

Paradigm Function Morphology II: Syncretism

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1 A quick recap of PFM

- (1) *Format for realization rules:*
 $RR_{n, \tau, C}(\langle X, \sigma \rangle) =_{\text{def}} \langle Y, \sigma \rangle$
 a. n is the block to which the rule belongs
 b. τ is the property set that the rule can realize through its application
 c. C indicates the class of lexemes whose paradigms may be defined by this rule
- (2) *Narrowest Applicable Rule:*
 a. $RR_{n, \sigma, C}$ is **NARROWER** than $RR_{n, \tau, C}$ iff σ is an extension of τ and $\sigma \neq \tau$
 b. Where $C \neq C'$, $RR_{n, \sigma, C}$ is **NARROWER** than $RR_{n, \tau, C}$ iff $C \subseteq C'$.
- (3) *Format for rules for referral:*
 ‘X in the context of feature-set τ has the form of X in the context of feature-set ρ ’
 $RR_{n, \tau, C}(\langle X, \sigma \rangle) =_{\text{def}} \langle Y, \sigma \rangle$, where $\text{Nar}_n(\langle X, \sigma/\rho \rangle) =_{\text{def}} \langle Y, \sigma/\rho \rangle$.
- (4) *Paradigm function:*
 Where σ is a complete set of morphosyntactic properties for lexemes of category Z with rule blocks A–D, $\text{PF}(\langle X, \sigma \rangle) =_{\text{def}} \text{Nar}_D(\text{Nar}_C(\text{Nar}_B(\text{Nar}_A(\langle X, \sigma \rangle))))$

2 Bidirectional syncretism

- (5) *Romanian present indicative verbs:*

	I		II		III	IV		
	‘invite’	‘breathe’	‘be silent’	‘fill’	‘do’	‘know’	‘talk’	‘be’
1SG	<i>invít</i>	<i>súfl-u</i>	<i>tác</i>	<i>úmpl-u</i>	<i>fác</i>	<i>ști-u</i>	<i>vorbésc</i>	<i>sínt</i>
2SG	<i>invít-i</i>	<i>súfl-i</i>	<i>tác-i</i>	<i>úmpl-i</i>	<i>fác-i</i>	<i>ști-i</i>	<i>vorbést-i</i>	<i>ést-i</i>
3SG	<i>invít-ă</i>	<i>súfl-ă</i>	<i>tác-e</i>	<i>úmpl-e</i>	<i>fác-e</i>	<i>ști-e</i>	<i>vorbést-e</i>	<i>ést-e</i>
1PL	<i>invită-m</i>	<i>súflă-m</i>	<i>tăcé-m</i>	<i>úmpl-e-m</i>	<i>făce-m</i>	<i>ștí-m</i>	<i>vorbí-m</i>	<i>sínte-m</i>
2PL	<i>invită-ți</i>	<i>súflă-ți</i>	<i>tăcé-ți</i>	<i>úmpl-e-ți</i>	<i>făc-ți</i>	<i>ști-ți</i>	<i>vorbí-ți</i>	<i>sínte-ți</i>
3PL	<i>invít-ă</i>	<i>súfl-ă</i>	<i>tác</i>	<i>úmpl-u</i>	<i>fác</i>	<i>ști-u</i>	<i>vorbésc</i>	<i>sínt</i>

Stump’s analysis:

- (6) *Realization rules:*
- (i) $RR_{I, \{ \}, V}(\langle X, \sigma \rangle) =_{\text{def}} X$ ’s athematic stem
 - (ii) $RR_{I, \{\text{NUM: SG}, \{\text{‘be’}\}} =_{\text{def}} \langle \text{ést}, \sigma \rangle$
- (i) $RR_{II, \{\text{PERS:1, NUM: SG}\}, V}(\langle X, \sigma \rangle) =_{\text{def}} \langle Xu \rangle$
 - (ii) $RR_{II, \{\text{PERS:2, NUM: SG}\}, V}(\langle X, \sigma \rangle) =_{\text{def}} \langle Xi \rangle$
 - (iii) $RR_{II, \{\text{PERS:3, NUM: SG}\}, V}(\langle X, \sigma \rangle) =_{\text{def}} \langle Xe \rangle$
 - (iv) $RR_{II, \{\text{PERS:3}\}, [\text{CONJ: 1}]}(\langle X, \sigma \rangle) =_{\text{def}} \langle X\check{a} \rangle$
 - (v) $RR_{II, \{\text{PERS:1, NUM: PL}\}, V}(\langle X, \sigma \rangle) =_{\text{def}} \langle Xm \rangle$
 - (vi) $RR_{II, \{\text{PERS:2, NUM: PL}\}, V}(\langle X, \sigma \rangle) =_{\text{def}} \langle Xt_i \rangle$
- (7) *Morphological metageneralizations:*
- If R belongs to Block II, then $(8a) \in \phi_R$
 - $(8b) \in \phi_{(6bi)}$
 - $(8c) \in \phi_{(6bv)}$
- (8) *Morphophonological rules:* Where $RR_{n, \tau, C}(\langle X, \sigma \rangle) = \langle Y', \sigma \rangle$:
- If X is an athematic stem whose corresponding thematic stem is Z and $Y = X[\text{consonant}]W$, then $\langle Y', \sigma \rangle = RR_{n, \tau, C}(\langle Z, \sigma \rangle)$
 - If the final two segments of X are decreasingly sonorous and $Y = X[\text{vowel}]W$, then $Y' = X$.
 - If $X = Z\acute{a}$, then $\langle Y', \sigma \rangle = RR_{n, \tau, C}(\langle Z\acute{a}, \sigma \rangle)$.

NB: Sonority scale: vowels >> approximants >> nasals >> fricatives >> affricates >> stops

What about the 3PL form for ‘know’ and 1SG form ‘be’ ?

- (9) *Rule of referral for Romanian:*
 Where $n = I$ or II , $RR_{n, \{\text{PERS: 1, NUM: SG}\}, \{\text{‘be’}\}}(\langle X, \sigma \rangle) =_{\text{def}} \langle Y, \sigma \rangle$, where $\text{Nar}_n(\langle X, \sigma/\{\text{PERS: 3, NUM: PL}\} \rangle) = \langle Y, \sigma/\{\text{PERS: 3, NUM: PL}\} \rangle$
 Referral domain: V

What does this rule derive?

- (10) *Bidirectional Referral Principle:*
 The existence of a rule of referral $\langle RR_{n, \tau, C}(\langle X, \sigma \rangle) =_{\text{def}} \langle Y, \sigma \rangle$,
 where $\text{Nar}_n(\langle X, \sigma/\rho \rangle) = \langle Y, \sigma/\rho \rangle$ with referral domain D entails the existence of a
 second rule of referral $\langle RR_{n, \tau/\rho, D-C}(\langle X, \sigma \rangle) =_{\text{def}} \langle Y, \sigma \rangle$, where $\text{Nar}_n(\langle X, \sigma/\tau \rangle) =$
 $\langle Y, \sigma/\tau \rangle$ with referral domain D.
- (11) *Rule of referral derived by (10):*
 Where $n = \text{I or II}$, $RR_{n, \{ \text{PERS: 3, NUM: PL} \}, V-\{ \text{'be'} \}}(\langle X, \sigma \rangle) =_{\text{def}} \langle Y, \sigma \rangle$,
 where $\text{Nar}_n(\langle X, \sigma/\{ \text{PERS: 1, NUM: SG} \} \rangle) = \langle Y, \sigma/\{ \text{PERS: 1, NUM: SG} \} \rangle$
 Referral domain: V

Why don't we find the 1SG/3PL syncretism with 'invite' and 'breathe' in Romanian?

What kind of bidirectional syncretism do we have in Romanian?

Convergent bidirectional syncretism

There is a feature value x that takes the form associated with feature value y in some contexts, and in other contexts takes the form associated with feature value z .

Divergent bidirectional syncretism

There is a feature value x that takes the form associated with feature value y in some contexts, while in other contexts y takes the form associated with x .

- (12) *Bidirectional syncretism in the Latin second declension:*

	Neuter _a	Masculine	Neuter _b
	'war'	'slave'	'crowd'
NOM SG	bell-um	serv-us	vulg-us
ACC SG	bell-um	serv-um	vulg-us
GEN SG	bell-ī	servi-ī	vulg-ī
DAT SG	bell-ō	serv-ō	vulg-ō
ABL SG	bellō	serv-ō	vulg-ō

How do we restrict the application of the *Bidirectional Referral Principle*?

- (13) *Bidirectional syncretism in Bonan noun declension:*

	Noun	Pronoun
	'foliage'	'he'
NOM	labčon-Ø	ndžan-Ø
GEN	labčon-ne	ndžan-ne
ACC	labčon-ne	ndžan-de
DAT	labčon-de	ndžan-de
ABL	labčon-se	ndžan-se
INS	labčon-gale	ndžan-gale

What is the problem with Bonan?

Can we derive (14) as a directional syncretism? Could the BRP ever be applicable?

- (14) *Inflection of 'sing' in Udihe:*

	past	future
1SG	jexe:-mi	jexezeŋe-i
2SG	jexe:-i	jexezeŋe-i
3SG	jexe:-ni	jexezeŋe-ni

3 Symmetrical syncretism

- (15) *Symmetrical syncretism metarule*

$$RR_{n, \tau, C}(\langle X, \sigma \rangle) =_{\text{def}} \langle Y, \sigma \rangle$$

↑

$$RR_{n, \tau/\rho, C}(\langle X, \sigma \rangle) =_{\text{def}} \langle Y, \sigma \rangle$$

'The existence of a rule of exponence of the form $\langle RR_{n, \tau, C}(\langle X, \sigma \rangle) =_{\text{def}} \langle Y, \sigma \rangle$ '
 implies and is implied by another rule of exponence of the form $\langle RR_{n, \tau/\rho, C}(\langle X, \sigma \rangle) =_{\text{def}} \langle Y, \sigma \rangle$

- (16) *Verb terminations in Hua:*

	interrogative	medial (a)
1SG	-ve	-ga
2SG	-pe	-na
3SG	-ve	-ga
1/2/3DU	-ve	-ga
1PL	-pe	-na
2/3PL	-ve	-ga

- (17) *Symmetrical syncretism metarule for Hua:*

Where τ is an extension of $\{ \text{PERS: 2, NUM: SG} \}$,

$$RR_{n, \tau, V}(\langle X, \sigma \rangle) =_{\text{def}} \langle Y, \sigma \rangle$$

↑

$$RR_{n, \tau/\{ \text{PERS: 1, NUM: PL} \}, V}(\langle X, \sigma \rangle) =_{\text{def}} \langle Y, \sigma \rangle$$

- (18) a. Default rules

$$RR_{\text{II}, \{ \text{MOOD: INTERR} \}, V}(\langle X, \sigma \rangle) =_{\text{def}} \langle Xve, \sigma \rangle$$

$$RR_{\text{II}, \{ \text{MOOD: MEDIAL(A)} \}, V}(\langle X, \sigma \rangle) =_{\text{def}} \langle Xga, \sigma \rangle$$

- b. Second-person singular rules

$$RR_{\text{II}, \{ \text{MOOD: INTERR, PERS: 2, NUM: SG} \}, V}(\langle X, \sigma \rangle) =_{\text{def}} \langle Xpe, \sigma \rangle$$

$$RR_{\text{II}, \{ \text{MOOD: MEDIAL(A), PERS: 2, NUM: SG} \}, V}(\langle X, \sigma \rangle) =_{\text{def}} \langle Xna, \sigma \rangle$$

- c. First-person singular rules

$$RR_{\text{II}, \{ \text{MOOD: INTERR, PERS: 1, NUM: PL} \}, V}(\langle X, \sigma \rangle) =_{\text{def}} \langle Xpe, \sigma \rangle$$

$$RR_{\text{II}, \{ \text{MOOD: MEDIAL(A), PERS: 1, NUM: PL} \}, V}(\langle X, \sigma \rangle) =_{\text{def}} \langle Xna, \sigma \rangle$$

4 Competing rules

(19) *Case declension of Sanskrit nouns:*

<i>a-stem: aśva- 'horse'</i>			
	singular	dual	plural
DAT	<i>aśvāya</i>	<i>aśvābhyām</i>	<i>aśvebhyas</i>
ABL	<i>aśvāt</i>	<i>aśvābhyām</i>	<i>aśvebhyas</i>
GEN	<i>aśvasya</i>	<i>aśvayos</i>	<i>aśvñām</i>
<i>ā-stem: senā 'army'</i>			
	singular	dual	plural
DAT	<i>senyāi</i>	<i>senābhyām</i>	<i>senābhyas</i>
ABL	<i>senyās</i>	<i>senābhyām</i>	<i>senābhyas</i>
GEN	<i>senyās</i>	<i>senayos</i>	<i>senānām</i>
<i>masculine ī-stem: agni- 'fire'</i>			
	singular	dual	plural
DAT	<i>agnaye</i>	<i>agnibhyām</i>	<i>agnibhyas</i>
ABL	<i>agnes</i>	<i>agnibhyām</i>	<i>agnibhyas</i>
GEN	<i>agnes</i>	<i>agnyos</i>	<i>agninām</i>

What are the important generalizations about syncretism here?

- (20) a. *Rule of referral I:*
For any rule block n , $RR_{n, \{CASE: ABL, [nominal]}\}(\langle X, \sigma \rangle) =_{\text{def}} \langle Y, \sigma \rangle$, where $Nar_n(\langle X, \sigma / \{CASE: DAT\} \rangle) = \langle Y, \sigma / \{CASE: DAT\} \rangle$.
- b. *Rule of referral II:*
For any rule block n , $RR_{n, \{CASE: ABL, NUM: SG, [nominal]}\}(\langle X, \sigma \rangle) =_{\text{def}} \langle Y, \sigma \rangle$, where $Nar_n(\langle X, \sigma / \{CASE: GEN\} \rangle) = \langle Y, \sigma / \{CASE: GEN\} \rangle$.
- c. $RR_{I, \{CASE: ABL, NUM: SG, [a-stem]}\}(\langle X, \sigma \rangle) =_{\text{def}} \langle Xat, \sigma \rangle$
- d. $RR_{I, \{CASE: GEN, NUM: SG, [nominal]}\}(\langle X, \sigma \rangle) =_{\text{def}} \langle Xs, \sigma \rangle$
- e. $RR_{I, \{CASE: DAT, NUM: DL, [nominal]}\}(\langle X, \sigma \rangle) =_{\text{def}} \langle Xbhyām, \sigma \rangle$
- f. $RR_{I, \{CASE: DAT, NUM: PL, [nominal]}\}(\langle X, \sigma \rangle) =_{\text{def}} \langle Xbhyas, \sigma \rangle$

How could DM analyze this?

5 Some PFM practice

(21)

		1	2	3	
				MASC	FEM
singular	ACC	<i>me</i>	<i>te</i>	<i>lo</i>	<i>la</i>
	DAT	<i>me</i>	<i>te</i>	<i>le</i>	<i>le</i>
	REFL	<i>me</i>	<i>te</i>	<i>se</i>	<i>se</i>
plural	ACC	<i>nos</i>	<i>os</i>	<i>los</i>	<i>las</i>
	DAT	<i>nos</i>	<i>os</i>	<i>les</i>	<i>les</i>
	REFL	<i>nos</i>	<i>os</i>	<i>se</i>	<i>se</i>

What rules/blocks do we need?

(22) *Subject agreement in Nimboran (future tense):*

	singular	dual	plural
1 EXCL	<i>ŋgedúo-d-u</i>	<i>ŋgedúo-k-d-u</i>	<i>ŋgedóiⁱ-d-u</i>
1 INCL	<i>maN-ŋgedúo-d-ám</i>	<i>ŋgedúo-k-d-ám</i>	<i>ŋgedói-k-d-ám</i>
2	<i>ŋgedúo-d-e</i>	<i>ŋgedúo-k-d-e</i>	<i>ŋgedói-k-d-e</i>
3 MASC	<i>ŋgedúo-d-am</i>	<i>ŋgedúo-k-d-am</i>	<i>ŋgedóiⁱ-d-am</i>
3 FEM	<i>ŋgedóu-d-um</i>	<i>ŋgedúo-k-d-um</i>	<i>ŋgedóiⁱ-d-am</i>

What rules/blocks do we need?

References

Stump, Gregory T. (2001). *Inflectional Morphology: A Theory of Paradigm Structure*. Cambridge University Press: Cambridge.