Parallel Interaction between Infixation and Root Domain Constraints

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New empirical gap in interaction between infixation and root domain constraints! Serial approaches to phonology predict empirically unattested pattern!

1. Infixation & Root Domain Constraints

~ Phonological Root domain constraints (RDCs) are phonological generalizations that hold over roots (Albright, 2004).

~ Infixation can split up root domains leading to discontiguous roots (Yu, 2007), cf. (1).

~ How do these building blocks interact?

(1) Infixation: $[\text{Root}]_{\text{root domain}}$ + Infix → Ro⟨infix⟩ot

~ In the hypothetical language L, a root domain constraint forbids roots from containing syllable adjacent identical consonants, repaired by dissimilation, cf. (2).

~ Additionally, L features an infix ⟨it⟩ that attaches after the initial consonant, cf. (3).

(2) RDC in L

sida	***sisa**
goko	***gogo**
tepu	***tetu**
tubi	***tuti**

(3) Infixation in L

sida	s⟨**it**⟩ida
goko	g⟨**it**⟩oko
tepu	/t⟨**it**⟩etu/→ [???]
tubi	/t⟨**it**⟩uti/→ [???]

~ What happens if an infix attaches to a root that already containts a /t/?

~ Is the infix affected by the root domain constraint?

~ Is the non-contiguous root still affected by the root domain constraint?

(4) L1: Infix is ignored.
tepu t⟨it⟩**epu**
tubi t⟨it⟩**ubi**
Ro⟨Infix⟩**ot**

(5) L3: No RDC for ro⟨⟩ot
tepu t⟨is⟩etu
tubi t⟨is⟩uti
Ro⟨**Infix**⟩ot

(6) L2: infix & root undergo RDC
tepu t⟨is⟩**epu**
tubi t⟨is⟩**ubi**
Ro⟨**Infix**⟩**ot**

2. Case Studies: Hebrew and Muna

~ In Hebrew (Afro-Asiatic, Israel), no root can contain two non-final identical consonants.

~ In reflexive forms, a ⟨t⟩ is infixed after the first consonant in certain contexts, cf. (8).

(7) Hebrew RDC
katav ***tatav**
write.PST
namax ***mamax**
become.short.PST

(8) Hebrew Infix
sarak hi-s⟨**t**⟩arek
R_i-⟨R_i⟩comb
ʃilev hi-ʃ⟨**t**⟩alev
R_i-⟨R_i⟩integrate

(9) Infix & RDC
seter hi-s⟨**t**⟩**ater**
R_i-⟨R_i⟩hide
ʃitef hi-ʃ⟨**t**⟩**atef**
R_i-⟨R_i⟩share

~ The ⟨t⟩ can violate the RDC, but the ro⟨⟩ot cannot, cf. (9)

~ Hebrew is thus of type L1: Infix is ignored.

~ In Muna (Austronesian, Indonesia), a root cannot contain a labial obstruent followed by a bilabial nasal [m] (van den Berg, 1989), cf. (10).

~ In irrealis forms, an infix ⟨m⟩ is added after the first consonant, cf. (11).

(10) Muna RDC
foni ***fomi**
climb
pili ***pimi**
chose

(11) Muna Infix
dadi d⟨**um**⟩adi
⟨IRR⟩live
gaa g⟨**um**⟩aa
⟨IRR⟩marry

(12) Infix & RDC
foni **m**-oni
IRR-climb
pili **m**-ili
IRR-chose

~ Both ⟨m⟩ and ro⟨⟩ot cannot violate the RDC, such instances are repaired, cf. (12).

~ Muna is thus of Type L1: infix & ro⟨⟩ot undergo RDC.

3. Typological Survey: No L3!

(13) Typological Results

	# of lgs.
L1 Infix is ignored	12
L2 RDC for Infix & ro⟨⟩ot	20
L3 No RDC for ro⟨⟩ot	**0**
No interaction	23
Total	55

(14) Genealogical Distribution

top-level family	L1	L2	None	Total
Austronesian	1	19	5	25
Afro-Asiatic	4	1	5	10
Nakh-Dagestanian	1	0	0	1
Sino-Tibetan	2	0	0	2
Austroasiatic	2	0	2	4
Nuclear Torricelli	2	0	0	2
Other	0	0	11	11
Total	12	20	23	55

~ A typological study of 55 patterns in 32 languages from 9 families with RDCs and infixation shows **no L3 languages**, but 12 L1 and 20 L2 patterns, cf. (13).

~ Infixation also interacts with OCP/dissimilation (Hebrew, Muna), maximality constraints/deletion (Hunzib, Nakh-Dagestanian), and syllable structure (Semelai, Austroasiatic; Yeri, Nuclear Torricelli).

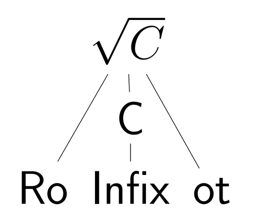
~ L2 mainly occurs in Austronesian languages, wheras L1 is more widely distributed, cf. (14).

4. Hierarchical Morphoprosodic Structure

~ A fixed rankings of OT-constraints (Prince & Smolensky, 1993) explains the gap.

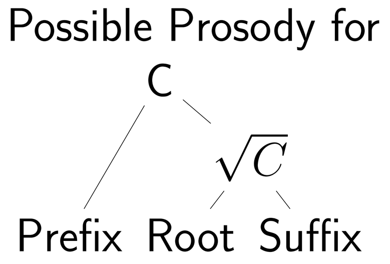
~ The constraint domains derive from prosodic constituents (cf. Itô & Mester, 2021).

(15) Prosodic Domains in Infixation



→ $[_{\sqrt{C},\text{DD}}$ Ro⟨⟩ot], $[_{\sqrt{C},\text{D}}$Ro⟨Infix⟩ot]

(16) Possible Prosody for other Affixes



~ A domain is either only material directly dominated (DD) by the root constituent $\sqrt{C}$, i.e. the Ro⟨⟩ot, or all material dominated (D) by $\sqrt{C}$, i.e. Ro⟨Infix⟩ot, cf. (15).

~ Constraint with domains derived by direct domination always dominate constraints with domains derived by domination, i.e. $\text{RDC}_{\text{DD}} \gg \text{RDC}_{\text{D}}$ (cf. Suzuki, 1998), cf. (17).

~ This excludes L3.

(17) Partal factorial typology

Ranking	language	RDC domains
$\text{RDC}_{\text{DD}} \gg$ FAITH $\gg \text{RDC}_{\text{D}}$	L1, Hebrew	Ro⟨⟩ot
$\text{RDC}_{\text{DD}} \gg \text{RDC}_{\text{D}} \gg$ FAITH	L2, Muna	Ro⟨Infix⟩ot, Ro⟨⟩ot
*$\text{RDC}_{\text{DD}} \gg \text{RDC}_{\text{D}} \gg$ FAITH	L3	Ro⟨Infix⟩ot

5. Analyses: Two different rankings

~ In Hebrew, the infix is ignored because only the RDC_{DD} constraint is ranked high, (18).

(18) Hebrew requires $\text{RDC}_{\sqrt{C},\text{DD}} \gg$ FAITH $\gg \text{RDC}_{\sqrt{C},\text{D}}$

Input stater	$\text{OCP(C)}_{\sqrt{C},\text{DD}}$	FAITH	$\text{OCP(C)}_{\sqrt{C},\text{D}}$
☞ a. s t a t e r			*
b. s t a r e r		*!	

~ In Muna, ranking both the RDC-constraint above FAITH yields an additional repair.

(19) Muna requires $\text{RDC}_{\sqrt{C},\text{DD}}$, $\text{RDC}_{\sqrt{C},\text{D}} \gg$ FAITH

Input: fumomi	$\text{*BM}_{\sqrt{C},\text{DD}}$	$\text{*BM}_{\sqrt{C},\text{D}}$	FAITH
☞ a. m o n i			**
b. f u m o n i		*!	*

6. Serial approaches overgenerate!

~ Serial approaches (e.g. SPE (Chomsky & Halle, 1968), Lexical Phonology (Kiparsky, 1982), Stratal OT (Kiparsky, 2015)) predict L3 by ordering a repair for the RDC after infixation, cf. (20,21).

~ Late ordering of the RDC is independently needed to derive L4, Muna.

(20) Overgeneration of Serial Approaches

Order of Application	Language	RDC Domain
RDC≺Infixation	L1, Hebrew	Ro⟨⟩ot
RDC≺Infixation≺RDC	L2, Muna	Ro⟨Infix⟩ot, Ro⟨⟩ot
*Infixation≺RDC	—	Ro⟨Infix⟩ot

(21) Derivation of L3 in a serial approach

Input	sida	tepu	tetu	tetu
Infixation	s⟨it⟩ida	t⟨it⟩epu	—	t⟨it⟩etu
RDC	—	t⟨is⟩epu	tepu	tisetu
Output	[sitida]	[tisepu]	[tepu]	[tisetu]

~ This problem could be solved by Strong Domain Hypothesis (SDH) (Kiparsky, 1985), which restricts rules from applying only after morphology.

~ However, emprically the SDH does not hold for prefixes and suffixes (cf. e.g. Mohanan, 1989; Hualde, 1989; Hyman, 1993; Kaisse, 1993).

~ In the present approach, prefixes and suffixes show more variation in their prosodic constituency and therefore might be subject to different constraint, depending on their prosodic constituency, cf. (16).

~ Infixes are **representationally** special, not procedurally.

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