A typology of inflectional class interaction
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Theoretical interest in inflectional classes has grown in recent years, from Carstairs' (1983) Paradigm Economy to the principal parts typology of Finkel & Stump (2009). Inflectional classes are typically thought of in terms of affixation, as in Atsugewi in Figure 1, where the subject agreement markers differ between the two classes of verbs. We can extend the notion to inflectional differences along other parameters, such as stem alternations (illustrated by Nuer in Figure 2) and prosodic alternations (Cupeño, Figure 3). We should now consider instances where inflectional morphology is **multi-stratal**: the inflectional devices in Figures 1-3 may be combined in a single paradigm, which in turn may be divided into different inflectional classes. We see this in Mazatec (Figure 4), where affixes, stem alternations and tone patterns divide into cross-classifying subsystems. We propose a typological framework for investigating the interaction of such multi-stratal inflectional classes, looking both at morphologically and morphosyntactically defined subsystems.

The typology is based on the degree to which the different subsystems interact. At one extreme they can be **independent**: choices within one subsystem do not determine the choices in another subsystem, as in Mazatec (Figure 4), where the patterns freely combine with each other. More typically we find some degree of **unidirectional implicature**, reflecting a hierarchical relationship between subsystems. Thus nouns in Russian fall into a number of different declension classes, stem classes, and accentual classes, where class membership in one subsystem may restrict the possibilities in the others, e.g. nouns of declension class II may belong to almost any of the accentual classes, while nouns of declension class III are restricted to two accentual classes. Finally, the subsystems may be related by **mutual implicature**, as with Russian nouns of the *vremja* 'time' type, whose declension class and stem alternation pattern are both unique to this type. This typology has implications both for the formal representation of the inflectional classes and for the nature of the lexical entry: the less deterministic the implications between subsystems, the more information must be lexically stored.

We may go further. 'Subsystem' as construed so far is defined in terms of morphological tiers or slots (e.g. affixes versus stems versus prosody), but it may also be defined in terms of individual morphosyntactic values or sets of values. Subsystems in this sense may likewise interact to varying degrees, and we can apply the same typology of relations as already established. For example, in Anywa (Figure 5), singular and plural constitute entirely independent systems, where the choice of singular ending has no implications for the choice of plural ending. In Spanish verbs (Figure 6) there is a hierarchy of unidirectional implicature starting from {3SG, 1PL, 2PL}. In Burmeso (Figure 7) a network of mutual implicature binds all the parts of the paradigm, as the content of any one cell unambiguously determines the content of the remaining cells. Once again, the weaker the implicational structure between cells in the paradigm, the denser the lexical entry.

	class I 'scratch'	class III 'kill'
1SG	s- twojoq-a	s- pwəhn-mijehe:
2SG	twojoq-eneʔe	pwəhn-mije
3SG	twojoq-enye:	pwəhn-mitʔe
1PL	twojoq-enyeyaw	pwəhn-awmitʔeyaw
2PL	mohja- twojoq-ewmehe	je- pwəhn-aw
3PL	twojoq-enyi	pwəhn-enwaʔwaywa

Figure 1: Atsugewi (Olmsted 1961)

stem:	A A A 'snot'	A B B 'shirt'	A A B 'lung'	A B C 'kind of tree'
NOM SG	thuny	luɔt	puäth	buäw
GEN SG	thuny-kä	lut-kä	puäth-kä	buɔ-kä
LOC SG	thuny-kä	lut-kä	puth-kä	bɔw-kä

Figure 2: Nuer (Frank 1999)

	fixed stress 'go'	mobile stress 'put'
IPFV PL	ŋíy-əm	wə́n-əm
1SG	nə-ŋíy	nə́-wən
1SG PST DURATIVE	nə-ŋíy-qal	nə-wən-qál

Figure 3: Cupeño: (Alderete 2001)

	'gather'		same ending class 'return'	same stem class 'pull out'	same tone class 'take out'
1SG	$čha^3\,y\text{-}a^1$		$bu^1\,y\text{-}a^1$	$čha^3\,n\text{-}ẽ^1$	$ba^3š\text{-}æ^1$
2SG	$hba^2\,y\text{-}e^2$	*compare*	$bo^3\,y\text{-}e^2$	$hba^3\,y\text{-}e^{31}$	$nã^2š\text{-}e^2$
3	$čha^3\,y\text{-}a^2$	*with other*	$bu^3\,y\text{-}a^2$	$čha^3\,n\text{-}ẽ^1$	$ba^3š\text{-}æ^2$
1INCL	$hba^2\,y\text{-}ã^2$	*lexemes:*	$bu^3\,y\text{-}ã^2$	$hba^3\,n\text{-}ẽ^{31}$	$nã^2š\text{-}ẽ^2$
1PL	$hba^2\,y\text{-}ĩ^{24}$		$bu^3\,y\text{-}ĩ^{24}$	$hba^3\,n\text{-}ĩ^{14}$	$b^2š\text{-}ĩ^{24}$
2PL	$hba^2\,y\text{-}ũ^2$		$bu^3\,y\text{-}ũ^2$	$hba^3n\text{-}ũ^1$	$ba^2š\text{-}ũ^2$

Figure 4: Mazatec (Jamieson 1982)

SG	-o	-u	-a
PL	-i	-e	Ø

Figure 5: Anywa (Reh 1996)

	class A		class B	
	SG	PL	SG	PL
I	j-	s-	b-	t-
II	g-	s-	n-	t-
III	g-	j-	n-	b-
IV	j-	j-	b-	b-
V	j-	g-	b-	n-
VI	g-	g-	n-	n-

Figure 7: Burmeso (Donohue 2001)

1SG	-o		
2SG	-as	-es	
3SG	-a	-e	
1PL	-amos	-emos	-imos
2PL	-ais	-eis	-is
3PL	-an	-en	

Figure 6: Spanish

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