A typology of re-pairing in vowel harmony

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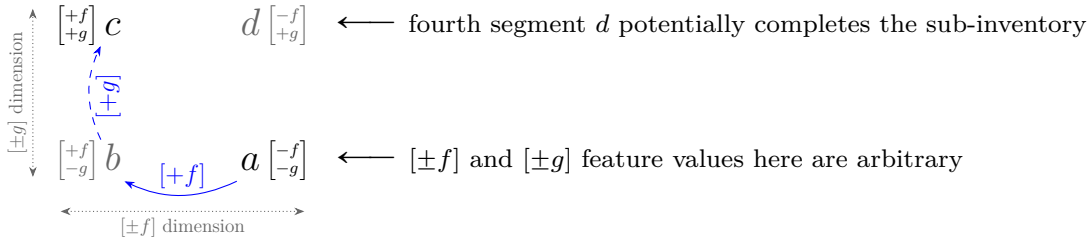
Re-pairing is when a particular instance of a $[\pm f]$ alternation results in an additional $[\pm g]$ change, made necessary by the absence in the inventory of a direct $[\pm f]$ 'pair' b for the segment a undergoing the alternation (Baković 2000). Instead of blocking the alternation, the further change 're-pairs' a with another segment c. This is illustrated in (1).

(1) Abstract illustration of re-pairing of a with c via b



A typology of attested/possible types of re-pairing has not been described and formalized. This work fits three attested types of re-pairing in vowel harmony with the possibilities predicted by a standard set of OT constraints, and compares this analysis of the typology with an analysis using BMRS (Bhaskar *et al.* 2020, 2023, Chandlee & Jardine 2021).

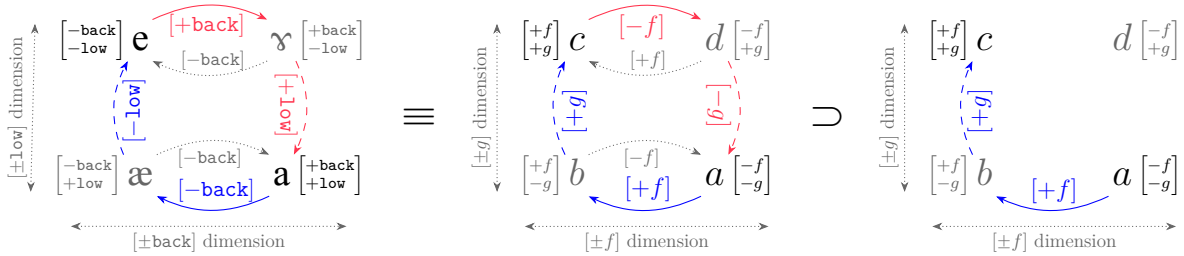
Symmetric re-pairing

This type of re-pairing is exemplified by [−high] vowels in Turkish [±back] harmony (2). Suffix [+high] vowels are directly paired, e.g. [i] ~ [ɯ] (2a). Suffix [−high] vowels are re-paired via an additional change in [±low], e.g. [e] ~ [a] (2b), due to the absence of both [+low, −back] [æ] and [−low, +back] [ɤ] from the relevant part of the inventory space (3).

(2) **Symmetric re-pairing** in Turkish (Clements & Sezer 1982)

a.	**ip-im** 'my rope'	**el-im** 'my hand'	**kɯz-ɯm** 'my daughter'	**ʧan-ɯm** 'my bell'
b.	**ip-ler** 'ropes'	**el-ler** 'hands'	**kɯz-lar** 'daughters'	**ʧan-lar** 'bells'

(3) Illustration of symmetric re-pairing in Turkish



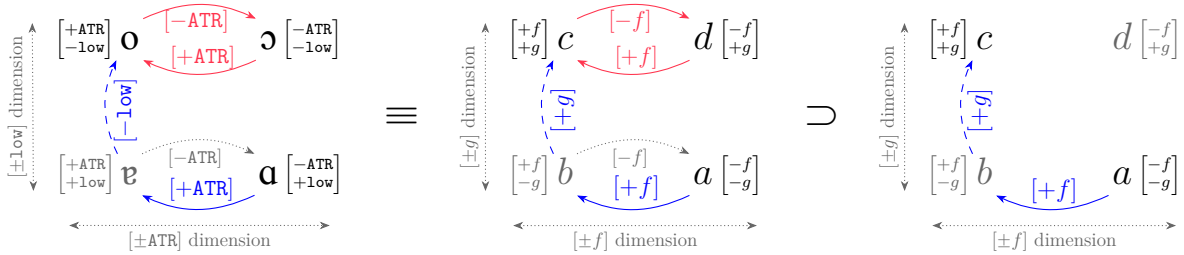
Alternating asymmetric re-pairing

This type of re-pairing is exemplified by [−high] vowels in Maasai (rightward) [±ATR] harmony (4). Suffix [−low] vowels are directly paired, e.g. [ɔ] ~ [o] and [ɪ] ~ [i] (4a). Suffix [+low] vowels are re-paired via an additional change in [±low], e.g. [ɑ] ~ [o] (4b), due to the absence of [+low, +ATR] [ɐ] from the relevant part of the inventory space (5).[1]

(4) **Alternating asymmetric re-pairing** in Maasai (Tucker & Mpaayei 1955)

a.	ɑ-lɪpɔŋ-ɔk-ɪn 'INF-female-DAT-APPL'	ɑ-mudoŋ-ok-in 'INF-relative-DAT-APPL'
b.	ɪn-lɪpɔŋ-ɑ 'FEM.PL-female-PL'	in-mudoŋ-o 'FEM.PL-relative-PL'

(5) Illustration of alternating asymmetric re-pairing in Maasai



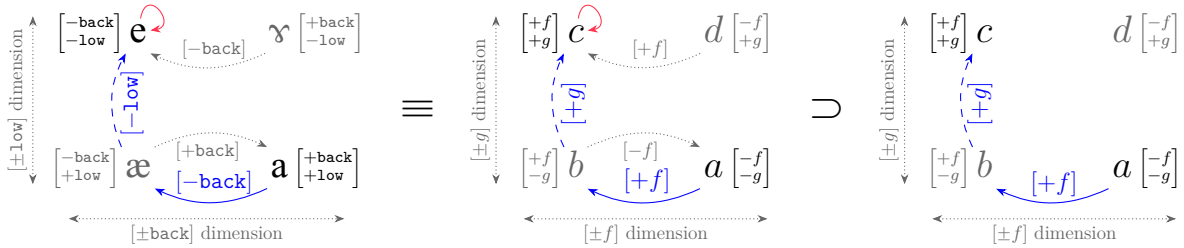
Neutral asymmetric re-pairing

This type of re-pairing is exemplified by [−high] vowels in Hungarian [±back] harmony (6). Suffix [+round] vowels are directly paired, e.g. [u] ~ [ü] and [o] ~ [ö] (6a). The same two vowel qualities noted above to be absent from the Turkish inventory are absent in Hungarian, prompting an additional change in [±low] in the relevant part of the inventory space; e.g. [a] ~ [e] (6b). However, /e/ is independently neutral to vowel harmony, surfacing unchanged even in [+back] contexts (6c). Thus only underlying /a/ undergoes harmony and re-pairing to become surface [e]; /e/ instead resists harmony (7).

(6) **Neutral asymmetric re-pairing** in Hungarian (Siptár & Törkenczy 2000)

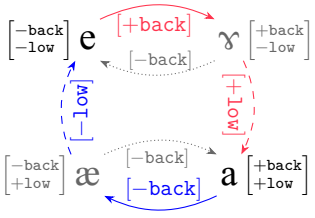
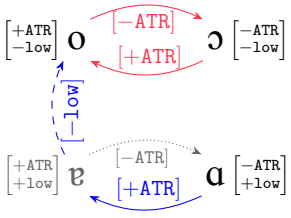
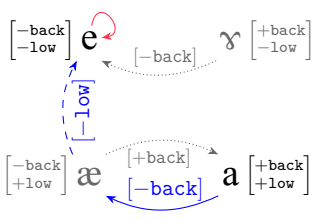
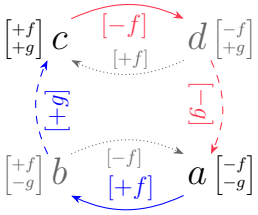
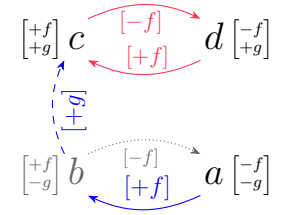
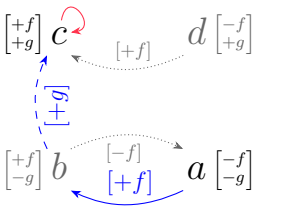
a.	ha:z-unk 'our house'	föld-ünk 'our land'	ha:z-hoz 'to the house'	föld-höz 'to the land'
b.	ha:z-ban 'in the house'	föld-ben 'in the land'	ha:z-a:n 'on his/her house'	föld-e:n 'on his/her land'
c.	ha:z-e:rt 'the house's'	föld-e:rt 'the land's'	ha:z-e: 'for the house'	föld-e: 'for the land'

(7) Illustration of neutral asymmetric re-pairing in Hungarian



[1] Not everyone agrees that this type of pattern is induced by harmony in the way that I am characterizing it here (in the related Eastern Nilotic language Turkana, anyway; see e.g. Noske 1996, 2000, Leduc 2026).

Summary of the typology

Symmetric (*Turkish*)	**Alternating asymmetric** (*Maasai*)	**Neutral asymmetric** (*Hungarian*)
		
		

OT system

An OT system (Alber *et al.* 2016) was created, comparing members of the relevant candidate sets in (8) against the minimal set of constraint types in (9) and (10), familiar from the OT literature. Reported results were confirmed with OTWorkplace (Prince *et al.* 2016).

(8) Abstract candidate sets for OT typology

a. $/\overset{x}{[+f]}\overset{y}{[-f]}/ \mapsto \left\{ \left[\overset{x}{[+f]}\overset{y}{[-f]}\right], \left[\overset{x}{[+f]}\overset{x}{[+f]}\right] \right\} \qquad /\overset{y}{[-f]}\overset{x}{[+f]}/ \mapsto \left\{ \left[\overset{y}{[-f]}\overset{x}{[+f]}\right], \left[\overset{y}{[-f]}\overset{y}{[-f]}\right] \right\}$

b. $\left\{ /\overset{x}{[+f]}\overset{a}{\begin{bmatrix}-f\\-g\end{bmatrix}}/, /\overset{x}{[+f]}\overset{d}{\begin{bmatrix}-f\\+g\end{bmatrix}}/ \right\} \mapsto \left\{ \left[\overset{x}{[+f]}\overset{a}{\begin{bmatrix}-f\\-g\end{bmatrix}}\right], \left[\overset{x}{[+f]}\overset{b}{\begin{bmatrix}+f\\-g\end{bmatrix}}\right], \left[\overset{x}{[+f]}\overset{c}{\begin{bmatrix}+f\\+g\end{bmatrix}}\right], \left[\overset{x}{[+f]}\overset{d}{\begin{bmatrix}-f\\+g\end{bmatrix}}\right] \right\}$

c. $\left\{ /\overset{y}{[-f]}\overset{b}{\begin{bmatrix}+f\\-g\end{bmatrix}}/, /\overset{y}{[-f]}\overset{c}{\begin{bmatrix}+f\\+g\end{bmatrix}}/ \right\} \mapsto \left\{ \left[\overset{y}{[-f]}\overset{a}{\begin{bmatrix}-f\\-g\end{bmatrix}}\right], \left[\overset{y}{[-f]}\overset{b}{\begin{bmatrix}+f\\-g\end{bmatrix}}\right], \left[\overset{y}{[-f]}\overset{c}{\begin{bmatrix}+f\\+g\end{bmatrix}}\right], \left[\overset{y}{[-f]}\overset{d}{\begin{bmatrix}-f\\+g\end{bmatrix}}\right] \right\}$

Each input and candidate consists of two 'vowels', the $[\pm f]$ harmony **trigger** x, y that remains faithful in every candidate, and the varying **target** x, y, a, b, c, d. Trigger and target disagree in the input in terms of $[\pm f]$ to focus on the consequences of harmony for $[\pm g]$.

(9) Markedness constraints

a. M:Agree(f) — penalizes $[\pm f]$ disagreement — $^*\{a,d\}\{b,c\}$, $^*\{b,c\}\{a,d\}$

b. M:No(b) — penalizes $\begin{bmatrix}+f\\+g\end{bmatrix}$ segments — $^*b$

c. M:No(d) — penalizes $\begin{bmatrix}-f\\-g\end{bmatrix}$ segments — $^*d$

M:Agree(f) promotes $[\pm f]$-harmonic candidates, while M:No(b) and M:No(d) penalize the vowels in the lower-left and upper-right corners of our abstract re-pairing diagrams.

(10) Faithfulness constraints

a. $\mathbb{F}$:Ident(f) — penalizes $[+f] \longleftrightarrow [-f]$ — $^*\{b, c\} \longleftrightarrow \{a, d\}$

b. $\mathbb{F}$:Max(g) — penalizes $[+g] \longrightarrow [-g]$ — $^*\{a, b\} \longrightarrow \{c, d\}$

c. $\mathbb{F}$:Dep(g) — penalizes $[-g] \longrightarrow [+g]$ — $^*\{c, d\} \longrightarrow \{a, b\}$

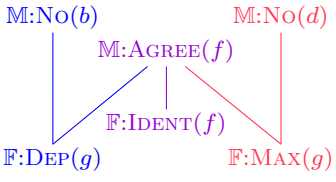
$\mathbb{F}$:Ident(f) penalizes either change in $[\pm f]$, consistent with the unvalued harmony patterns assumed here. Changes in $[\pm g]$ must be assessed separately by $\mathbb{F}$:Max(g) and $\mathbb{F}$:Dep(g), however, in order to include neutral asymmetric re-pairing (as in Hungarian) in the typology.

OT typology

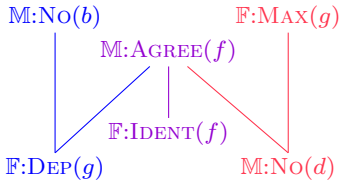
Rankings for each type of re-pairing pattern (11) illustrate their formal similarities and differences. The rankings share two Elementary Ranking Conditions (Prince 2002): one ensuring $[\pm f]$ harmony $[\![\mathbb{M}\text{:Agree}(f) \gg \mathbb{F}\text{:Ident}(f)]\!]$ and one further ensuring the additional $[\pm g]$ change re-pairing a with c via marked b $[\![\{\mathbb{M}\text{:Agree}(f), \mathbb{M}\text{:No}(b)\} \gg \mathbb{F}\text{:Dep}(g)]\!]$.

(11) Schematic rankings responsible for each type of re-pairing

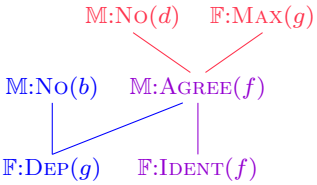
a. Symmetric



b. Alternating asymmmetric



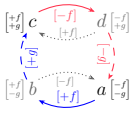
c. Neutral asymmetric



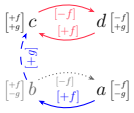
The rankings are distinguished by which of $\{\mathbb{M}\text{:Agree}(f), \mathbb{M}\text{:No}(d), \mathbb{F}\text{:Max}(g)\}$ is ranked at the bottom of that set, forming three 'x-bot' grammars (Merchant & Prince 2023).

(12) Re-pairing types as x-bot grammars

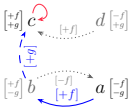
a. **Symmetric re-pairing** is $\mathbb{F}$:Max(g)-bot (11a), fully sacrificing faithfulness to $[\pm g]$ and closing the re-pairing circle between c and a through marked d.



b. **Alternating asymmetric re-pairing** is $\mathbb{M}$:No(d)-bot (11b) sacrificing markedness of d and allowing d to harmonically alternate independently with c.

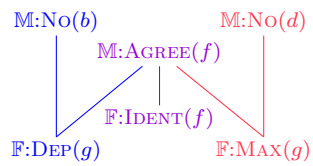
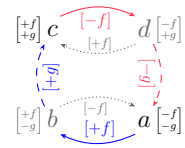
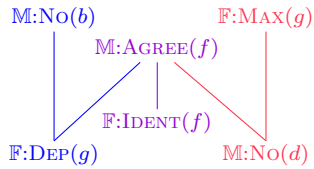
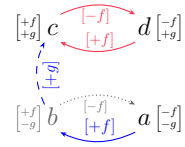


c. **Neutral asymmetric re-pairing** is $\mathbb{M}$:Agree(f)-bot (11c), sacrificing the generality of harmony by forcing disharmony due to the markedness of d.



The full typology contains 18 grammars. Half of these are grammars displaying harmony, due to $[\![\mathbb{M}\text{:Agree}(f) \gg \mathbb{F}\text{:Ident}(f)]\!]$. The rankings and mappings of these nine grammars are shown on the following page. Given the overall symmetry of the system, there are mirror-image versions of several of these grammars, including the two asymmetric re-pairing types. **The most significant result is that no other re-pairing types arise in the typology.**

Factorial typology, holding harmony constant

Ranking	$\overset{a}{\begin{bmatrix} x \\ [+f] \end{bmatrix}\begin{bmatrix} -f \\ -g \end{bmatrix}}$	$\overset{b}{\begin{bmatrix} y \\ [-f] \end{bmatrix}\begin{bmatrix} +f \\ -g \end{bmatrix}}$	$\overset{c}{\begin{bmatrix} y \\ [-f] \end{bmatrix}\begin{bmatrix} +f \\ +g \end{bmatrix}}$	$\overset{d}{\begin{bmatrix} x \\ [+f] \end{bmatrix}\begin{bmatrix} -f \\ +g \end{bmatrix}}$	Type
	$\overset{c}{\begin{bmatrix} x \\ [+f] \end{bmatrix}\begin{bmatrix} +f \\ +g \end{bmatrix}}$	$\overset{a}{\begin{bmatrix} y \\ [-f] \end{bmatrix}\begin{bmatrix} -f \\ -g \end{bmatrix}}$	$\overset{a}{\begin{bmatrix} y \\ [-f] \end{bmatrix}\begin{bmatrix} -f \\ -g \end{bmatrix}}$	$\overset{c}{\begin{bmatrix} x \\ [+f] \end{bmatrix}\begin{bmatrix} +f \\ +g \end{bmatrix}}$	
		symmetric re-pairing			
	$\overset{c}{\begin{bmatrix} x \\ [+f] \end{bmatrix}\begin{bmatrix} +f \\ +g \end{bmatrix}}$	$\overset{a}{\begin{bmatrix} y \\ [-f] \end{bmatrix}\begin{bmatrix} -f \\ -g \end{bmatrix}}$	$\overset{d}{\begin{bmatrix} y \\ [-f] \end{bmatrix}\begin{bmatrix} -f \\ +g \end{bmatrix}}$	$\overset{c}{\begin{bmatrix} x \\ [+f] \end{bmatrix}\begin{bmatrix} +f \\ +g \end{bmatrix}}$	
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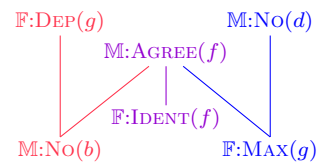
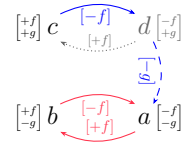
	$\overset{b}{\begin{bmatrix} x \\ [+f] \end{bmatrix}\begin{bmatrix} +f \\ -g \end{bmatrix}}$	$\overset{a}{\begin{bmatrix} y \\ [-f] \end{bmatrix}\begin{bmatrix} -f \\ -g \end{bmatrix}}$	$\overset{a}{\begin{bmatrix} y \\ [-f] \end{bmatrix}\begin{bmatrix} -f \\ -g \end{bmatrix}}$	$\overset{c}{\begin{bmatrix} x \\ [+f] \end{bmatrix}\begin{bmatrix} +f \\ +g \end{bmatrix}}$	
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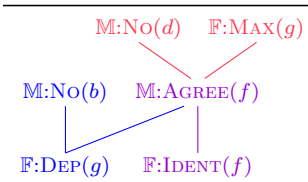
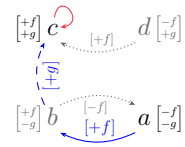
	$\overset{c}{\begin{bmatrix} x \\ [+f] \end{bmatrix}\begin{bmatrix} +f \\ +g \end{bmatrix}}$	$\overset{a}{\begin{bmatrix} y \\ [-f] \end{bmatrix}\begin{bmatrix} -f \\ -g \end{bmatrix}}$	$\overset{c}{\begin{bmatrix} y \\ [-f] \end{bmatrix}\begin{bmatrix} +f \\ +g \end{bmatrix}}$	$\overset{c}{\begin{bmatrix} x \\ [+f] \end{bmatrix}\begin{bmatrix} +f \\ +g \end{bmatrix}}$	
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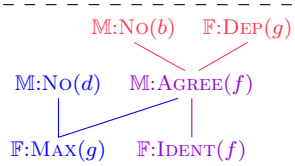
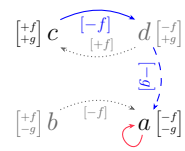
	$\overset{a}{\begin{bmatrix} x \\ [+f] \end{bmatrix}\begin{bmatrix} -f \\ -g \end{bmatrix}}$	$\overset{a}{\begin{bmatrix} y \\ [-f] \end{bmatrix}\begin{bmatrix} -f \\ -g \end{bmatrix}}$	$\overset{a}{\begin{bmatrix} y \\ [-f] \end{bmatrix}\begin{bmatrix} -f \\ -g \end{bmatrix}}$	$\overset{c}{\begin{bmatrix} x \\ [+f] \end{bmatrix}\begin{bmatrix} +f \\ +g \end{bmatrix}}$	
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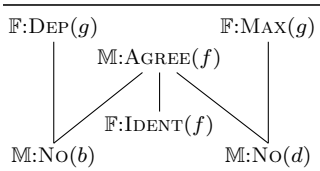
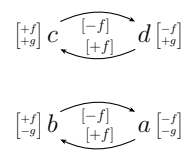
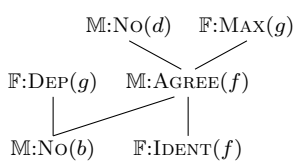
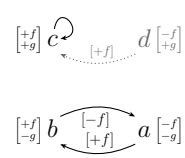
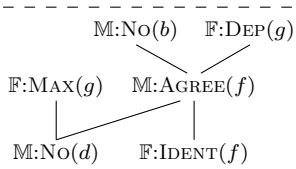
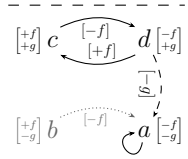
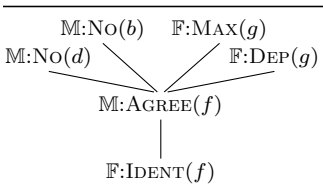
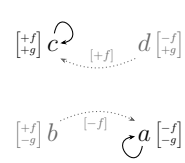
	$\overset{b}{\begin{bmatrix} x \\ [+f] \end{bmatrix}\begin{bmatrix} +f \\ -g \end{bmatrix}}$	$\overset{a}{\begin{bmatrix} y \\ [-f] \end{bmatrix}\begin{bmatrix} -f \\ -g \end{bmatrix}}$	$\overset{d}{\begin{bmatrix} y \\ [-f] \end{bmatrix}\begin{bmatrix} -f \\ +g \end{bmatrix}}$	$\overset{c}{\begin{bmatrix} x \\ [+f] \end{bmatrix}\begin{bmatrix} +f \\ +g \end{bmatrix}}$	
		straight-up harmony			
	$\overset{b}{\begin{bmatrix} x \\ [+f] \end{bmatrix}\begin{bmatrix} +f \\ -g \end{bmatrix}}$	$\overset{a}{\begin{bmatrix} y \\ [-f] \end{bmatrix}\begin{bmatrix} -f \\ -g \end{bmatrix}}$	$\overset{c}{\begin{bmatrix} y \\ [-f] \end{bmatrix}\begin{bmatrix} +f \\ +g \end{bmatrix}}$	$\overset{c}{\begin{bmatrix} x \\ [+f] \end{bmatrix}\begin{bmatrix} +f \\ +g \end{bmatrix}}$	
		harmony with one neutral			
	$\overset{a}{\begin{bmatrix} x \\ [+f] \end{bmatrix}\begin{bmatrix} -f \\ -g \end{bmatrix}}$	$\overset{a}{\begin{bmatrix} y \\ [-f] \end{bmatrix}\begin{bmatrix} -f \\ -g \end{bmatrix}}$	$\overset{d}{\begin{bmatrix} y \\ [-f] \end{bmatrix}\begin{bmatrix} -f \\ +g \end{bmatrix}}$	$\overset{c}{\begin{bmatrix} x \\ [+f] \end{bmatrix}\begin{bmatrix} +f \\ +g \end{bmatrix}}$	
		(mirror-image)			
	$\overset{a}{\begin{bmatrix} x \\ [+f] \end{bmatrix}\begin{bmatrix} -f \\ -g \end{bmatrix}}$	$\overset{a}{\begin{bmatrix} y \\ [-f] \end{bmatrix}\begin{bmatrix} -f \\ -g \end{bmatrix}}$	$\overset{c}{\begin{bmatrix} y \\ [-f] \end{bmatrix}\begin{bmatrix} +f \\ +g \end{bmatrix}}$	$\overset{c}{\begin{bmatrix} x \\ [+f] \end{bmatrix}\begin{bmatrix} +f \\ +g \end{bmatrix}}$	
		harmony with two neutrals			

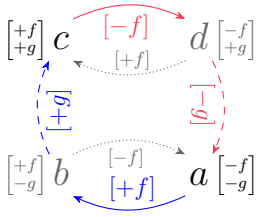
BMRS typology

(13) Symmetric re-pairing

a. $\phi_f(x) \coloneqq$ IF trig(x) THEN $f(x)$ ELSE $\phi_f(n(x))$ (Nelson & Baković 2026)

b. $\phi_g(x) \coloneqq$ IF $\phi_f(x)$ THEN $\top$ ELSE $\bot$

(13a) determines the output value of $[\pm f]$: triggers (= trig(x)) are faithful (= $f(x)$); targets agree with the *n*eigboring trigger-side vowel $n(x)$ (= $\phi_f(n(x))$).[2] (13b) determines the output value of $[\pm g]$: $[+f]$ targets are $[+g]$ (= $\top$), accounting for $a \to b \to c$ when the trigger is $[+f]$; and $[-f]$ vowels are $[-g]$ (= $\bot$), accounting for $c \to d \to a$ when the trigger is $[-f]$.



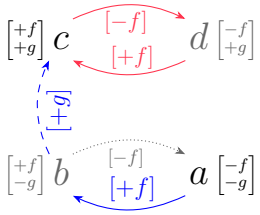
input	x $[+f]$	y $[-f]$	x $[+f]$ a $[-f,-g]$	y $[-f]$ b $[+f,-g]$	y $[-f]$ c $[+f,+g]$	x $[+f]$ d $[-f,+g]$
trig(x)	$\top$	$\bot$	$\top$	$\top$	$\top$	$\top$
$f(x)$	$\top$	$\bot$	$\top$	$\bot$	$\bot$	$\top$
$g(x)$	$\times$	$\times$	$\times$	$\times$	$\times$	$\times$
$\phi_f(n(x))$	$\bot$	$\top$	$\bot$	$\bot$	$\bot$	$\top$
$\phi_f(x)$	$\top$	$\top$	$\top$	$\bot$	$\bot$	$\top$
$\phi_g(x)$	$\times$	$\times$	$\top$	$\bot$	$\bot$	$\top$
output	x $[+f]$	x $[+f]$	x $[+f]$ c $[+f,+g]$	y $[-f]$ a $[-f,-g]$	y $[-f]$ a $[-f,-g]$	x $[+f]$ c $[+f,+g]$

(14) Alternating asymmetric re-pairing

a. $\phi_f(x) \coloneqq$ IF trig(x) THEN $f(x)$ ELSE $\phi_f(n(x))$

b. $\phi_g(x) \coloneqq$ IF $\phi_f(x)$ THEN $\top$ ELSE $g(x)$

(14a) determines the output value of $[\pm f]$ just like (13a). (14b) determines the output value of $[\pm g]$: $[+f]$ targets are $[+g]$ (= $\top$), accounting for $a \to b \to c$ when the trigger is $[+f]$; remaining targets are $[\pm g]$-faithful, allowing a and d to contrast when the trigger is $[-f]$.



input	x $[+f]$	y $[-f]$	x $[+f]$ a $[-f,-g]$	y $[-f]$ b $[+f,-g]$	y $[-f]$ c $[+f,+g]$	x $[+f]$ d $[-f,+g]$
trig(x)	$\top$	$\bot$	$\top$	$\top$	$\top$	$\top$
$f(x)$	$\top$	$\bot$	$\top$	$\bot$	$\bot$	$\top$
$g(x)$	$\times$	$\times$	$\times$	$\bot$	$\top$	$\top$
$\phi_f(n(x))$	$\bot$	$\top$	$\bot$	$\bot$	$\bot$	$\top$
$\phi_f(x)$	$\top$	$\top$	$\top$	$\bot$	$\bot$	$\top$
$\phi_g(x)$	$\times$	$\times$	$\top$	$\bot$	$\top$	$\top$
output	x $[+f]$	y $[-f]$	x $[+f]$ c $[+f,+g]$	y $[-f]$ a $[-f,-g]$	y $[-f]$ d $[-f,+g]$	x $[+f]$ c $[+f,+g]$

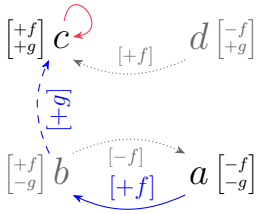
[2] *n*eighbor = *p*redecessor or *s*uccessor, depending on which side of the target the trigger is on.

(15) Neutral asymmetric re-pairing

a. $\phi_f(x) \coloneqq$ IF $g(x)$ THEN $\top$ ELSE IF $\texttt{trig}(x)$ THEN $f(x)$ ELSE $\phi_f(n(x))$

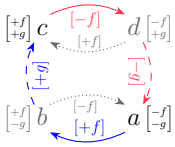
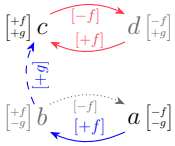
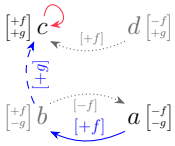
b. $\phi_g(x) \coloneqq$ IF $\phi_f(x)$ THEN $\top$ ELSE $\left\{\begin{smallmatrix}\bot\\ g(x)\end{smallmatrix}\right\}$

(15a) determines the output value of $[\pm f]$: input $[+g]$ vowels are redundantly $[+f]$ $(=\top)$, ensuring the neutrality of c, and $[\pm f]$ otherwise spreads to $[-g]$ targets. (15b) determines the output value of $[\pm g]$ just like (13b) $(=\bot)$ or (14b) $(=g(x))$, accounting for $a \to b \to c$.



input	$^{x}[+f]$	$^{y}[-f]$	$^{x}[+f]$	$^{a}[\begin{smallmatrix}-f\\-g\end{smallmatrix}]$	$^{y}[-f]$	$^{b}[\begin{smallmatrix}+f\\-g\end{smallmatrix}]$	$^{y}[-f]$	$^{c}[\begin{smallmatrix}+f\\+g\end{smallmatrix}]$	$^{x}[+f]$	$^{d}[\begin{smallmatrix}-f\\+g\end{smallmatrix}]$
$\texttt{trig}(x)$	$\top$	$\bot$	$\top$	$\bot$	$\top$	$\bot$	$\top$	$\bot$	$\top$	$\bot$
$f(x)$	$\top$	$\bot$	$\top$	$\bot$	$\bot$	$\top$	$\bot$	$\top$	$\top$	$\bot$
$g(x)$	$\times$	$\times$	$\times$	$\bot$	$\times$	$\bot$	$\times$	$\top$	$\times$	$\top$
$\phi_f(n(x))$	$\bot$	$\top$	$\bot$	$\top$	$\bot$	$\bot$	$\bot$	$\bot$	$\bot$	$\top$
$\phi_f(x)$	$\top$	$\top$	$\top$	$\top$	$\bot$	$\bot$	$\bot$	$\top$	$\top$	$\top$
$\phi_g(x)$	$\times$	$\times$	$\times$	$\top$	$\times$	$\bot$	$\times$	$\top$	$\times$	$\top$
output	$^{x}[+f]$	$^{y}[-f]$	$^{x}[+f]$	$^{c}[\begin{smallmatrix}+f\\+g\end{smallmatrix}]$	$^{y}[-f]$	$^{a}[\begin{smallmatrix}-f\\-g\end{smallmatrix}]$	$^{y}[-f]$	$^{c}[\begin{smallmatrix}+f\\+g\end{smallmatrix}]$	$^{x}[+f]$	$^{c}[\begin{smallmatrix}+f\\+g\end{smallmatrix}]$

Comparison of the OT and BMRS analyses of re-pairing patterns

Re-pairing pattern	OT ranking	BMRS functions
Symmetric 	M:No(b) M:No(d) M:Agree(f) F:Ident(f) F:Dep(g) F:Max(g)	$\phi_f(x) \coloneqq$ IF $\texttt{trig}(x)$ THEN $f(x)$ ELSE $\phi_f(n(x))$ $\phi_g(x) \coloneqq$ IF $\phi_f(x)$ THEN $\top$ ELSE $\bot$
Alternating asymmetric 	M:No(b) F:Max(g) M:Agree(f) F:Ident(f) F:Dep(g) M:No(d)	$\phi_f(x) \coloneqq$ IF $\texttt{trig}(x)$ THEN $f(x)$ ELSE $\phi_f(n(x))$ $\phi_g(x) \coloneqq$ IF $\phi_f(x)$ THEN $\top$ ELSE $g(x)$
Neutral asymmetric 	M:No(d) F:Max(g) M:No(b) M:Agree(f) F:Dep(g) F:Ident(f)	$\phi_f(x) \coloneqq$ IF $g(x)$ THEN $\top$ ELSE IF $\texttt{trig}(x)$ THEN $f(x)$ ELSE $\phi_f(n(x))$ $\phi_g(x) \coloneqq$ IF $\phi_f(x)$ THEN $\top$ ELSE $\left\{\begin{smallmatrix}\bot\\ g(x)\end{smallmatrix}\right\}$

Conclusion, future directions, and all that jazz

While I'm reasonably confident that no other re-pairing types can be described with some other combination of the parts of BMRS functions shown here, I'm not **100%** confident in the way that I am with the OT analysis (especially with the help of a tool like OTWorkplace).

Looking beyond re-pairing, I'm less confident that other typological consequences of the OT analyses presented here are similarly manifested with the corresponding BMRS analyses.

(16) Further comparison requires some framework normalization

a. As someone who (at least somewhat) understands how to do factorial typological analysis in OT, my instinct is to find a corresponding notion in BMRS.

b. ***Hark!*** Nelson & Baković (2026) write: "While the BMRS syntax can encode any subregular function, our aim [...] is to identify the computational structures [...] and basic predicate types [...] that underlie different types of [...] patterns."

c. *Basic predicate types* in BMRS correspond to *types of constraints* in OT, and *computational structures* correspond to *rankings* (well, more or less).

d. In OT, (types of) constraints both define and are defined by factorial typologies.

- One part of 'doing OT' is defining constraints based on linguistic analysis, another is verifying definitions based on their factorial typological consequences.
- We need corresponding notions of defining and verifying predicates in BMRS.

A (polite) call to action?

Someone please build a software tool (or modify an existing one) for BMRS that corresponds to what can be done for OT with OTWorkplace!

(but please don't make it depend on any particular commercial operating system and application kthxbye)

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