Long Distance Geminates - myth or fact?

Noam Faust (noam.faust@univ-paris8.fr)

Roadmap

A. Phonological Fun

1. Geminate Inseparability (=Integrity)
2. Template Satisfaction, "Long Distance Geminates" (LDG)
   - Geminate "transfer"
   - Allomorphy in Algiers Arabic?
3. Contiguity vs. *LDGs in Semitic denominal verbs
   - Modern Hebrew allomorphy Contiguity > *LDG
   - Hasawi Arabic *LDG > Contiguity
4. *#[T:] blocks Geminate transfer in Maaloula Neo Aramaic
5. Geminate Transfer and Geminate reconstruction in Mehri

B. Consequences

6. Consequence for the representation of templates.
   - The final C effect
   - "prosodic templates"
7. Are LDG a thing?
8. Geminate Transfer only attested in Semitic

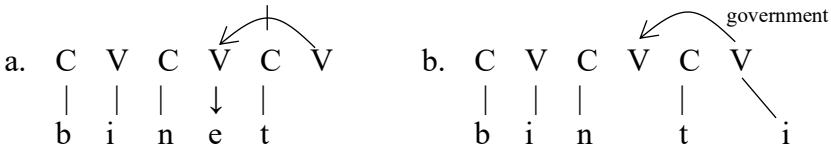
A. Phonological Fun

1. Geminate Inseparability

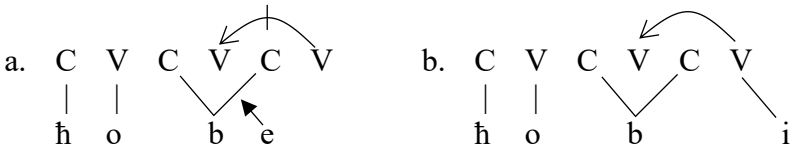
(1) Palestinian Arabic CVC_C (Elihai 2012)

a. binet	'daughter'	bint-i	'my daughter'
b. kaleb	'dog'	kalb-i	'my dog'
c. ħobb	'love'	ħobb-i	'my love'

(2) *C_iC_j# in Strict CV (Lowenstamm 1996, Scheer 2004)



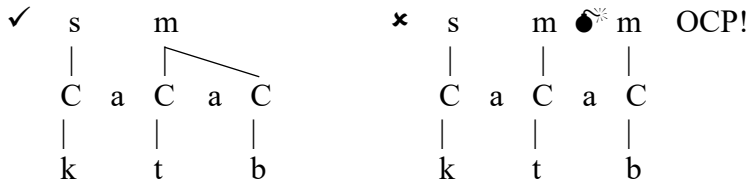
(3) C_iC_i# in Strict CV? Geminate Inseparability!



- "Buried" nuclei do not require government? Alternative view later.

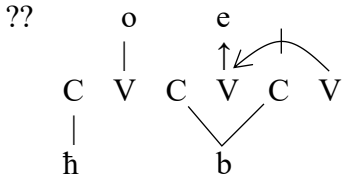
2. Template Satisfaction and "Long Distance Geminates" (LDG)

(4) Template Satisfaction by biradical Root (McCarthy 1981)



▪ Violation of geminate integrity? "Long Distance Geminate" ?

(5) If Cs and Vs on different tiers, why not epenthesize inside a geminate?



▪ McCarthy (1981): at some point, "tier conflation" occurs – Cs and Vs become fully linearized. One may suppose that epenthesis is blocked *then* by "no line crossing".

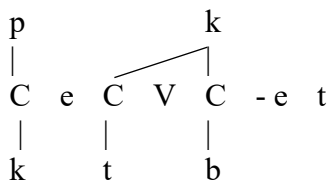
▪ Hoberman shows that even LDGs are sometime avoided.

(6) Hoberman (1988): Avoidance of LDG in Syriac through "**Geminate Transfer**"[1]

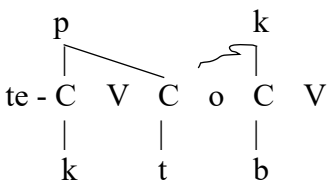
pekk-et	**ketb-et**	**Class I Perfect 1SG**
et-pakk-at	**et-katb-at**	**Class I-t Perfect 3SG FEM**
t-et-pakk-ūn	**t-et-katb-ūn**	**Class I-t Imperfect 2PL MASC**
pākk-ā	**kātb-ā**	**Class I Act. Participle SG FEM**
te-ppok	**te-ktob**	**Class I Imperfect 2SG MASC**
te-ppok-ūn	**te-ktob-ūn**	**Class I Imperfect 2PL MASC**
appek	**akteb**	**Class IV Perfect 3SG MASC**
ett-appak	**ett-aktab**	**Class IV-t Perfect 3SG MASC**
ett-appak-at	**ett-aktab-at**	**Class IV-t Perfect 3SG FEM**

(7) Equi-templatic √QTK, √QT – variable mapping of √QT

a. pekk-et, ketb-et



b. teppok, tektob



[1] Thanks to Outi Bat-El for showing me this direction of research.

▪ Solid evidence for

i. biradicality (if anyone needed any);
ii. *$C^{\alpha}vC^{\alpha}$, or even *LDG
iii. Edge-in template satisfaction (Yip 1998)?

▪ What about a template QaTiL? Geminate Transfer cannot hold (QaQiT is not better than QaTiT).

(8) Arabic participles across varieties (thank to Lameen Souag)

	Classical/ Standard	Levant	Algiers upper/ middle class	Algiers working class	
a. √ktb	ka:tib	ká:tib	kátəb	kátəb	'write'
b. √sˁjm	**sˁa:jim**	**sˁá:jim**	**sˁájəm**	**sˁájəm**	'fast'
c. √ħb	**ħabb**	**ħá:bib**	**ħəbb**	**ħajəb**	'like'

(In the Algiers working class dialect, 'he liked' is [ħəbb], 'he fasted' is [sˁam]).

▪ Three possible analyses:

I) *Root allomorphy* √ħb=> √ħjb / participle
Surprising type of root allomorphy, because it applies not to specific roots, but to all biradical roots.

II) *Template allomorphy* CaCəC/ CajəC; weak roots select the latter
The middle [j] would be a non-radical in both (8)b,c. But then what distinguishes the roots in (8)b,c? Maybe √sˁ▪m vs. √ħb?

III) *Phonological Epenthesis*
Epenthesis of [j] in (8c). Unlikely.

▪ Whatever the correct analysis, there is avoidance of an LDG/$C^{\alpha}vC^{\alpha}$.

▪ Claim in Hoberman (1989): the same logic underlies Geminate Inseparability and the ban on Long Distance geminates.

3. Contiguity vs. *LDGs in Hebrew and Arabic denominal verbs

(9) Two "active" verbal templates in native lexicon: QiTeL and hiQTiL

	QiTeL		*hiQTiL*	
Biradical	χilel	'desecrate'	hiχlil	'generalize'
	rises	'spray'	hitsis	'ferment'
Triradical	χipes	'search'	hiχlif	'replace'
	kibets	'assemble'	hivχin	'notice'
Quadriradical	sinver	'blind'	-	
	tirgem	'translate'	-	

▪ The T position of QiTeL can host 2 consonants.

▪ Native quadriradicals - always occur in QiTeL [**sinver**] 'it blinded'
- always syllabified QiTLeD *[**sn**iver]

(10) QiTeL and hiQTiL as unpredictable allomorphs in deajectival verbs

Adjective		*QiTeL*		*hiQTiL*	
karov	'close'	kirev	'bring close'	-	
raχok	'far'	-		hirχik	'put far'
katsar	'short'	kitser	'shorten'	-	
ʔaroχ	'long'	-		heʔeriχ	'lengthen'

(10') Denominal verbs in Modern Hebrew

	BASE	VERB			BASE	VERB	
a.	ʃprits	hiʃprits	'splash' (<Yidd.)	c.	faks	fikses	'fax'
	strim	histrim	'stream'		bindʒ	bindʒedʒ	'binge'
	trol	hitril	'troll'		miks	mikses	'mix (music)'
	swajp	hiswip	'swipe'				
b.	flirt	flirtet	'flirt'				
	spondʒa	spindʒedʒ	'wash floors'				
	brantʃ	brintʃetʃ	'brunch'				
	triger	triger ~ tirger	'trigger'				

▪ If a base has an initial cluster and only *one additional consonant* (**CC**V**C**V)
=> the verb is mapped to hiQTiL

▪ In all other cases, Initial cluster + more than one C (**CC**V**C**V**C**)
Non-initial cluster (**C**V**CC**(V**C**))
No cluster (**C**V**C**V**C**)
=> mapped to QiTeL.

▪ Clusters are always preserved, sometimes through reduplication.

(10'') Hasawi Arabic gamer vocabulary (Almuhaysh & Nevins 2025)

		N	V
a.	*flash*	flaʃ	fallaʃ, *flaʃʃaʃ
	crouch	krawtʃ	karwatʃ, *krawwatʃ
	troll	trowl	tarwal, *trallal
b.	*trigger*	triger	targar, *traggar
	drift	drift	darfat, *draffat
c.	*ult*	ʔalt	ʔallat, *ʔaltat
	aim	ejm	ʔajjam, *ajmam
	max	maks	makkas, *maksas

▪ All forms go to QaTTaL. No cluster preservation. Also, no LDG.

▪ What's the difference between Hebrew and (Hasawi) Arabic?

▪ Bat-El (2003) treats cluster preservation using the well-established constraint CONTIGUITY (adjacency in a base must be preserved);

(11) /faks/+ <QiTeL>	CONTIGUITY	*CODA
a. fikes	*!	
☞ b. fikses		*

(11') /fokus/+ <QiTeL>	CONTIGUITY	*CODA
☞a. fikes		
b. fikses		*!

▪ Bat-El does not explain the allomorphic choice. Assume *CC#, *LDG

(12) /flirt/+ <QiTeL> <hiQTiL>	CONTIGUITY	*CC#	*LDG
a. filret	*!*		
☞ b. flirtet			*
c. hiflirt		*	

(13) /strim/+ <QiTeL> <hiQTiL>	CONTIGUITY	*CC#	*LDG
a. sitrem	*!		
b. strimem			*!
☞ c. histrim			

(14) /faks/+ <QiTeL> <hiQTiL>	CONTIGUITY	*CC#	*LDG
☞ a. fikses			*
b. fikes	*!		
c. hifkis	*!		

▪ The two templates, which elsewhere are not true allomorphs, function here as allomorphs. Possibly, this is phonologically-conditioned optimizing allomorphy **at lexicalization**, as opposed to in the production phonology (Faust et al 2018)

▪ Note that there is no need to extract a "consonantal root" in these cases (though it might be the case that one is extracted).

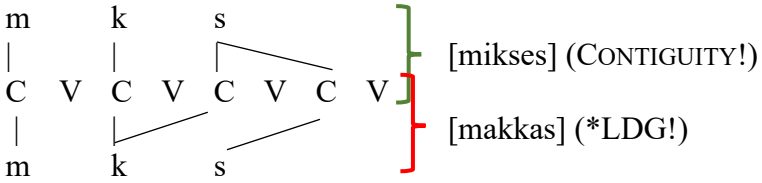
▪ In Hasawi Arabic (gamer vocabulary), CONTIGUITY is low, but *LDG is high.

(15) /maks/ + <QaTTaL>	*CC#	*LDG	CONTIGUITY
a. maksas		*!	
☞ b. makkas			*

(16) /drift/ + <QaTTaL>	*CC#	*LDG	CONTIGUITY
a. darraft	*!		
☞ b. darfat			*

([draffat] would also have to be ruled out – possibly *CC# is a more general constraint "no tautosyllabic clusters")

(17) Hebrew vs. Arabic

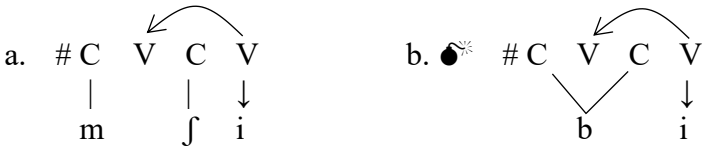


5. *#[T:] blocks Geminate transfer in Maaloula Neo Aramaic (MNA)

▪ MNA (Arnold 1990, Eid 2024) allows all sonority slopes in initial clusters: [**mʃ**iːħa] 'Christ', [**χt**oːba] 'book'. It also has geminates.

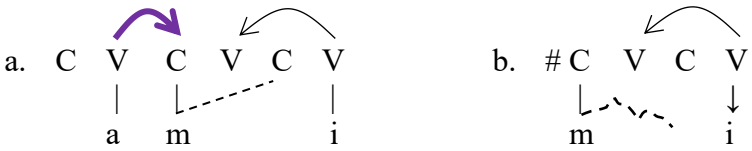
▪ "anything goes" languages (Scheer 2004) = no initial CV

(18) In "anything goes" languages, initial geminates should be fine. In MNA they aren't.

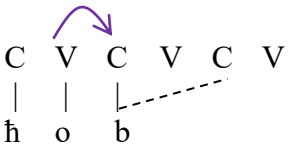


▪ Proposal: a C has to be licensed by preceding V in order to spread:

(19) Geminate licensing



(19') Final geminate licensed



▪ MNA exhibits Geminate transfer, but only in the SBJNCT 3MSG.

(20) Maaloula Neo Aramaic

		3MSG	3FSG
a. PRS	√lm	loːmem	loːmma
	√tˤʕn	tˤoːʕen	tˤoːʕna
b. PRF	√lm	**ilmem**	lmiːma
	√tˤħn	itˤħen	tˤħiːna
c. SBJNCT	√lm	**jillum**	jlummun
	√ftħ	jiftaħ	jifutħun

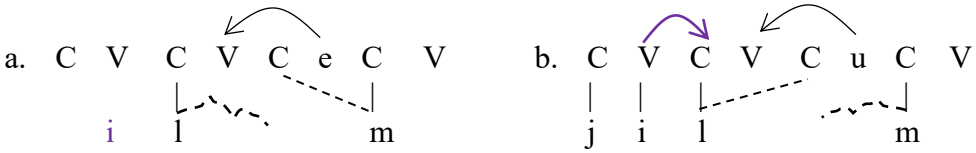
▪ PRS violates *LDG – presumably because otherwise, hiatus would arise *[loːem].

▪ But why not *[ji**lm**um] given (20)b?

▪ Note that PRF loses the initial vowel upon suffixation, whereas SBJNCT is always prefixed.

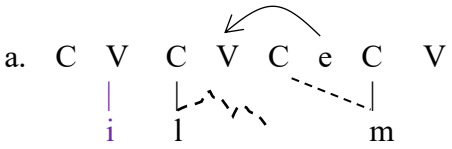
▪ Assume therefore that the vowel [i] of the PRF is weak.

(21) First stage the initial vowel of the PRF is floating; can't license a geminate.



[ⁱlmem] PRF [jillum] SBJNCT

(21') Then, the initial vowel of the PRF associates iff minimality is not reached



▪ MNA exhibits Geminate Transfer in non-initial position; *LDG is still a force.

5. Geminate Transfer and Geminate reconstruction in Mehri

▪ Dhofari Mehri (Rubin 2018, Watson et al. 2020) exhibits both Geminate Transfer (light green) and "Geminate Reconstruction" (framed).

▪ Note vowel alternations: i. Reduction
/a, u/ => [ə] when unstressed
/u/ => [ə] in closed stressed syllables
(final C does not count as closing syllable)
ii. Bolstering
All vowels lengthen in open stressed syllables
(final C does not count as closing syllable)

22) Triradical and Biradical roots in Mehri[2]

	PRF	PRF-1SG	COND	SBJNCT	SBJNCT-3DU[3]	
a.	hənsúːm	hənsə́m-k	-hánsəm-ən	-hánsəm	-hənsəm-éh	'breathe'
b.	həglúːl	həglə́l-k	-hággəl-ən	-hággəl	-həgəll-éh	'boil'
	*həggúːl	*həggə́l-k	*-hágləl-ən	*-hágləl	*-həgləl-éh	
			*-hoːgəll-ən	*-hoːgəll	*-həggəl-éh	

▪ As a sidenote, when there is no previous consonant to assimilate to, *LDG is violated:

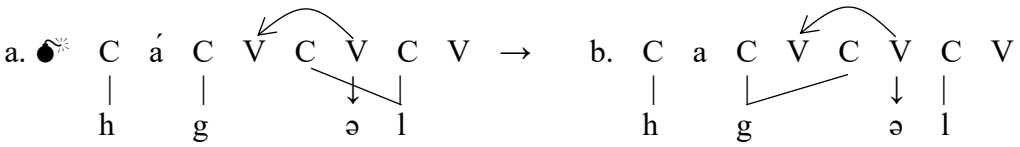
sg	pl	
[ɬə́kkʔ-ət]	[ɬwóːkʔəkʔ]	'clever'
[msáll-ət]	[msóːləl]	'thick needle'

▪ *Hiatus is higher up than *LDG

▪ **Pieces of the Puzzle**

1. A stressed vowel (full or reduced) can support a LDG (light blue)
2. An unstressed one cannot; is repaired through Geminate Transfer (light green) or Geminates Reconstruction (grey).
Why not *[həggəl-éh] in SBJNCT-3DU?

(23) Bendjaballah & Ségéral (2013): *$C_iəC_i$, (b) as a repair to (a)



▪ Account Incomplete: i. [həglə́lk]: assume that constraint applies before reduction?
ii. [həgəll-éh]: B&S say that duals have special morphology.

[2] Thanks go out to Janet Watson for discussing the data with me, and for providing important data points. Her consultants also deserve thanks: Abdullah Musallam al-Mahri, Husayn Mahsan al-Mahri, Sulaiman Musallam al-Mahri and Saeed Ahmad al-Mahri.
[3] In Mehri, final stressed vowels are neither lengthened not reduced before [h]. Instead they are lowered. This fact is of course tangential to the present purpose.

▪ Second point not true:

[mhágggəl] 'will boil' [mhəgəll-é:ta] 'will boil-FSG'
[mhəgəll-ú:tən] 'will boil-MPL'

⇨ RR1əR2 => R1əRR2 if R2 is followed by stress
= Geminate reconstruction.
= If R2 can regain a true geminate status upon suffixation, it does.

▪ Let us assume i. *LDG.
ii. Stage A freezes "syllabification".
iii. In stage B, the stressed syllable must remain unaltered.

▪ FAITH-σ́: element of the stressed syllable (onset, nucleus, coda) should not be altered.

▪ FAITHMAP: the mapping of radicals to C-slot should be preserved.

(24) Resistance to Geminate Transfer [həglú:l] 'he boiled', [həglə́lk] 'you$_{msg}$ boiled'

i. /həg.lúl/	FAITH-σ́	*LDG	FAITHMAP
☞ a. həg.lúl		*	
b. həg.gúl	*!		*

ii. /həg.lúl-k/	FAITH-σ́	*LDG	FAITHMAP
☞ a. həg.lə́lk	*	*	
b. həg.gə́lk	**!		*

(25) Geminate Transfer [jəhágggəl] 'that he boil', [jəhágggəl-ən] 'if he had boiled'

i. /hág.ləl/	FAITH-σ́	*LDG	FAITHMAP
a. hág.ləl		*!	
☞ b. hág.gəl			*
c. hó:.gəll	*!*		

ii. /hág.lə.l-ən/	FAITH-σ́	*LDG	FAITHMAP
a. hág.lə.lən		*!	
☞ b. hág.gə.lən			*
c. hó:.gəl.lən	*!*		

▪ Geminate Reconstruction is the effect of the otherwise unimportant FAITHMAP.

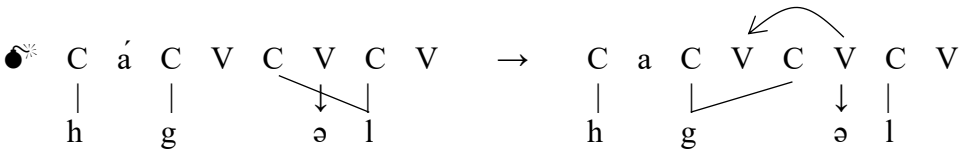
(26) Geminate Reconstruction [jəhágəll-éh] 'that you$_{m}$ two boil'

/hag.lə.l-éh/	FAITH-σ́	*LDG	FAITHMAP
☞ a. hə.gəl.léh			
b. həg.gə.léh			*!
c. həg.lə.léh		*!	

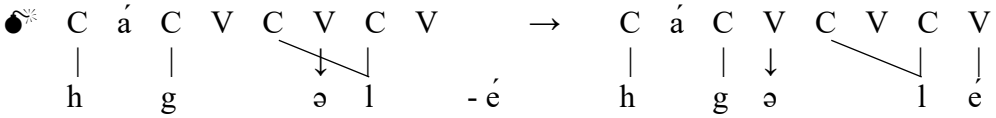
▪ In fact, Geminate Reconstruction is not reconstruction. It is simply the non-application of Geminate Transfer.

(27) Candidate (26a) does not violate FAITHMAP in Strict CV

a. Geminate Transfer violates FAITHMAP



b. Geminate Reconstruction does not



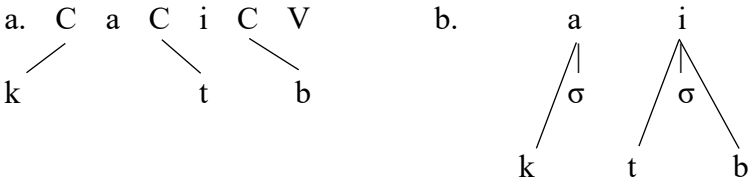
▪ The fact that [hagəll-e] preserves the arrangement of consonants in the template in the problematic /haglәl/ implies that templates are defined in terms of C-slots, as in Strict CV.

▪ It is not expressible in the same manner if templates are defined in terms of syllables and moras. Which brings us to…

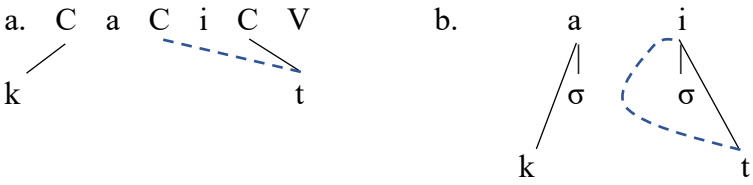
B. Consequences

6. Consequence for the representation of templates

(28) Skeletal templates vs prosodic templates for hypothetical [katib] based on √ktb

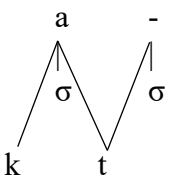


(29) Skeletal templates vs prosodic templates for hypothetical [katit] based on √kt

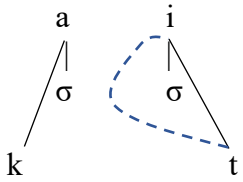


(Assuming Edge-in template Satisfaction, Buckley 1990, Yip 1998)

(30) Compare final geminate and LDG in the prosodic template approach

a. 

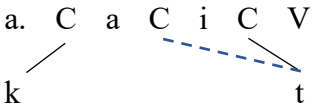
[katt]

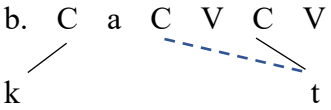
b. 

[katit]

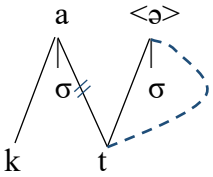
▪ A true geminate and a LDG are very different things in the Prosodic Templates approach.

(31) Not so in the skeletal approach

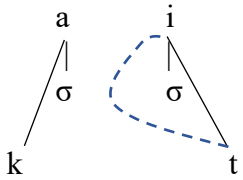
a. 

b. 

(32) A *broken* final geminate and a LDG are similar. **But does this ever happen??**

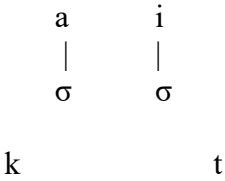
a. 

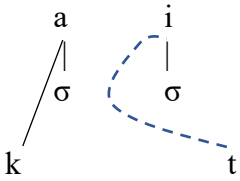
/katt/ => [katət]

b. 

[katit]

(33) Question for the prosodic approach: Given (a), why not (b)? Why [katit]?

a. 

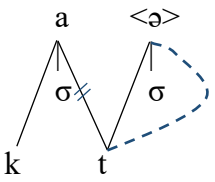
b. 

▪ It must be stated that the final coda is obligatory. But how?

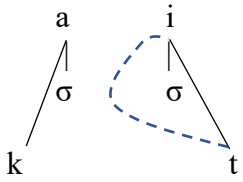
i. Constraint FINAL-C (Gafos 1998, Bat-El 2003, based on McCarthy 1993): not supported by facts (in any Semitic language).
ii. Final μ (template is $\sigma^{\mu}\sigma^{\mu\mu}$): Final Cs in Semitic are either extrametrical, or the languages does not have moraic codas
iii. There is a position to fill: only makes sense in the skeletal approach.
iv. The last radical must be final (*MISALIGNMENT, Faust 2023) – but why?

7. Are LDG a thing?

(34) A *broken* final geminate and a LDG are similar. **But does this ever happen??**

a. 

/katt/ => [katət]

b. 

[katit]

▪ Odden 1994, Gafos 1998, Rose 2000: Also LDGs never happen, they are not a thing.

▪ Many languages show *$C^{\alpha}vC^{\alpha}$ effect without the two C^{α}s being copies of each other.

(35) Ponapean (Goodman 1995, reported in Odden, to appear)

a.	pʷil	pʷil**i**pʷil	'flow'	(epenthesis occurs)
	lop	lop**i**lop	'be cut'	
	tep	tep**e**tep	'kick'	
b.	ŋoŋ	ŋo**ŋŋ**oŋ	'bark'	(epenthesis does not occur)
	rer	re**rr**er	'tremble'	

▪ And many other cases, where for instance syncope occurs *only* between two identical Cs.

▪ Thus, the more general *$C^{\alpha}vC^{\alpha}$ can replace *LDG.

▪ Rose (2000) further proposes that *$C^{\alpha}vC^{\alpha}$ is an OCP constraint, because the vowel is not a sufficient contour to separate the two copies of C^{α}.

(35) *LDG effect following Rose

/ħb$^{\alpha}$/+ a,i	DEP	OCP	MAX
a. ħáb$^{\alpha}$ib$^{\alpha}$		*!	
☞ b. háb$^{\alpha}$b$^{\alpha}$			*
c. háb$^{\alpha}$b$^{\beta}$	*!		

▪ But what do all those indices mean? How is a mapping /ħb$^{\alpha}$/ → [háb$^{\alpha}$b$^{\alpha}$] different from the skeletal view (31a)? [4]

▪ There is no doubt that *$C^{\alpha}vC^{\alpha}$ is a thing. **What would argue that *LDG is also necessary?**

▪ In Mehri, if the two C^{α}s are not of the same morphological origin, a sequence $CC^{\alpha}vC^{\alpha}$ Geminate transfer is blocked:

/raks-s/ → [ráks-əs] 'her pile of stones', *[rákkəs]
/ħarək-k/ → [ħarkək] 'nod-2MSG', *[ħarrək]

[4] See also Bat-El (2002) for a discussion from the point of view of perception.

▪ But if the preceding C is of a different morphological origin, Transfer does occur:

/ħa-t-fəf/ → [ħattəf] ‘be easily angered’, *[ħatfef]

▪ But these facts can still be explained by domains or morphological sensitivity.

▪ In some varieties of Palestinian Arabic one finds an (epenthetic?) [h] before [vʔ], but reduplicated /ʔ/ is ok (data from Elihai 2012).

[kabiːr] ‘big’ → [**ʔ**akbar] ‘bigger’
[ʔasˁiːr] ‘short’ → [**h**a**ʔ**sˁar] ‘shorter’ (avoidance of [**ʔvʔ**sˁar])
/daʔiːʔe/ ‘minute’ → [da**ʔ**iː**ʔ**e]

▪ Again, not strong evidence. What would be? Maybe the fact that

8. Geminate Transfer only attested in Semitic

▪ If *$C^{\alpha}vC^{\alpha}$ is all we need, why is Geminate Transfer

$/C^{\beta}C^{\alpha}vC^{\alpha}/ \rightarrow [C^{\beta}C^{\beta}vC^{\alpha}]$

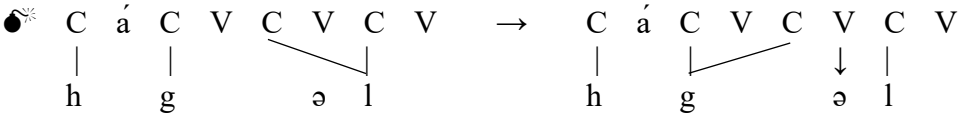
Only attested in Semitic?

▪ One possibility is that this is not even the correct analysis. Rather, Mehri [həglúːl] and [hággəl] are underlyingly /həgCuːl/ and /hágCəl/, and the middle C is filled only at a second stage, in compliance with a constraint *$C^{\alpha}əC^{\alpha}$.

▪ This view would be at odds with an account based on FAITH-σ́ and FaithMap, which require the QTT mapping to precede the QQT one.

▪ Another possibility would rely on the LDG structure. The move in (36) does not involve loss of a lexical C

(36) Geminate Transfer



▪ In other words, MAX-C is not violated, because the two Cs are one at some level. This can also be expressed with “correspondence”.

9. Summary

▪ Semitic languages often involve what has been called LDG.

▪ Hebrew and Arabic actively avoid those in the formation of denominal verbs, though Arabic to a larger extent than Hebrew.

▪ Syriac, Maaloula Neo-Aramaic and Mehri exhibit Geminate Transfer in biradical roots. This phenomenon is exclusive to Semitic (ttbomk), possibly due to its root & pattern morphology.

- Hopefully, this was phonological fun. But it does have consequences. Tentatively,
  - Prosodic templates are inadequate for the description of the facts
  - LDG are possible representations - they are a thing.
  - There might be truth in *MISALIGNMENT.

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