In how many ways can you be morphomic? Laz person marking

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Introduction

- Laz has an intricate person marking system, with a variety of aspects calling for a purely morphological ('morphomic') analysis.
- Most notably, plain vs. inverse constructions:

(1) *me-g-o-x-e-n*
PV-CPL.2-VAL_O-sit-TH-SBJ.3SG
'it sits on you (sg)'

(2) *g-i-dzir-u-n*
SBJ.2-VAL_U-see-TH-CPL.3SG
'you (sg) have seen him'

- Goals:
  - Provide a detailed description of the system
  - Motivate the use of morphomic features, as a way of reducing the plain vs. inverse distinction to a morphological reversal
  - Explicit formal analysis in terms of Paradigm Function Morphology

The language Laz

- Belongs to the South Caucasian language family, which also includes Georgian, Mingrelian and Svan
- Spoken in North-East Turkey and South-West Georgia

- Approximately 250,000 speakers (Feurstein 1983).
- Endangered : speakers under the age of ca. 25 do not speak Laz.
- Four dialect areas. The data presented here are from the dialect of Arhavi. They are taken from published sources and from René Lacroix's fieldwork.

☞ A preliminary analysis of person marking in Arhavi Laz is provided in Lacroix (2009).

The structure of the finite verb

- As other South Caucasian languages, Laz has an intricate conjugation system
- Lacroix (2009): 11 derivational and/or inflectional position classes

preverbs	preverbs	person marking	valency/aspect	root	causative	causative	thematic suffix	TAM	TAM	person marking	TAM/evidentiality
–4	–3	–2	–1	0	1	2	3	4	5	6	7
ko-	*go-*	*m-*	*o-*	*k'untsx*	*-in*		*-am*	*-t'*	*-i*	*-t*	*-doe*
PV	PV	CPL.1	VAL1	wake_up	CAUS		TH	PST.IPFV	PST	SBJ.12PL	EVD

'you(pl.) were waking me up, I'm told'

- Some position classes host both derivational and inflectional affixes
- In this talk we will only be concerned with the person markers in red

Outline

Outline

The plain construction: case marking

- Monovalent verbs take an ergative or absolutive subject

(3) *K'oči-k* *čind-um-s*
man-ERG sneeze-TH-SBJ.3SG
'The man sneezes.' (field data)

- Divalent verbs may take:
  - An ergative subject and an absolutive complement
  - An ergative subject and a dative complement
  - An absolutive subject and a dative complement

(4) a. *Bere-k* *otsxodž* *me-tk'oč-u*
child-ERG comb[ABS] PV-throw-AOR.SBJ.3SG
'The boy threw the comb.' (Dumézil 1937, text 1)

b. *Bere-k* *bozo-s* *mend-o-tsk'e-s*
child-ERG girl-DAT PV-VAL_O-look_at-SBJ.3SG
'The boy looks at the girl.' (field data)

c. *Ha* *t'urva-s* *čkar mč'adži var* *n-o-xed-asen*
DEM bag-DAT no fly[ABS] NEG PV-VAL_O-sit-FUT.SBJ.3SG
'No fly will sit on this bag.' (Dumézil 1967, text XXXV)

The inverse construction: case marking

- Monovalent verbs take a dative subject

(5) *Bozo-s a-škurin-u*
girl-DAT VAL_A-get_afraid-AOR.SBJ.3SG
'The girl got afraid.' (Žghent'i 1938, text 50)

- Divalent verbs take a dative subject and an absolutive complement

(6) *K'oči-s čxomi va a-č'op-u*
man-DAT fish[ABS] NEG VAL_A-take-AOR.SBJ.3SG
'The man could not catch fish.' (field data)

Distribution of the two constructions

Most verbal lexemes are congruent:

- If the form is –PERFECT, the plain construction is used.
- If the form is +PERFECT, the inverse construction is used.

TAM	1PL>3SG form of *dzir* 'see'
present	bdziromt
past imperfective	bdziromt'it
aorist	bdzirit
future	bdziraten
present perfect	midzirunan
past perfect	midzirut'es
subjunctive	bdziromt'at
optative	bdzirat
past optative	bdzirat'it

Distribution of the two constructions

A few basic verbs are non-congruent: they use the inverse construction for –PERFECT forms (instead of the expected plain construction)

(7) *k'oči-s* *a-škuin-u*
man-DAT VAL_A-fear-AOR.CPL.3SG
'The man was scared.' (field data)

In addition, the potential derivation creates new non-congruent verbs

(8) *k'oči-s* *čxomi va* *a-č'op-u*
man-DAT fish NEG VAL_A-take-AOR.CPL.3SG
'The man could not catch fish.' (field data)

Outline

Person markers in the plain construction

- Verbs agree with both subjects and (direct or indirect) complements.

(9) *m-dzir-om-an*
CPL.1-see-TH-3SG>PL
'He sees us.'

- Monovalent verbs in the plain construction use of a first set of affixes

1SG	blalum
2SG	lalum
3SG	lalums
1PL	blalumt
2PL	lalumt
3PL	laluman

Present of *lal* 'bark'

☞ From now on we will refer to these affixes as set 1 markers

Person marking on divalent verbs

- Divalent verbs use the same set of subject person markers as monovalent verbs.
- A second set of affixes serve as complement person markers.

		COMPLEMENT					
		1SG	2SG	3SG	1PL	2PL	3PL
SUBJECT	1SG	—	gdzirom	bdzirom	—	gdziromt	bdzirom
	2SG	mdzirom	—	dzirom	mdziromt	—	dzirom
	3SG	mdziroms	gdziroms	dziroms	mdziroman	gdziroman	dziroms
	1PL	—	gdziromt	bdziromt	—	gdziromt	bdziromt
	2PL	mdziromt	—	dziromt	mdziromt	—	dziromt
	3PL	mdziroman	gdziroman	dziroman	mdziroman	gdziroman	dziroman

Present of *dzir* 'see'

NB: some affixes are cumulative Set 1 / Set 2 markers. Deciding what is cumulative and what is not is depends on theoretical decisions

Allomorphy in person suffixes

- *-an* alternates with two other suffixes:
  - *-an* is used with class I verbs in the indicative present
  - *-nan* is used with class II and class III verbs in the indicative present
  - *-n* is used elswhere

		COMPLEMENT					
		1SG	2SG	3SG	1PL	2PL	3PL
SUBJECT	1SG	—	gdzirom	bdzirom	—	gdzиromt	bdzirom
	2SG	mdzirom	—	dzirom	mdziromt	—	dzirom
	3SG	mdziroms	gdziroms	dziroms	mdziroman	gdziroman	dziroms
	1PL	—	gdziromt	bdziromt	—	gdziromt	bdziromt
	2PL	mdziromt	—	dziromt	mdziromt	—	dziromt
	3PL	mdziroman	gdziroman	dziroman	mdziroman	gdziroman	dziroman

Present of *dzir* 'see'

		COMPLEMENT					
		1SG	2SG	3SG	1PL	2PL	3PL
SUBJECT	1SG	—	megoxe	meboxe	—	megoxet	meboxe
	2SG	memoxe	—	noxe	memoxet	—	noxe
	3SG	memoxen	megoxen	noxen	memoxenan	megoxenan	noxen
	1PL	—	megoxet	meboxet	—	megoxet	meboxet
	2PL	memoxet	—	noxet	memoxet	—	noxet
	3PL	memoxenan	megoxenan	noxenan	memoxenan	megoxenan	noxenan

Present of *meox* 'sit'

Allomorphy in person suffixes

- *-an* alternates with two other suffixes:
  - *-an* is used with class I verbs in the indicative present
  - *-nan* is used with class II and class III verbs in the indicative present
  - *-n* is used elswhere

		COMPLEMENT					
		1SG	2SG	3SG	1PL	2PL	3PL
SUBJECT	1SG	—	gdzirom	bdzirom	—	gdziromt	bdzirom
	2SG	mdzirom	—	dzirom	mdziromt	—	dzirom
	3SG	mdziroms	gdziroms	dziroms	mdziroman	gdziroman	dziroms
	1PL	—	gdziromt	bdziromt	—	gdziromt	bdziromt
	2PL	mdziromt	—	dziromt	mdziromt	—	dziromt
	3PL	mdziroman	gdziroman	dziroman	mdziroman	gdziroman	dziroman

Present of *dzir* 'see'

		COMPLEMENT					
		1SG	2SG	3SG	1PL	2PL	3PL
SUBJECT	1SG	—	gdzira	bdzira	—	gdzirat	bdzira
	2SG	mdzira	—	dzira	mdzirat	—	dzira
	3SG	mdziras	gdziras	dziras	mdziran	gdziran	dziras
	1PL	—	gdzirat	bdzirat	—	gdzirat	bdzirat
	2PL	mdzirat	—	dzirat	mdzirat	—	dzirat
	3PL	mdziran	gdziran	dziran	mdziran	gdziran	dziran

Optative of *dzir* 'see'

Allomorphy in person suffixes

- *-s* alternates with another suffix:
  - *-n* is used with class III verbs in the indicative present
  - *-s* is used elsewhere

		COMPLEMENT					
		1SG	2SG	3SG	1PL	2PL	3PL
SUBJECT	1SG	—	gdzirom	bdzirom	—	gdzиromt	bdzirom
	2SG	mdzirom	—	dzirom	mdziromt	—	dzirom
	3SG	mdziroms	gdziroms	dziroms	mdziroman	gdziroman	dziroms
	1PL	—	gdziromt	bdziromt	—	gdziromt	bdziromt
	2PL	mdziromt	—	dziromt	mdziromt	—	dziromt
	3PL	mdziroman	gdziroman	dziroman	mdziroman	gdziroman	dziroman

Present of *dzir* 'see'

		COMPLEMENT					
		1SG	2SG	3SG	1PL	2PL	3PL
SUBJECT	1SG	—	megoxe	meboxe	—	megoxet	meboxe
	2SG	memoxe	—	noxe	memoxet	—	noxe
	3SG	memoxen	megoxen	noxen	memoxenan	megoxenan	noxen
	1PL	—	megoxet	meboxet	—	megoxet	meboxet
	2PL	memoxet	—	noxet	memoxet	—	noxet
	3PL	memoxenan	megoxenan	noxenan	memoxenan	megoxenan	noxenan

Present of *meox* 'sit'

Allomorphy in person suffixes

- In the future, full set of suffixes cumulating tense and person marking

		COMPLEMENT					
		1SG	2SG	3SG	1PL	2PL	3PL
SUBJECT	1SG	—	gdzirom	bdzirom	—	gdziromt	bdzirom
	2SG	mdzirom	—	dzirom	mdziromt	—	dzirom
	3SG	mdziroms	gdziroms	dziroms	mdziroman	gdziroman	dziroms
	1PL	—	gdziromt	bdziromt	—	gdziromt	bdziromt
	2PL	mdziromt	—	dziromt	mdziromt	—	dziromt
	3PL	mdziroman	gdziroman	dziroman	mdziroman	gdziroman	dziroman

Present of *dzir* 'see'

		COMPLEMENT					
		1SG	2SG	3SG	1PL	2PL	3PL
SUBJECT	1SG	—	gdzirare	bdzirare	—	gdziraten	bdzirare
	2SG	mdzirare	—	dzirare	mdziraten	—	dzirare
	3SG	mdzirasen	gdzirasen	dzirasen	mdziranoren	gdziranoren	dzirasen
	1PL	—	gdziraten	bdziraten	—	gdziraten	bdziraten
	2PL	mdziraten	—	dziraten	mdziraten	—	dziraten
	3PL	m-dziranoren	gdziranoren	dziranoren	mdziranoren	gdziranoren	mdziranoren

Future of *dzir* 'see'

Portmanteau suffixes in the past

- In the past, two portmanteau suffixes corresponding to *-nan* and *-n*

SUBJECT \ COMPLEMENT	1SG	2SG	3SG	1PL	2PL	3PL
1SG	—	gdzirom	bdzirom	—	gdziromt	bdzirom
2SG	mdzirom	—	dzirom	mdziromt	—	dzirom
3SG	mdziroms	gdziroms	dziroms	mdziroman	gdziroman	dziroms
1PL	—	gdziromt	bdziromt	—	gdziromt	bdziromt
2PL	mdziromt	—	dziromt	mdziromt	—	dziromt
3PL	mdziroman	gdziroman	dziroman	mdziroman	gdziroman	dziroman

Present of *dzir* 'see'

SUBJECT \ COMPLEMENT	1SG	2SG	3SG	1PL	2PL	3PL
1SG	—	gdzir**i**	bdzir**i**	—	gdzir**it**	bdzir**i**
2SG	mdzir**i**	—	dzir**i**	mdzir**it**	—	dzir**i**
3SG	mdzir **u**	gdzir **u**	dzir **u**	mdzir **es**	gdzir **es**	dzir **u**
1PL	—	gdzir**it**	bdzir**it**	—	gdzir**it**	bdzir**it**
2PL	mdzir**it**	—	dzir**it**	mdzir**it**	—	dzir**it**
3PL	m-dzir **es**	gdzir **es**	dzir **es**	mdzir **es**	gdzir **es**	dzir **es**

Aorist of *dzir* 'see'

Summary: suffix allomorphy

- Alternate person suffixes always occur in the same 4 zones of the paradigm
- Two orthogonal dimensions of classification for suffixes: person marking, TAM+class

SUBJECT \ COMPLEMENT	1SG	2SG	3SG	1PL	2PL	3PL
1SG	A			D		A
2SG						
3SG	C			B		C
1PL	D					
2PL						
3PL	B					

A:
- *are* in the future
- ∅ elsewhere

B:
- *anoren* in the future
- portmanteau *es* in the past
- *nan* in the present, classes II and III
- *an* in the present, class I
- *n* elsewhere

C:
- *asen* in the future
- portmanteau *u* in the past
- *n* in the present, class III
- *s* elsewhere

D:
- *aten* in the future
- *t* elsewhere

Outline

Person markers in the inverse construction

- As in the plain construction, verbs agree with both subjects and complements.

(10) *b-u-dzir-u-t*
3>1-SUBJ.3.VAL_U-see-TH-CPL.PL
'He has seen us'

- Monovalent verbs recycle Set 2 person markers from the plain construction

1SG	maškurinen
2SG	gaškurinen
3SG	aškurinen
1PL	maškurinenan
2PL	gaškurinenan
3PL	aškurinenan

Present of *aškurin* 'get afraid'

Person marking on divalent verbs

- Set 2 markers register subject agreement, set 1 markers complement agreement

plain construction

1SG	—	megoxe	meboxe	—	megoxet	meboxe
2SG	memoxe	—	noxe	memoxet	—	noxe
3SG	memoxen	megoxen	noxen	memoxenan	megoxenan	noxen
1PL	—	megoxet	meboxet	—	megoxet	meboxet
2PL	memoxet	—	noxet	memoxet	—	noxet
3PL	memoxenan	megoxenan	noxenan	memoxenan	megoxenan	noxenan

inverse construction

1SG	—	midziu	midziun	—	midziut	midziun
2SG	gidziu	—	gidziun	gidziut	—	gidziun
3SG	budziu	udziu	udziun	budziut	udziut	udziun
1PL	—	midziut	midziunan	—	midzi-ut	midziunan
2PL	gidziut	—	gidziunan	gidziut	—	gidziunan
3PL	budziu	udziu	udziunan	budziut	udziut	udziunan

Comparing the two constructions

- Observation: the table is symmetrical, except for the greyed out area

☞ This is almost a morphological reversal (Baerman 2007)

plain construction

	1SG	2SG	3SG	1PL	2PL	3PL
1SG	—	g-∅	b-∅	—	g-t	b-∅
2SG	m-∅	—	∅-∅	m-t	—	∅-∅
3SG	m-n	g-n	∅-n	m-nan	g-nan	∅-n
1PL	—	g-t	b-t	—	g-t	b-t
2PL	m-t	—	∅-t	m-t	—	∅-t
3PL	m-nan	g-nan	∅-nan	m-nan	g-nan	∅-nan

inverse construction

1SG	—	m-∅	m-n	—	m-t	m-n
2SG	g-∅	—	g-n	g-t	—	g-n
3SG	b-∅	∅-∅	∅-n	b-t	-t	∅-n
1PL	—	m-t	m-nan	—	m-t	m-nan
2PL	g-t	—	g-nan	g-t	—	g-nan
3PL	b-∅	∅-∅	∅-nan	b-t	∅-t	∅-nan

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plain construction

	1SG	2SG	3SG	1PL	2PL	3PL
1SG	—	g-∅	b-∅	—	g-t	b-∅
2SG	m-∅	—	∅-∅	m-t	—	∅-∅
3SG	m-n	g-n	∅-n	m-nan	g-nan	∅-n
1PL	—	g-t	b-t	—	g-t	b-t
2PL	m-t	—	∅-t	m-t	—	∅-t
3PL	m-nan	g-nan	∅-nan	m-nan	g-nan	∅-nan

inverse construction

	1SG	2SG	3SG	1PL	2PL	3PL
1SG	—	m-∅	m-n	—	m-t	m-n
2SG	g-∅	—	g-n	g-t	—	g-n
3SG	b-∅	∅-∅	∅-n	b-t	-t	∅-n
1PL	—	m-t	m-nan	—	m-t	m-nan
2PL	g-t	—	g-nan	g-t	—	g-nan
3PL	b-∅	∅-∅	∅-nan	b-t	∅-t	∅-nan

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plain construction

	1SG	2SG	3SG	1PL	2PL	3PL
1SG	—	g-∅	b-∅	—	g-t	b-∅
2SG	m-∅	—	∅-∅	m-t	—	∅-∅
3SG	m-n	g-n	∅-n	m-nan	g-nan	∅-n
1PL	—	g-t	b-t	—	g-t	b-t
2PL	m-t	—	∅-t	m-t	—	∅-t
3PL	m-nan	g-nan	∅-nan	m-nan	g-nan	∅-nan

inverse construction

	1SG	2SG	3SG	1PL	2PL	3PL
1SG	—	m-∅	m-n	—	m-t	m-n
2SG	g-∅	—	g-n	g-t	—	g-n
3SG	b-∅	∅-∅	∅-n	b-t	-t	∅-n
1PL	—	m-t	m-nan	—	m-t	m-nan
2PL	g-t	—	g-nan	g-t	—	g-nan
3PL	b-∅	∅-∅	∅-nan	b-t	∅-t	∅-nan

Comparing the two constructions

- Observation: the table is symmetrical, except for the greyed out area

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plain construction

	1SG	2SG	3SG	1PL	2PL	3PL
1SG	—	g-∅	b-∅	—	g-t	b-∅
2SG	m-∅	—	∅-∅	m-t	—	∅-∅
3SG	m-n	g-n	∅-n	m-nan	g-nan	∅-n
1PL	—	g-t	b-t	—	g-t	b-t
2PL	m-t	—	∅-t	m-t	—	∅-t
3PL	m-nan	g-nan	∅-nan	m-nan	g-nan	∅-nan

inverse construction

	1SG	2SG	3SG	1PL	2PL	3PL
1SG	—	m-∅	m-n	—	m-t	m-n
2SG	g-∅	—	g-n	g-t	—	g-n
3SG	b-∅	∅-∅	∅-n	b-t	-t	∅-n
1PL	—	m-t	m-nan	—	m-t	m-nan
2PL	g-t	—	g-nan	g-t	—	g-nan
3PL	b-∅	∅-∅	∅-nan	b-t	∅-t	∅-nan

Comparing the two constructions

- Observation: the table is symmetrical, except for the greyed out area

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plain construction

	1SG	2SG	3SG	1PL	2PL	3PL
1SG	—	g-∅	b-∅	—	g-t	b-∅
2SG	m-∅	—	∅-∅	m-t	—	∅-∅
3SG	m-n	g-n	∅-n	m-nan	g-nan	∅-n
1PL	—	g-t	b-t	—	g-t	b-t
2PL	m-t	—	∅-t	m-t	—	∅-t
3PL	m-nan	g-nan	∅-nan	m-nan	g-nan	∅-nan

inverse construction

1SG	—	m-∅	m-n	—	m-t	m-n
2SG	g-∅	—	g-n	g-t	—	g-n
3SG	b-∅	∅-∅	∅-n	b-t	-t	∅-n
1PL	—	m-t	m-nan	—	m-t	m-nan
2PL	g-t	—	g-nan	g-t	—	g-nan
3PL	b-∅	∅-∅	∅-nan	b-t	∅-t	∅-nan

Comparing the two constructions

- Systematic syncretism between 3SG and 3PL complements
- Both look like SG forms
- Analysis: no number agreement; remove a column

plain construction

	1SG	2SG	3SG	1PL	2PL	3PL
1SG	—	g-∅	b-∅	—	g-t	b-∅
2SG	m-∅	—	∅-∅	m-t	—	∅-∅
3SG	m-n	g-n	∅-n	m-nan	g-nan	∅-n
1PL	—	g-t	b-t	—	g-t	b-t
2PL	m-t	—	∅-t	m-t	—	∅-t
3PL	m-nan	g-nan	∅-nan	m-nan	g-nan	∅-nan

inverse construction

1SG	—	m-∅	m-n	—	m-t	m-n
2SG	g-∅	—	g-n	g-t	—	g-n
3SG	b-∅	∅-∅	∅-n	b-t	-t	∅-n
1PL	—	m-t	m-nan	—	m-t	m-nan
2PL	g-t	—	g-nan	g-t	—	g-nan
3PL	b-∅	∅-∅	∅-nan	b-t	∅-t	∅-nan

Comparing the two constructions

- Systematic syncretism between 3SG and 3PL complements
- Both look like SG forms
- Analysis: no number agreement; remove a column

plain construction

	1SG	2SG	3SG	1PL	2PL	3PL
1SG	—	g-∅	b-∅	—	g-t	b-∅
2SG	m-∅	—	∅-∅	m-t	—	∅-∅
3SG	m-n͡	g-n͡	∅-n͡	m-nan	g-nan	∅-n͡
1PL	—	g-t	b-t	—	g-t	b-t
2PL	m-t	—	∅-t	m-t	—	∅-t
3PL	m-nan	g-nan	∅-nan	m-nan	g-nan	∅-nan

inverse construction

1SG	—	m-∅	m-n	—	m-t	m-n
2SG	g-∅	—	g-n	g-t	—	g-n
3SG	b-∅	∅-∅	∅-n	b-t	-t	∅-n
1PL	—	m-t	m-nan	—	m-t	m-nan
2PL	g-t	—	g-nan	g-t	—	g-nan
3PL	b-∅	∅-∅	∅-nan	b-t	∅-t	∅-nan

Comparing the two constructions

- Systematic syncretism between 3SG and 3PL complements
- Both look like SG forms
- Analysis: no number agreement; remove a column

plain construction

	1SG	2SG	3SG	1PL	2PL
1SG	—	g-∅	b-∅	—	g-t
2SG	m-∅	—	∅-∅	m-t	—
3SG	m-n	g-n	∅-n	m-nan	g-nan
1PL	—	g-t	b-t	—	g-t
2PL	m-t	—	∅-t	m-t	—
3PL	m-nan	g-nan	∅-nan	m-nan	g-nan

inverse construction

1SG	—	m-∅	m-n	—	m-t
2SG	g-∅	—	g-n	g-t	—
3SG	b-∅	∅-∅	∅-n	b-t	-t
1PL	—	m-t	m-nan	—	m-t
2PL	g-t	—	g-nan	g-t	—
3PL	b-∅	∅-∅	∅-nan	b-t	∅-t

Outline

The argument

- We want to account for:
  - Plain vs. inverse opposition
  - Systematic syncretism between 3PL and 3SG complement agreement affixes
- The problem is reminiscent of the Georgian situation for which numerous analyses have been proposed (e.g. Harris, 1981; Anderson, 1984, 1986, 1992; Halle & Marantz, 1993; Stump, 2001; Stewart 2001), but:
  - None of these is fully satisfactory
  - The Laz facts are different (in effect, more clear)
- Proposed solution:
  - The syncretism pattern is an instance of a systematic morphological mismatch.
  - Given this, inversion is a simple, full reversal.
- Theoretical claim:
  - This type of morphological mismatch is best captured by positing morphomic features

☞ Avoids the overhead of the paradigm linkage approach (Stump, 2006)

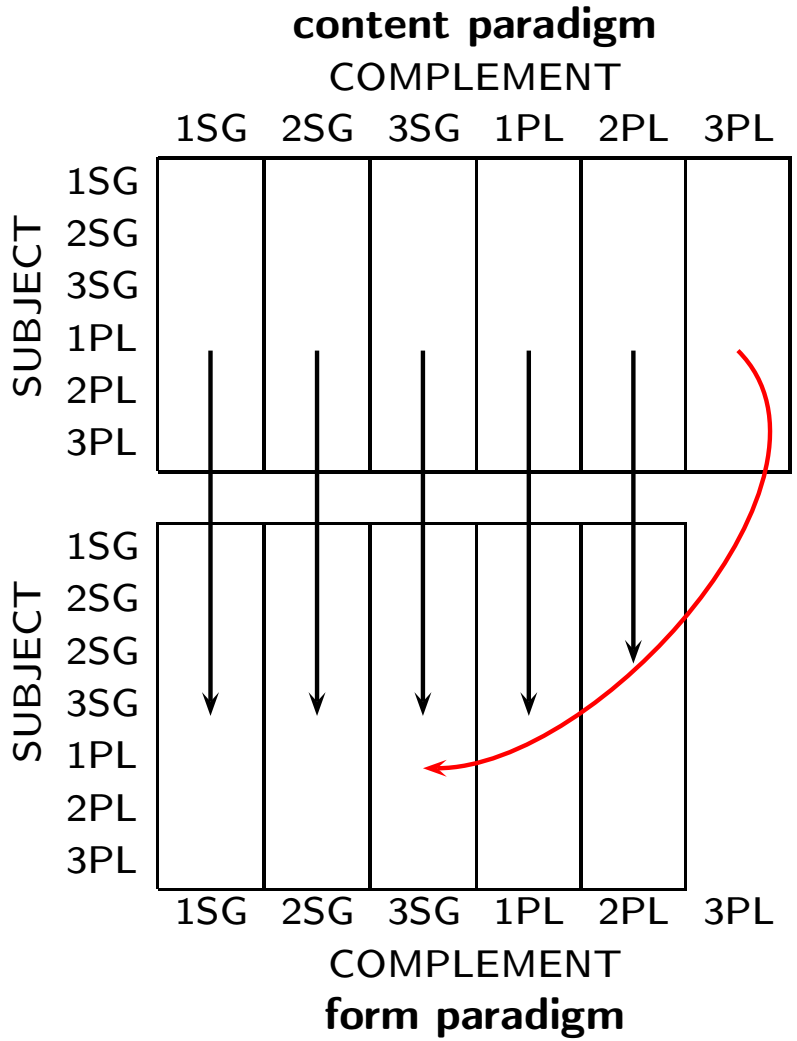
☞ Allows for a simple account of the celebrated prefix choice problem

Outline

A morphological mismatch

- Suppose we adopt Stump's (2006) distinction between the content paradigm and the form paradigm of a lexeme.
- Then the Laz systematic syncretism can be seen as a mismatch: content cells with features {CPL *3pl*} correspond to form cells with features {CPL *3sg*}

☞ Different from deponency: systematic, 'copy and paste' (Corbett, 2007)



Rules for prefixes (form paradigm)

- The following rules generate appropriate prefixes for the plain construction of divalent verbs.
  - $X_{\textbf{verb}}, \sigma : \{\text{CPL } \textit{1}\} \longrightarrow \text{m}X$
  - $X_{\textbf{verb}}, \sigma : \{\text{CPL } \textit{2}\} \longrightarrow \text{g}X$
  - $X_{\textbf{verb}}, \sigma : \{\text{SBJ } \textit{1}, \text{CPL } \textit{3}\} \longrightarrow \text{b}X$

		COMPLEMENT				
		1SG	2SG	3SG	1PL	2PL
SUBJECT	1SG	—	gdzirom	bdzirom	—	gdziromt
	2SG	mdzirom	—	dzirom	mdziromt	—
	3SG	mdziroms	gdziroms	dziroms	mdziroman	gdziroman
	1PL	—	gdziromt	bdziromt	—	gdziromt
	2PL	mdziromt	—	dziromt	mdziromt	—
	3PL	mdziroman	gdziroman	dziroman	mdziroman	gdziroman

Present of *dzir* 'see'

Rules for suffixes (form paradigm)

- Remember: all subparadigms have the exact same structure
- To highlight the structural unity, we organize rules in **gangs**, modelled as unordered rule blocks (Stump 2001, chap. 5)

SUBJECT \ COMPLEMENT	1SG	2SG	3SG	1PL	2PL	3PL	
1SG	A			D			A
2SG							
3SG	C			B			B
1PL	D						D
2PL							
3PL	B						B

$X_{verb}, \sigma : \{\} \longrightarrow \langle X, \sigma \rangle : A$
$X_{verb}, \sigma : \{\text{SBJ } 3\} \longrightarrow \langle X, \sigma \rangle : B$
$X_{verb}, \sigma : \{\text{SBJ } 3sg, \text{CPL } sg\} \longrightarrow \langle X, \sigma \rangle : C$
$X_{verb}, \sigma : \{\text{SBJ } 12pl\} \longrightarrow \langle X, \sigma \rangle : D$
$X_{verb}, \sigma : \{\text{SBJ } 12sg, \text{CPL } 12pl\} \longrightarrow \langle X, \sigma \rangle : D$

$$A : \begin{cases} X_{verb}, \sigma : \{\text{TNS } fut\} \longrightarrow X\text{are} \\ \text{Identity function default} \end{cases}$$

$$B : \begin{cases} X_{verb}, \sigma : \{\text{TNS } fut\} \longrightarrow X\text{anoren} \\ X_{verb}, \sigma : \{\text{TNS } prs\} \longrightarrow X\text{nan} \\ X_{I}, \sigma : \{\text{TNS } prs\} \longrightarrow X\text{an} \\ X_{verb}, \sigma : \{\} \longrightarrow X\text{n} \end{cases}$$

$$C : \begin{cases} X_{verb}, \sigma : \{\text{TNS } fut\} \longrightarrow X\text{asen} \\ X_{III}, \sigma : \{\text{TNS } prs\} \longrightarrow X\text{n} \\ X_{verb}, \sigma : \{\} \longrightarrow X\text{s} \end{cases}$$

$$D : \begin{cases} X_{verb}, \sigma : \{\text{TNS } fut\} \longrightarrow X\text{aten} \\ X_{verb}, \sigma : \{\} \longrightarrow X\text{t} \end{cases}$$

Outline

Hidden forms in the form paradigm

- The rules given thus far generate forms for the {CPL *3sg*} column in the form paradigm

☞ In fact, special measures would need to be taken to prevent these forms from being generated

- These forms never show up in the content paradigm in the plain construction

plain construction (form paradigm)

	1SG	2SG	3SG	1PL	2PL	3PL
1SG	—	g-∅	b-∅	—	g-t	b-∅
2SG	m-∅	—	∅-∅	m-t	—	∅-∅
3SG	m-n	g-n	∅-n	m-nan	g-nan	∅-nan
1PL	—	g-t	b-t	—	g-t	b-t
2PL	m-t	—	∅-t	m-t	—	∅-t
3PL	m-nan	g-nan	∅-nan	m-nan	g-nan	∅-nan

Plain vs. inverse in the form paradigm

☞ In terms of the form paradigm, the inverse construction is an **exact** reversal of the plain construction.

plain construction (form paradigm)

	1SG	2SG	3SG	1PL	2PL	3PL
1SG	—	g-∅	b-∅	—	g-t	b-∅
2SG	m-∅	—	∅-∅	m-t	—	∅-∅
3SG	m-n	g-n	∅-n	m-nan	g-nan	∅-nan
1PL	—	g-t	b-t	—	g-t	b-t
2PL	m-t	—	∅-t	m-t	—	∅-t
3PL	m-nan	g-nan	∅-nan	m-nan	g-nan	∅-nan

inverse construction (form paradigm)

1SG	—	m-∅	m-n	—	m-t	m-nan
2SG	g-∅	—	g-n	g-t	—	g-nan
3SG	b-∅	∅-∅	∅-n	b-t	-t	∅-nan
1PL	—	m-t	m-nan	—	m-t	m-nan
2PL	g-t	—	g-nan	g-t	—	g-nan
3PL	b-∅	∅-∅	∅-nan	b-t	∅-t	∅-nan

Interim conclusion

- Conclusion:

If the systematic directional syncretism from {CPL *3pl*} to {CPL *3sg*} is modelled as a morphological mismatch,

Then inversion is a true morphological reversal (in the form paradigm)

☞ Inversion can be modelled by a portmanteau rule of referral (all rule blocks):

$$X_{\textbf{verb}}, \sigma : \{\text{INV } +, \text{SBJ } \varphi, \text{CPL } \psi\} \longrightarrow$$
$$\langle X, \sigma / \{\text{INV } -, \text{SBJ } \psi, \text{CPL } \varphi\}\rangle : \textbf{all blocks}$$

Outline

Modelling morphological mismatches

- Remaining problem: how are we to model morphological mismatches?
- One solution: paradigm linkage (Stump, 2006; Hippisley, 2007)
- Here we propose an alternative approach we believe to be:
  - formally simpler
  - conceptually more clear
  - preferable in the case at hand
- No time for defending our case in general; we will just present our analysis of Laz

Morphomic features

- Assume a version of PFM as outlined in Stump 2001.
- We assume a single paradigm, structured by a single set of features, where:
  - Most features are relevant both to the interface with synsem and to the statement of realization rules; those we call morphosyntactic
  - Some features are relevant only to the interface with synsem: those we call pure content features
  - Some features are relevant only to the statement of realization rules; those we call morphomic
- Although there is a conceptual distinction between morphosyntactic, pure-content, and morphomic features, there is no formal distinction between the three.

Back to Iaz

- We assume a list-valued ARG-ST feature, which encodes morphosyntactic properties of arguments, in order of relative obliqueness. This is a pure content feature.
- We assume two morphomic features SET1 and SET2 which mediate the relation between ARG-ST values and rules of realization.
- Feature Cooccurrence Restrictions constrain the relation between the two series of features

$$\begin{cases} \text{ARG-ST } \langle \varphi, \ldots \rangle \Rightarrow \text{SET1 } \varphi \\ \text{ARG-ST } \langle \varphi, \{\text{PER } \tau\}, \ldots \rangle \Rightarrow \text{SET2 } \{\text{PER } \tau\} \\ \text{ARG-ST } \langle \varphi, \{\text{PER } \textit{3}\}, \ldots \rangle \Rightarrow \text{SET2 } \{\text{NB } \textit{sg}\} \\ \neg\text{ARG-ST } \langle \varphi, \{\text{PER } \textit{3}\}, \ldots \rangle \Rightarrow (\text{ARG-ST } \langle \varphi, \{\text{NB } \textit{pl}\}, \ldots \rangle \Leftrightarrow \text{SET2 } \{\text{NB } \textit{pl}\}) \end{cases}$$

- The FCRs implement exactly the content of the morphosyntactic mismatch: *3pl* complements on the content size correspond to a *3sg* SET2 value.
- All previously mentioned rules of realization are kept as is, just substituting SET1 to SBJ and SET2 to CPL.

☞ No formal innovation is needed.

Updated rules

- No modification of the system of realization rules, except attribute names

Prefixes

$X_{\textbf{verb}}, \sigma : \{\text{SET2 } 1\} \longrightarrow \text{m}X$

$X_{\textbf{verb}}, \sigma : \{\text{SET2 } 2\} \longrightarrow \text{g}X$

$X_{\textbf{verb}}, \sigma : \{\text{SET1 } 1, \text{SET2 } 3\} \longrightarrow \text{b}X$

Suffixes

$X_{\textbf{verb}}, \sigma : \{\} \longrightarrow \langle X, \sigma \rangle : A$

$X_{\textbf{verb}}, \sigma : \{\text{SET1 } 3\} \longrightarrow \langle X, \sigma \rangle : B$

$X_{\textbf{verb}}, \sigma : \{\text{SET1 } 3sg, \text{SET2 } sg\} \longrightarrow \langle X, \sigma \rangle : C$

$X_{\textbf{verb}}, \sigma : \{\text{SET1 } 12pl\} \longrightarrow \langle X, \sigma \rangle : D$

$X_{\textbf{verb}}, \sigma : \{\text{SET1 } 12sg, \text{SET2 } 12pl\} \longrightarrow \langle X, \sigma \rangle : D$

$$A : \left\{ X_{\textbf{verb}}, \sigma : \{\text{TNS } fut\} \longrightarrow \text{Xare} \right.$$

$$B : \begin{cases} X_{\textbf{verb}}, \sigma : \{\text{TNS } fut\} \longrightarrow \text{Xanoren} \\ X_{\textbf{verb}}, \sigma : \{\text{TNS } prs\} \longrightarrow \text{Xnan} \\ X_{\textbf{I}}, \sigma : \{\text{TNS } prs\} \longrightarrow \text{Xan} \\ X_{\textbf{verb}}, \sigma : \{\} \longrightarrow \text{Xn} \end{cases}$$

$$C : \begin{cases} X_{\textbf{verb}}, \sigma : \{\text{TNS } fut\} \longrightarrow \text{Xasen} \\ X_{\textbf{III}}, \sigma : \{\text{TNS } prs\} \longrightarrow \text{Xn} \\ X_{\textbf{verb}}, \sigma : \{\} \longrightarrow \text{Xs} \end{cases}$$

$$D : \begin{cases} X_{\textbf{verb}}, \sigma : \{\text{TNS } fut\} \longrightarrow \text{Xaten} \\ X_{\textbf{verb}}, \sigma : \{\} \longrightarrow \text{Xt} \end{cases}$$

Inversion

$X_{\textbf{verb}}, \sigma : \{\text{INV } +, \text{SET1 } \varphi, \text{SET2 } \psi\} \longrightarrow$
$\langle X, \sigma / \{\text{INV } -, \text{SET2 } \psi, \text{SET1 } \varphi\} \rangle : \textbf{all blocks}$

Sample analyses, 1

To be realized:

$\left\langle \text{DZIR}, \left\{ \text{PRF } -, \text{TNS } \textit{prs}, \text{ARG-ST } \langle \textit{1pl}, \textit{3pl} \rangle \right\} \right\rangle$

Consequences of FCRs:

$\left\langle \text{DZIR}, \left\{ \text{INV } -, \text{ SET1 } \textit{1pl}, \text{SET2 } \textit{3sg}, \ldots \right\} \right\rangle$

Applicable prefix rules:

$\text{X}_{\textbf{verb}}, \sigma : \{\text{SET1 } \textit{1}, \text{SET2 } \textit{3}\} \longrightarrow \text{bX}$

Applicable suffix rules:

$\text{X}_{\textbf{verb}}, \sigma : \{\} \longrightarrow \langle \text{X}, \sigma \rangle : A$

$\text{X}_{\textbf{verb}}, \sigma : \{\text{SET1 } \textit{12pl}\} \longrightarrow \langle \text{X}, \sigma \rangle : D$

Referred to:

$\text{X}_{\textbf{verb}}, \sigma : \{\} \longrightarrow \text{Xt}$

Final form: bdziromt

To be realized:

$\left\langle \text{DZIR}, \left\{ \text{PRF } -, \text{TNS } \textit{prs}, \text{ARG-ST } \langle \textit{3sg}, \textit{3pl} \rangle \right\} \right\rangle$

Consequences of FCRs:

$\left\langle \text{DZIR}, \left\{ \text{INV } -, \text{ SET1 } \textit{3sg}, \text{SET2 } \textit{3sg}, \ldots \right\} \right\rangle$

Applicable prefix rules:

none

Applicable suffix rules:

$\text{X}_{\textbf{verb}}, \sigma : \{\} \longrightarrow \langle \text{X}, \sigma \rangle : A$

$\text{X}_{\textbf{verb}}, \sigma : \{\text{SET1 } \textit{3}\} \longrightarrow \langle \text{X}, \sigma \rangle : B$

$\text{X}_{\textbf{verb}}, \sigma : \{\text{SET1 } \textit{3sg}, \text{SET2 } \textit{sg}\} \longrightarrow \langle \text{X}, \sigma \rangle : C$

Referred to:

$\text{X}, \sigma : \{\} \longrightarrow \text{Xs}$

Final form: dziroms

Sample analyses, 2

To be realized:

$$\left\langle \text{DZIR}, \left\{ \text{PRF } +, \text{TNS } \textit{prs}, \text{ARG-ST } \langle \textit{3pl}, \textit{3sg} \rangle \right\} \right\rangle$$

Consequences of FCRs:

$$\left\langle \text{DZIR}, \left\{ \text{INV } +, \text{ SET1 } \textit{3pl}, \text{SET2 } \textit{3sg}, \ldots \right\} \right\rangle$$

Referred to (by inversion):

$$\left\langle \text{DZIR}, \left\{ \text{INV } -, \text{ SET1 } \textit{3sg}, \text{SET2 } \textit{3pl}, \ldots \right\} \right\rangle$$

Applicable prefix rules:

none

Applicable suffix rules:

$X_{\textbf{verb}}, \sigma : \{\} \longrightarrow \langle X, \sigma \rangle : A$

$X_{\textbf{verb}}, \sigma : \{\text{SET1 } \textit{3}\} \longrightarrow \langle X, \sigma \rangle : B$

Referred to:

$X_{\textbf{verb}}, \sigma : \{\text{TNS } \textit{prs}\} \longrightarrow X\text{nan}$

Final form: udziunan

Advantage 1: FCRs

- Any purely morphological property can be modelled using morphomic features; in particular, inflection class information.
- This allows for a straightforward account of the fact that different inflection classes may correspond to different paradigm shapes.
- A case in point: in Laz,
  - congruent lexemes are plain when not perfect, inverted when perfect
  - ☞ CONGRUENT + $\Rightarrow$ (INV + $\Leftrightarrow$ PRF +)
  - noncongruent lexemes are inverted even when not perfect
  - ☞ CONGRUENT − $\Rightarrow$ INV +

Advantage 2: prefixes

- The analysis of person prefixes poses the same problems in Laz as in Georgian (e.g. Anderson 1992):
  - m is used whenever there is a 1st person complement
  - g is used whenever there is a 2nd person complement agreement
  - b is used:
    - With monovalent verbs having a 1st person subject
    - With divalent verbs having a 1st person subject and a 3rd person complement

☞ b is generally taken to be a 1st person subject agreement prefix

⇒ extrinsic rule ordering (Anderson 1992, Halle & Marantz 1993), multiple modes of rule application (Stump, 2001), etc.

- Under our assumptions, this is not necessary
- Assume a second morphological mismatch: monovalents have no complement, but they inflect as if they had a *3sg* complement.
- Technically: ARG-ST $\langle \varphi \rangle \Rightarrow$ SET2 {PER *3*, NB *sg*}
- Then nothing new is needed:
  - $X_{\textbf{verb}}, \sigma$: {SET2 *1*} $\longrightarrow$ mX
  - $X_{\textbf{verb}}, \sigma$: {SET2 *2*} $\longrightarrow$ gX
  - $X_{\textbf{verb}}, \sigma$: {SET1 *1*, SET2 *3*} $\longrightarrow$ bX

Conclusions

- Beautiful data set—see Lacroix 2009 for a much more detailed presentation
- The generalizations
  - Systematic syncretism + plain/inverse opposition
  - The plain/inverse opposition can be seen as a morphological reversal if the syncretism is seen as a morphological mismatch
- Theoretical claims
  - Morphological mismatches can/should be modelled using morphomic features
  - This is a new use of morphomic (a.k.a morphological) features
    - can not be reduced to morphosyntactic features with multiple interpretations (Stump 2005)
    - different from their use in the modelling of symmetrical (Baerman, *et al.* 2005)

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Laz vs. Georgian

		COMPLEMENT					
		1SG	2SG	3SG	1PL	2PL	3PL
SUBJECT	1SG	—	gdzirom	bdzirom	—	gdziromt	bdzirom
	2SG	mdzirom	—	dzirom	mdziromt	—	dzirom
	3SG	mdziroms	gdziroms	dziroms	mdziroman	gdziroman	dziroms
	1PL	—	gdziromt	bdziromt	—	gdziromt	bdziromt
	2PL	mdziromt	—	dziromt	mdziromt	—	dziromt
	3PL	mdziroman	gdziroman	dziroman	mdziroman	gdziroman	dziroman

Present of *dzir* 'see' in Laz

		COMPLEMENT					
		1SG	2SG	3SG	1PL	2PL	3PL
SUBJECT	1SG	—	mogk'lav	movk'lav	—	mogk'lavt	movklav
	2SG	momk'lav	—	mok'lav	mogvk'lav	—	mok'lav
	3SG	momk'lavs	mogk'lavs	mok'lavs	mogvk'lavs	mogk'lavt	mok'lavs
	1PL	—	mogk'lavt	movk'lavt	—	mogk'lavt	movk'lavt
	2PL	momk'lavt	—	mok'lavt	mogvk'lavt	—	mok'lavt
	3PL	momk'laven	mogk'laven	mok'laven	mogvk'laven	mogk'laven	mok'laven

Future of Georgian *mo-k'lav* 'kill' (Aronson 1990: 171)