

Features, structure, and morphological universals

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Acknowledgments

- ▶ collaborators:
 - Pt II-IV: Jungmin Kang, Beata Moskal, Peter Smith, Ting Xu
 - Part V: Uli Sauerland
- ▶ Language assistance: many people, see esp. Bobaljik (2012).
- ▶ Funding: NSF, A. von Humboldt Stiftung, UConn, American Philosophical Society

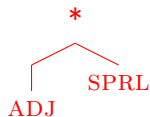
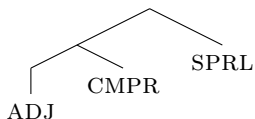
Part I:
*ABA

Bobaljik 2012: Comparative Suppletion

(1)	POS	CMPR	SPRL	
a.	A	A	A	<i>big – bigger – biggest</i>
b.	A	B	B	<i>good – better – best</i>
c.	A	B	C	<i>bonus – melior – optimus</i>
d.	A	B	A	<i>*good – better – goodest</i>
e.	A	A	B	<i>*good – gooder – best</i>

cf. Ultan 1972; apparent counterexamples to *ABA: %Basque 'good', %Karelian 'many', Bulgarian/Macedonian 'many' – see Bobaljik 2012

*ABA



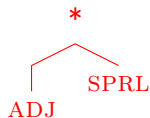
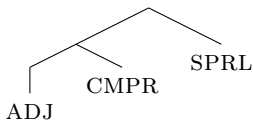
(2) Suppletion as Contextual Allomorphy

- GOOD → be(tt)- / ___] CMPR]
- GOOD → good

(3) Latin

- GOOD → opt- / ___] CMPR] SPRL]
- GOOD → mel- / ___] CMPR]
- GOOD → bon-

*ABA

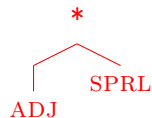
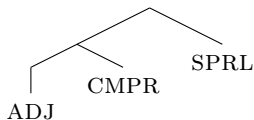
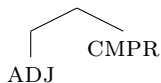


(4) Complexity Condition? – Some meanings are too complex for a single (functional) morpheme

- ▶ $\llbracket -est \rrbracket (R)(x)=1$ iff $\forall y[y \neq x \rightarrow \max\{d:R(d)(x)=1\} > \max\{d:R(d)(y)=1\}]$
- ▶ $CMPR = > = \llbracket -er \rrbracket (d)(d')=1$ iff $\max(d) > \max(d')$
- ▶ $SPRL =$ 'than all (others)'

cf. Kayne (2005), Nanosyntax, etc.

*ABA

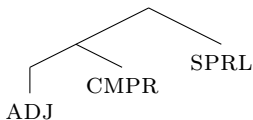


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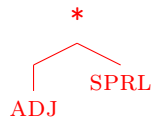
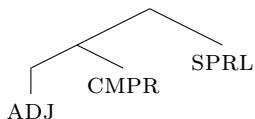


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*ABA



(2) Suppletion as Contextual Allomorphy

a. GOOD → be(tt)- / ___] CMPR]

b. GOOD → good

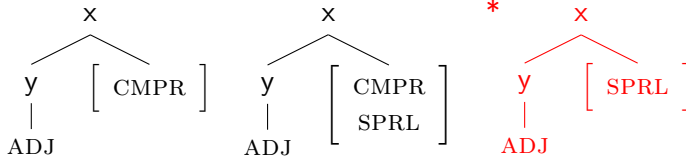
(5) Latin

a. GOOD → opt- / ___] CMPR] SPRL]

b. GOOD → mel- / ___] CMPR]

c. GOOD → bon-

(6) Featural Containment?



(2) Suppletion as Contextual Allomorphy

- GOOD \rightarrow be(tt)- / $___$] CMPR]
- GOOD \rightarrow good

Transparent Containment

(7)

	CMPR	SPRL
a. Persian:	X-tær	X-tær-in
b. Cimbr. German:	X-ar	X-ar-ste
c. Batsbi:	X-vx	X-vx-č
d. Latvian:	X-âk	vis-X-âk
e. Czech:	X-ši	nej-X-ši
f. Hungarian:	X-bb	leg-X-bb
g. Chukchi:	X-əŋ	ənan-X-əŋ
h. Cherokee:	X-ka/ya/...	w-X-kãʔi/yãʔi/...
i. Ubykh:	ç'a-X	a-ç'a-X
j. Latin:	X-ior < -ios	X-issimus < -is-m.mo-s
k. P-IE:	*X- <u>i</u> os-, *X-is-	*X-is-to-s

Today's Goals

- ▶ *ABA in case and number (Smith et al. 2016)
- ▶ locality as an argument for structural decomposition in pronouns
 - ▶ of case (cf. Caha 2009)
 - ▶ of number (cf. Harbour 2007)
- ▶ An alternative: Minimize Features (with U. Sauerland)

Part II:

Pronominal Suppletion I

Case

with Peter Smith, Beata Moskal, Jungmin Kang, Ting Xu

Pronominal Suppletion

Suppletion for case and number in pronouns (cf. Moskal, 2015a,b)

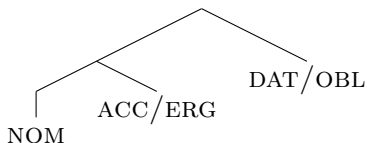
(8) Icelandic	NOM	ACC	DAT	GEN	
1SG	ég	mig	mér	mín	ABBB
2SG	þú	þig	þér	þín	AAAA
1PL	við	okkur	okkur	okkar	ABBB
2PL	þið	ykkur	ykkur	ykkar	ABBB
					*ABBA

Smith, et al.: Case in Pronouns

(9) Case Hierarchy (cf. Blake 2001, Caha 2009)

NOM > ACC/ERG > DATIVE/OBLIQUE

(10)



(11) Specific prediction: *ABA

- ▶ Caveat: genitive set aside

Smith et al., Case in Pronouns

- ▶ Original sample: 160 languages
 - ▶ 76 have no suppletion for case
 - ▶ 19 have suppletion, but < 3 cases (AB)

Cognate Triple

► Indo-European 1sg

(12)	Form	Nominative	Accusative	Dative	Other
	Lithu	àš	manè	mán	man-
	Russian	ja	menja	mnje	mn-
	Germ	ich	mich	mir	
	Latin	ego	mē	mihi	m-
	Greek	egō	eme	emoi	
	etc.				

As with Germanic *good* ~ *bett-*, this is 1 cognate triple.

Smith et al., Case in Pronouns

(13) Suppletive Cognate Triples

Pattern	Prediction	<i>n</i> Attested	Representative Languages
AAA	✓	numerous	Lezgian, W. Greenlandic, etc.
ABB	✓	24	Indo-European, Evenki, Khakas, Chuvash, Itelmen
ABC	✓	1	Khinalugh
AAB	?	8	Hunzib, Wardaman
ABA	✗	(1)	Archi 2PL

Archi apparent ABA?

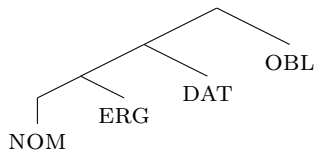
(14)

	ABS	ERG	DAT	OBL
'who'	k ^w i	ḥi-	ḥa-	-
1SG	zon	za-ri	◆-ez	za-
1PL.EX	nen	nen	◆-el	la-
1PL.IN	nen	nen+◆	◆-el-a-◆-u	la-
2SG	un	un	wa-s	wa-
2PL	ž ^w en	ž ^w en	wiš	ž ^w a-

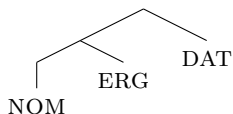
Some Archi dative pronouns show noun class agreement with the clausemate absolutive: ◆ = { w-, d-, b- ∅ }. See Polinsky, Radkevich and Chumakina.

Archi apparent ABA?

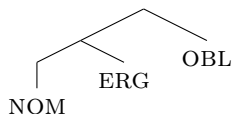
(15)



(16) a.



b.



Archi apparent ABA? (Moskal 2015)

(17) 2ND PLURAL

		2ND PLURAL	
a.	ABS	\check{z}^w	-en
	ERG	\check{z}^w	-en
	GEN	w-	iš
	DAT	w-	ež
	OBL		\check{z}^w a-

1ST SINGULAR

b.		z	-on
		za	-ri
	◆-	is	
	◆-	ez	
		za-	

◆ = { w-, d-, b- ∅ }

AAB

▶ German

(18)

	Nominative	Accusative	Dative
3.sg.m	er	ihn	ihm
3.sg.f	sie	sie	ihr
3.pl	sie	sie	ihnen

▶ Krongo

(19)

Form	Subject	Object	Dative	Ablative	Locative
1sg	àʔàŋ	àʔàŋ	àʔàŋ	nkàtí	kàtí
2sg	ùʔùŋ	ùʔùŋ	ùʔùŋ	nkòtú	kòtú
1ex	óow	óow	óow	nkòtíg	kòtíg

AAB as syncretism = AB

- (20) Convergent evidence: Stem-alternations in nouns (case);
from McFadden (2014)

	Finnish	Icelandic	Latin	Tamil
	'person'	'man'	'journey'	'tree'
NOM	ihmi-nen	mað-ur	it-er	maram
ACC	ihmi-se-n	mann-Ø	it-er	maratt-ai
PART/GEN	ihmi-s-tä	mann-s	itiner-is	maratt-Ø
INESS/DAT	ihmi-se-ssä	mann-i	itiner-ī	maratt-ukku

NOM > ACC > OTHER : *ABA, (*)AAB only via
syncretism (Latin)

AAB as syncretism = AB

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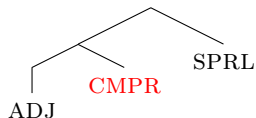
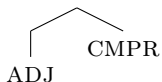
AAB

(21) Nakh-Dahestanian 2SG

	ABS	ERG	DAT	
Aghul	wun	wun	was	{A=A}A
Tsez	mi	mi	deb-er	{A=A}B
Hinuq	me	me	ded-ez	{A=A}B
Archi	un	un	wa-s	{A=A}B
Andi	mín	min	du-j	AAB
Chamalal	mì:	mín	du-ła	AAB
Inxokvari	mó	me	dub-ul	AAB
Khinalugh	vì	va	oX(ir)	AAB
Avar	mun	du-la	du-r	ABB

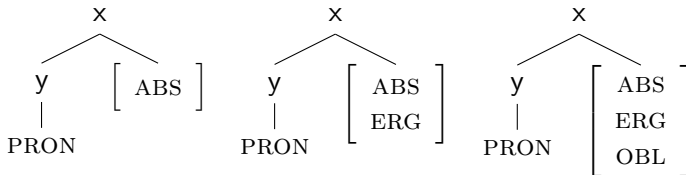
Locality: *AAB

(22) *The Containment Hypothesis*



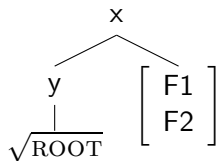
(23) *good – gooder – best

- a. GOOD → be(tt)- /] ... SPRL]
- b. GOOD → good

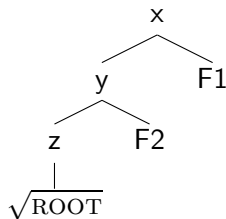
(24) Case Containment (Smith et al., *NELS*)

(25) Bundling and Containment

a.

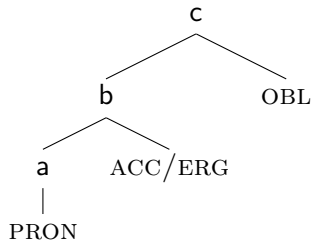


b.



Root Allomorphy conditioned by F1? a - yes, b - no

(26)



ACC/ERG is not (always) an intervener

Part III:

Pronominal Suppletion II

Number

- Like case suppletion, number suppletion in pronouns is ubiquitous, but by no means universal.

(27) Icelandic

	NOM	ACC	DAT	GEN
1SG	ég	mig	mér	mín
1PL	við	okkur	okkur	okkar
2SG	þú	þig	þér	þín
2PL	þið	ykkur	ykkur	ykkar

(28) Mandarin

	SG	PL
1	wǒ	wǒ-men
2	nǐ	nǐ-men
3	tā	tā-men

III: Number in Pronouns (First pass)

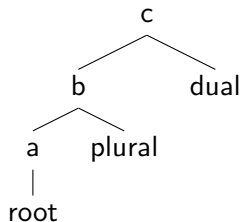
- (29) ~80 languages, few with 3 number values and pronominal suppletion for number.
- (30) SINGULAR > PLURAL > DUAL (Corbett, 2000)
- (31) No language has a dual unless it has a plural. (Greenberg, Universal 34)

III: Number in Pronouns (First pass)

(32) Manam containment (demonstrative)

	SG	PL	DU
'that'	ɲára-∅	ɲára-di	ɲara-dí-a-ru

(33)



(34)

Pattern	Prediction	<i>n</i> attested	Representative languages
AAA	✓	numerous	Mapuche, Dumi
ABB	✓	37	Kayardild, Kham, Jingulu
ABC	✓	13	Yimas, Flinders Island
ABA	✗	–	n/a
AAB	?	–	n/a

ABB Patterns

(35) Lavukaleve (du = pl + /)

	SG	PL	DU
1INCL		me	me-l
1EXCL	ngai	e	e-l
2	inu	imi	imi-l

(36) Hua (du = pl + a'a)

	SG	PL	DU
1	d-gai	r-gai	r-a'a-gai
2	h-gai	p-gai	p-a'a-gai
3	∅-gai	p-gai	p-a'a-gai

ABC Patterns

► Yimas

(37)

	SINGULAR	PLURAL	DUAL
1st	ama	ipa	kapa
2nd	mi	ipwa	kapwa

► Kham possessive, reflexive pronouns (Takale)¹

(38)

	SINGULAR	PLURAL	DUAL
3rd poss	o-/u-	ya-	ni-
3rd refl	ol	ya:	ni:

¹h/t Kenyon Branam

ABA: Unattested

We did not find any instances of ABA patterns in number in pronouns. When the plural form is suppletive, so too is the dual form.

But...

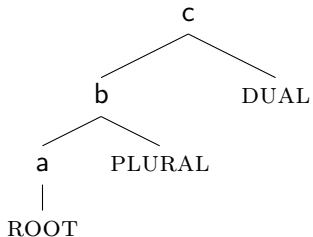
Nouns

(39)

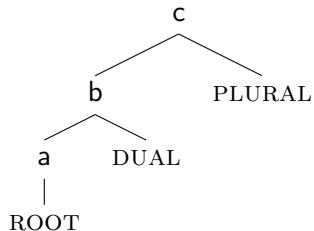
Language	Singular	Dual	Plural	Gloss
Hopi	wùuti	wùutit	momoyam	'woman'
Lavukaleve	vo'vou	vo'voul	tulav	'boy'
Yimas	panmal	panmalc-rm	pay-um	'man'
Slovenian	člóvek	člóvek-a	ljudj-e	'person'

Containment

(40) Plural in Dual



(41) Dual in Plural



(42) Sursurunga (Harbour)

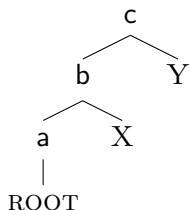
	SG	PL	DL	PCL	GR.PCL
1IN		git	git-ar	git-tul	git-hat
1EX	iau	gim	gi-ur	gim-tul	gim-hat
2	iáu	gam	ga-ur	gam-tul	gam-hat
3	-i/on/ái	di	di-ar	di-tul	di-hat

(43) Mokilese (Harbour)

	SG	DL	PL	GR. PCL
1IN		kisa	kisa-i	kihs (kisa- <i>i</i>)
1EX	ngoah	kama	kama-i	kimi (kama- <i>i</i>)
2	koah	kamwa	kamwa-i	kimwi (kamwa- <i>i</i>)
3	ih	ara/ira	ara-i/ira-i	ihr (ara/ira- <i>i</i>)

- ▶ The core predictions are contingent:

(44)



(45)

- ROOT → B /] X
- ROOT → A

- ▶ If Y contains X (contains unmarked), then *ABA

Hopi containment

Confirming evidence - in Hopi, containment supports the alternative embedding.

Du: -m or -t

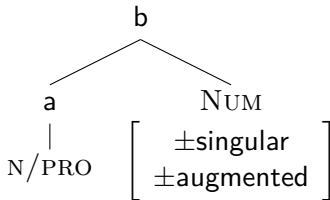
Pl: Dual + partial reduplication

(46) Hopi (SG > DU > PL)

	SG	DU	PL
'person'	sino	sino-t	sino-m
'horse'	kawayo	kawayo-t	kawayo-m
'donkey'	mooro	mooro-t	moo-moro-t
'child/young'	tsay	tsoayo-m	tsoa-tsoayo-m
'woman'	wùuti	wùuti-t	momoyam

Number: Harbour_{Lite}

(47)



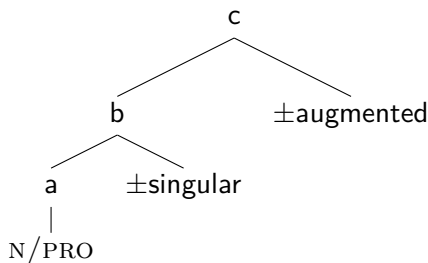
(48)

	SG	AUG
singular	+	n/a
dual	-	-
plural	-	+

Number - Harbour

- ▶ \pm singular must combine first

(49)

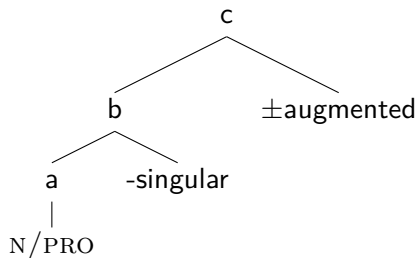


- ▶ Greenberg's U 34: no language can make a subdivision of the non-singulars unless it first makes a division into \pm singular

Number - Harbour

- ▶ \pm augmented is only contrastive with [-singular]

(50)

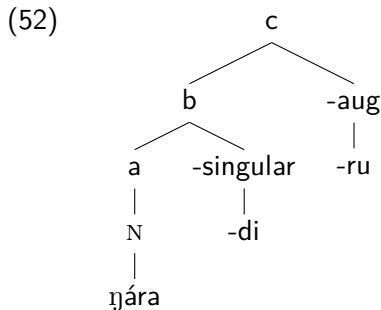


(51)

	SG	AUG
singular	+	
dual	-	-
plural	-	+

- ▶ representation: sufficient to mark only one value of [\pm aug]

Marked Dual: Manam



(53) 'that'

SG ŋára

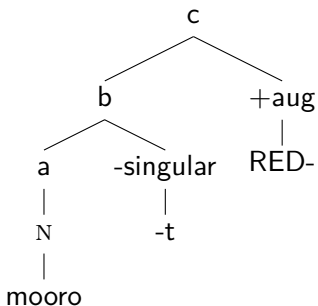
PL ŋára-di

DU ŋara-dí-a-ru

- ▶ Dual does not contain “plural”
- ▶ Dual contains “unmarked non-singular”

Marked Plural: Hopi

(54)



(55) 'donkey'

SG mooro

DU mooro-t

PL moo-mooro-t

- ▶ Plural does not contain “dual”
- ▶ Plural contains “unmarked non-singular”

► Universal_{Number} 1 [UG34 restated]

(56) No language has a dual unless it has a plural.

(57) SINGULAR > NON-SINGULAR > DUAL

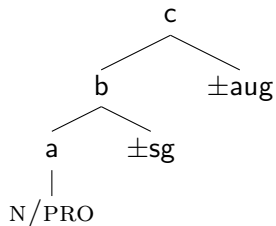
► Universal_{Number} 2

(58) Suppletion tracks structure

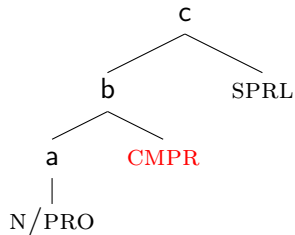
singular = dual \neq plural	\leftrightarrow	root] -sg] plural]
singular = plural \neq dual	\leftrightarrow	root] -sg] dual]
singular \neq plural = dual		root] -sg ...

Number: Harbour *Split*

(59)



(60)

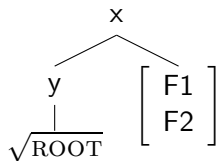


- (61) Hopi a. WOMAN → moya- / ___] ... +AUG]
 b. WOMAN → wùuti
- (62) N/A a. GOOD → be- / ___] ... SPRL]
 b. GOOD → good

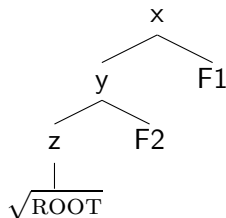
Part IV: Locality and Structure

(63) Bundling and Containment

a.



b.

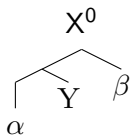


Root Allomorphy conditioned by F1? a - yes, b - no

Locality in X^0

(64) β may condition α iff there is no Y , such that ...

$\alpha \dots Y \dots \beta$

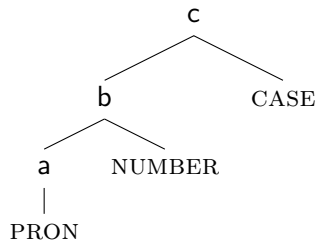


(64) β may condition α iff there is no Y , such that ...

$\alpha \dots Y \dots \beta$

- (65)
- Y is any node (Super Strict Locality, Adger et al)
 - linear adjacency: Y is overt (Embick 2010)
 - Y is a 'cyclic' node (Bobaljik 2012)
 - Y is a (cyclic) node dominating a cyclic node (Embick 2010, Moskal 2015)
 - Y is a word boundary (Bobaljik/Harley in press: no)

(66)



II: Case in Pronouns

(67) Khakas (SMG)

	NOMINATIVE	ACCUSATIVE	DATIVE ...
3SG	ol	ani	agaa
3PL	o-lar	o-lar-ni	o-lar-ga

⇒ In Khakas, overt number marking between the pronominal stem and case appears to block case-driven suppletion.

Tamil pronouns

(68)	DIRECT	GEN/OBL	DATIVE
1SG	naan	en	en-akku
1PL.EX	naan-ga(!)	en-ga(!)	en-ga!-ukku
2SG	nii	on	on-akku
2PL	niin-ga(!)	on-ga(!)	on-ga!-ukku

See Moskal (2015); Moskal & Smith (2015), for further discussion, Calabrese for a morpho-phonological alternative.

Locality in rules?

(69) Tamil

a. 2 → on / ___] ... CASE]

b. 2 → niin

(70) Khakas

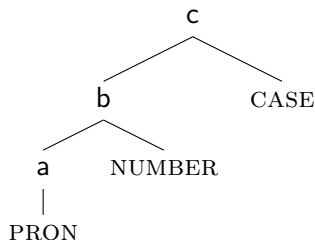
a. 3 → an / ___] CASE]

a./ 3 → an / ___] ... CASE]

b. 3 → ol

See also Moskal & Smith (2015).

(71)



NUMBER is not always an intervener

⇨ Interim conclusion: no strict linear adjacency condition on suppletion (contra Embick 2010, others).

worst case: some degree of arbitrariness in interveners, cf. D'Alessandro & Scheer (2015)

Locality

(64) β may condition α iff there is no X, such that ...

$\alpha \dots X \dots \beta$

- (60)
- ~~X is any node (Super Strict Locality, Adger et al)~~
 - ~~linear adjacency: X is overt (Embick 2010)~~
 - X is a 'cyclic' node (Bobaljik 2012)
 - X is one node above a cyclic node (Moskal 2015)
 - X is a word boundary ? (Bobaljik/Harley: no)

Part V:
Minimal Features *ABA without containment
with Uli Sauerland

*ABA without containment

(72)

$+\alpha$	$+\alpha$	
	$+\beta$	$+\beta$

a.

$$\begin{aligned} [+ \alpha, + \beta] &\mapsto B \\ [+ \alpha] &\mapsto A \\ [+ \beta] &\mapsto C \end{aligned}$$

b.

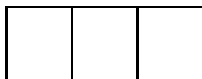
$$\begin{aligned} [+ \beta] &\mapsto B \\ [+ \alpha] &\mapsto A \end{aligned}$$

c.

$$\begin{aligned} [+ \alpha] &\mapsto A \\ [+ \beta] &\mapsto B \end{aligned}$$

Features as addresses for paradigm cells

(73)



(74)

- a. f_{100}
- b. f_{010}
- c. f_{001}
- d. f_{110}
- e. f_{101}
- f. f_{011}
- g. f_{111}

Features as addresses for paradigm cells

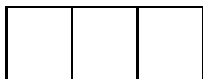
(75) **Maximal Differentiation:** The model must be able to generate the maximally differentiated partition.

Minimal Features: The model must use the minimal number of features needed to satisfy Maximal Differentiation.

(76) Feature Intersection $f_{110} \cap f_{011} = f_{010}$

Fails: *Max Differentiation

(77)

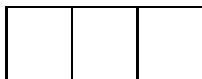


(78)

- a. f_{100}
- b. f_{010}
- c. f_{001}
- d. f_{110}
- e. f_{101}
- f. f_{011}
- g. f_{111}

Fails: *Max Differentiation

(79)



(80)

- a. f_{100}
- b. f_{010}
- c. f_{001}
- d. f_{110}
- e. f_{101}
- f. f_{011}
- g. f_{111}

Description: OK

Fails: *Minimal Features

(81)



(82)

a. $f_{001} \mapsto C$

b. $f_{011} \mapsto B$

c. $f_{111} \mapsto A$

(83)

a. f_{100}

b. f_{010}

c. f_{001}

d. f_{110}

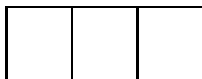
e. f_{101}

f. f_{011}

g. f_{111}

Minimal Valid Analysis

(84)



(85)

- a. $f_{110} \cap f_{011} \mapsto B$
- b. $f_{011} \mapsto C$
- c. $f_{110} \mapsto A$

(86)

- a. f_{100}
- b. f_{010}
- c. f_{001}
- d. f_{110}
- e. f_{101}
- f. f_{011}
- g. f_{111}

Minimal Valid Analysis = *ABA without containment

(87)

$+\alpha$	$+\alpha$	
	$+\beta$	$+\beta$

a.

$$\begin{aligned} [+ \alpha, + \beta] &\mapsto B \\ [+ \alpha] &\mapsto A \\ [+ \beta] &\mapsto C \end{aligned}$$

b.

$$\begin{aligned} [+ \beta] &\mapsto B \\ [+ \alpha] &\mapsto A \end{aligned}$$

c.

$$\begin{aligned} [+ \alpha] &\mapsto A \\ [+ \beta] &\mapsto B \end{aligned}$$

Empirical Considerations?

*ABA Superlatives; Case; Number

(88) Superlatives

Czech: 'young' **mlad-ý** **mlad-ší** nej-**mlad-ší**

(89) Case: Nom - Acc - Dat: / Abs - Erg - Dat

Khanty: 1sg ma ma:-ne:m ma:-ne:m-na
2sg luw luw-e:l luw-e:l-na

(90) Number: Sg - Pl - Du / Sg - Pl - Du

Manam 'that' ŋára-Ø ŋára-di ŋara-dí-a-ru

*ABA in person? (Vanden Wyngaerd 2016)

Vertical Person Syncretisms in pronouns (Baerman, Brown & Corbett; Cysouw 2013)

(91)

	Russian		Awa		Nez Perce	
	sg	pl	sg	pl	sg	pl
1	ja	my	ne	ite	'iin	núun
2	ty	vy	ade	ite	'iim	'imé
3	on(a)	oni	we	se	'ipí	'imé

Lack of evidence for containment

Person Features

Vertical Person Syncretisms in pronouns (Baerman, Brown & Corbett; Cysouw 2013)

(92)

	Containment	Minimal Features
1	[PERSON, PARTICIPANT, AUTHOR]	f_{110}
2	[PERSON, PARTICIPANT]	$f_{110} \cap f_{011}$
3	[PERSON]	f_{011}

Proof of concept

To be done: Significant literature on person syncretism

Growth

(93) For 7-cells:

a. $f_{1111000}$

b. $f_{1100110}$

c. $f_{0110011}$

▶ *ABAxxxx

▶ *xxxxABA

Conclusions

- ▶ * ABA: structure
 - adj positive < comparative < superlative (B)
 - case unmarked < dependent < oblique (SMXKB)
 - num bare < [-singular] < [±]augmented (SMXKB)
- ▶ (*)AAB: locality
 - ▶ Featural complexity is hierarchically represented as structural complexity
 - ▶ ... and constrained by familiar types of syntactic locality (BH)
- ▶ *ABA from feature logics other than containment
 - ▶ Towards a general theory of features (BS)

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