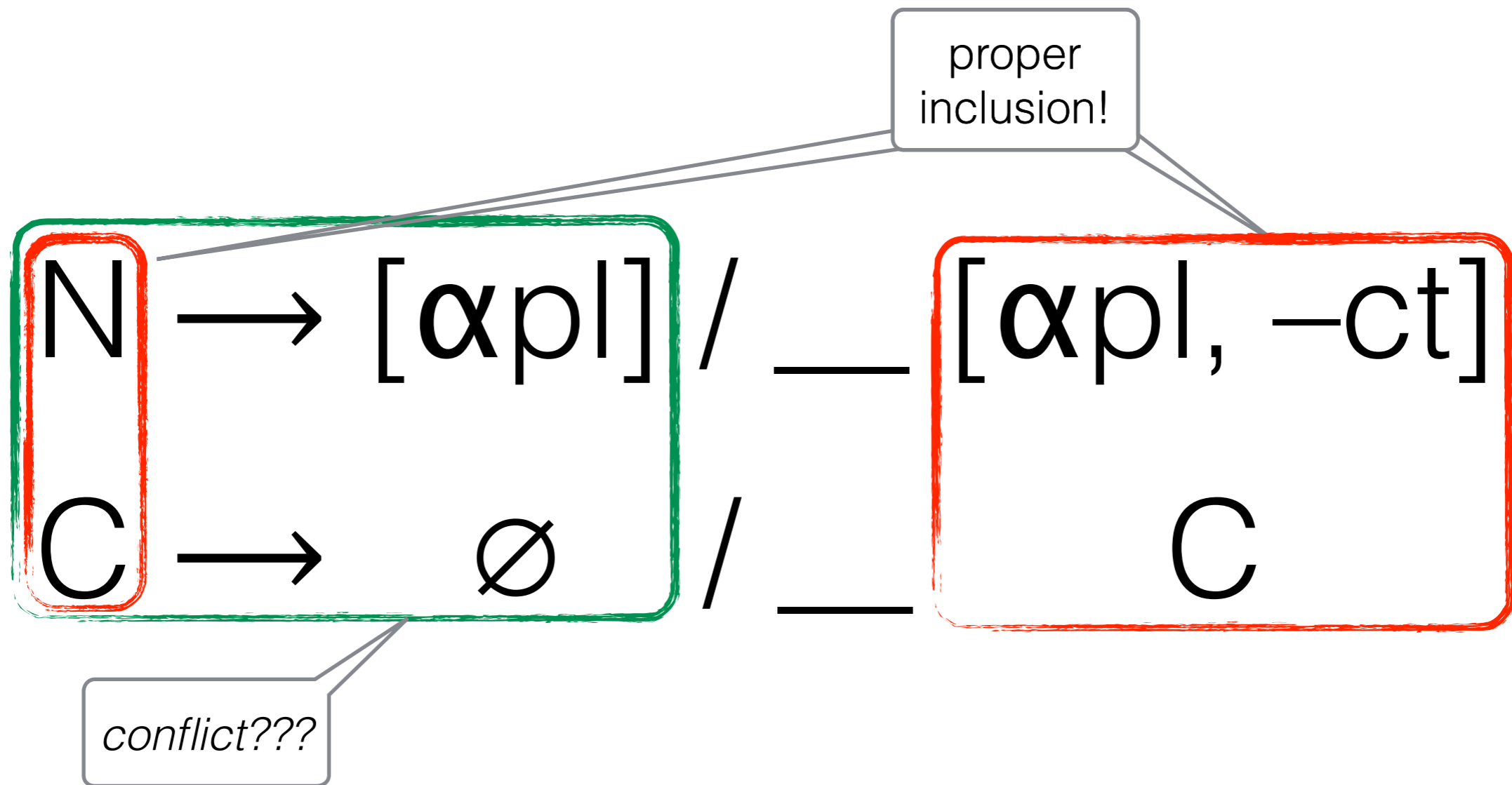
	/ħaju-qi/	LAB	DELAB	F
a.	ħaju-qi			(*)
b.	 ħaju-q ^w i	* !		(*)

mutual feeding

‘obliterative bleeding’

Diola Fogy

assimilation & deletion



Diola Fogny

assimilation & deletion

* = blocking by EC	ni-gam-gam	na-lan-lan	let-ku-jaw
<i>Assimilation</i> N → [αpl] / ___ [αpl, -ct]	ni-gan-gam	—	—
<i>Deletion</i> C → ∅ / ___ C	*	na-la-lan	le-ku-jaw

Diola Fogny'

assimilation & deletion

<i>this order...</i>	ni-gam-gam	na-lan-lan	let-ku-jaw
<i>Assimilation</i> N → [αpl] / ___ [αpl, -ct]	ni-gan-gam	—	—
<i>Deletion</i> C → ∅ / ___ C	ni-ga-gam	na-la-lan	le-ku-jaw

'obliterative
bleeding'



Diola Fogny''

assimilation & deletion

<i>that order...</i>	ni-gam-gam	na-lan-lan	let-ku-jaw
<i>Deletion</i> $C \rightarrow \emptyset / _ C$	ni-ga-gam	na-la-lan	le-ku-jaw
<i>Assimilation</i> $N \rightarrow [\alpha pl] / _ [\alpha pl, -ct]$	—	—	—

'obliterative
bleeding'

Diola Fogny^(/)

$\left\{ V \begin{array}{c} N \\ [(-)\alpha_{pl}] \end{array} \right\}_{\sigma} \begin{bmatrix} -ct \\ \alpha_{pl} \end{bmatrix}$	AGR(pl)-NC	NoCODA-C	ID(pl)	MAX-C
a.  $\left\{ V \right\}_{\sigma} \begin{bmatrix} -ct \\ \alpha_{pl} \end{bmatrix}$				*
b.  $\left\{ V \begin{array}{c} N \\ [\alpha_{pl}] \end{array} \right\}_{\sigma} \begin{bmatrix} -ct \\ \alpha_{pl} \end{bmatrix}$		* !	(*)	
c. $\left\{ V \begin{array}{c} N \\ [-\alpha_{pl}] \end{array} \right\}_{\sigma} \begin{bmatrix} -ct \\ \alpha_{pl} \end{bmatrix}$	* !	*	(*)	

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- the set of strings that fit *PAQ* **is a subset of** the set of strings that fit *RCS*, and
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Kiparsky (1973)

Elsewhere Condition

Rules A, B apply disjunctively to a form Φ iff

- The structural description of A **properly includes** that of B.
- The result of applying A to Φ **is distinct from** the result of applying B to Φ .

In that case, A is applied first, and if it takes effect, then B is not applied.

Kiparsky (1982)

Elsewhere Condition

Two rules of the form

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Kiparsky (1982)


- The result of applying Assimilation is certainly “distinct” from the result of applying Deletion.
- But the result of applying Palatalization is also “distinct” from the result of applying Voicing, and yet we expect them both to apply in this case.

	iki
<i>Palatalization</i> [dors] → [+pal] / i __ i	ik ^j i
<i>Voicing</i> C → [+voi] / V __ V	ig ^j i


An alternative for Diola

- Prosodic licensing
 - consonants linked to the onset are licensed,
 - consonants not linked to the onset are deleted.
- Effectively: Deletion only targets unassimilated Cs
 - Assimilation simply bleeds Deletion.

Diola Fogany

		AGR(pl)-NC	NoCODA-C	ID(pl)	MAX-C
	$\left\{ V \begin{array}{c} N \\ [(-)\alpha_{pl}] \end{array} \right\]_{\sigma} \begin{bmatrix} -ct \\ \alpha_{pl} \end{bmatrix} \right\}$				
a.	$\left\{ V \right\]_{\sigma} \begin{bmatrix} -ct \\ \alpha_{pl} \end{bmatrix} \right\}$				* !
b. 	$\left\{ V \begin{array}{c} N \\ [\alpha_{pl}] \end{array} \right\]_{\sigma} \begin{bmatrix} -ct \\ \alpha_{pl} \end{bmatrix} \right\}$			(*)	
c.	$\left\{ V \begin{array}{c} N \\ [-\alpha_{pl}] \end{array} \right\]_{\sigma} \begin{bmatrix} -ct \\ \alpha_{pl} \end{bmatrix} \right\}$	* !	*	(*)	

Another alternative

		AGR(pl)-NC	NoCODA-C	ID(pl)	MAX-C
	$\left\{ V \begin{array}{c} N \\ [(-)\alpha_{pl}] \end{array} \right\]_{\sigma} \begin{bmatrix} -ct \\ \alpha_{pl} \end{bmatrix} \right\}$				
a.	$\left\{ V \right\]_{\sigma} \begin{bmatrix} -ct \\ \alpha_{pl} \end{bmatrix} \right\}$	* !			*
b. 	$\left\{ V \begin{array}{c} N \\ [\alpha_{pl}] \end{array} \right\]_{\sigma} \begin{bmatrix} -ct \\ \alpha_{pl} \end{bmatrix} \right\}$			(*)	
c.	$\left\{ V \begin{array}{c} N \\ [-\alpha_{pl}] \end{array} \right\]_{\sigma} \begin{bmatrix} -ct \\ \alpha_{pl} \end{bmatrix} \right\}$	* !	*	(*)	

recall the point



- I have argued that the celebrated distinction between **proper inclusion** and **overlap** is a spurious one.
- All that matters is ***conflict***, and how it is resolved.

Thank you.