Polyfunctionality and the variety of inflectional exponence relations

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Exponence relations

In inferential-realizational theories of inflection, the only grammatically significant relation that exists between inflectional markings and morphosyntactic properties is that of exponence (Stump 2001:11).

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Exponence relations

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Variable affix ordering and morphotactic conditioning reveal that affixes participate in three sorts of exponence relations

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inherent

Exponence relations

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Variable affix ordering and morphotactic conditioning reveal that affixes participate in three sorts of exponence relations:

inherent,

positional

Exponence relations

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Variable affix ordering and morphotactic conditioning reveal that affixes participate in three sorts of exponence relations:

inherent,

positional and

conflated.

Exponence relations

But:

Variable affix ordering and morphotactic conditioning reveal that affixes participate in three sorts of exponence relations:

inherent,

positional and

conflated.

The latter two relations contribute to the polyfunctionality of a language's inflectional morphology, as evidence from Swahili reveals.

Outline

1. Inherent, positional and conflated exponence in Swahili verb morphology
2. Accounting for inherent and positional exponence: inherent exponence declarations and sequencing rules
3. Accounting for conflated exponence: conflated exponence declarations
4. Discussion & summary

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1.

Inherent, positional and conflated exponence in Swahili verb morphology

Swahili verbal concords

Person	Gender	Singular		Plural	
1st		*ni-*		*tu-*	
2nd		(sbj.)	(obj.)	(sbj.)	(obj.)
		u-	*ku-*	*m-*	*wa-*
3rd	m-wa	*a-*	*m-*	*wa-*	
	m-mi	*u-*		*i-*	
	ki-vi	*ki-*		*vi-*	
	ji-ma	*li-*		*ya-*	
	n-n	*i-*		*zi-*	
	u-n	*u-*		*zi-*	

Swahili verbal concords

Person	Gender	Singular		Plural	
1st		*ni-*		*tu-*	
2nd		(sbj.) *u-*	(obj.) *ku-*	(sbj.) *m-*	(obj.) *wa-*
3rd	m-wa	*a-*	*m-*	*wa-*	
	m-mi	*u-*		*i-*	
	ki-vi	*ki-*		***vi-***	
	ji-ma	*li-*		*ya-*	
	n-n	*i-*		*zi-*	
	u-n	*u-*		*zi-*	

Swahili verbal concords

vi-

is an exponent of

{{GEND:ki-vi, PER:3, NUM:plural}}

Swahili verbal concords

vi-

is an exponent of

{{GEND:ki-vi, PER:3, NUM:plural}}

This prefix is used in three different ways in Swahili verb morphology.

Swahili verbal concords

vi-

is an exponent of

{{GEND:ki-vi, PER:3, NUM:plural}}

= σ

Subject agreement in Swahili

1

Vi–tabu ***vi–****me–anguka.*
σ–book **SBJ:σ–**COMPL–fall.down
‘The books have fallen down.’

Object agreement in Swahili

2

*U–me–**vi**–ona* *vi–tabu?*

2SG.SBJ–COMPL–**OBJ:σ–**see σ–book

‘Have you seen the books?’

Swahili relative affixes

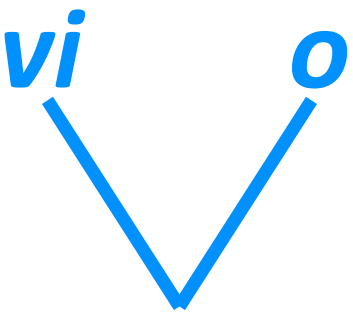
3

vi–tabu	*a–vi–taka–**vy.o***	*Hamisi*
σ–book	SBJ:CL.**m**–OBJ:σ–want–**REL:σ**	Hamisi.CL.**m**

‘the books which Hamisi wants’

Swahili relative affixes

3



vi–tabu *a–vi–taka–**vy.o*** *Hamisi*

σ–book SBJ:CL.**m**–OBJ:σ–want–**REL:σ** Hamisi.CL.**m**

‘the books which Hamisi wants’

Swahili relative affixes

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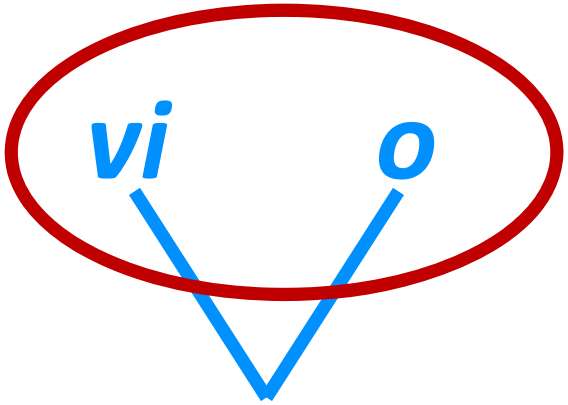


special morphotactics

vi–tabu	*a–vi–taka–**vy.o***	*Hamisi*
σ–book	SBJ:CL.**m**–OBJ:σ–want–**REL:σ**	Hamisi.CL.**m**

‘the books which Hamisi wants’

Three types of exponence

vi-

inherent	{{ki-vi, 3, plural}}

Three types of exponence

vi-

inherent	{{ki-vi, 3, plural}}

vi- invariably has this content (though it never has ONLY this content)

Three types of exponence

vi-

inherent	{{ki-vi, 3, plural}}
positional	{{sbj, ki-vi, 3, plural}}

Three types of exponence

vi-

inherent	{{ki-vi, 3, plural}}
positional	{{sbj, ki-vi, 3, plural}} {{obj, ki-vi, 3, plural}}

Three types of exponence

vi-

inherent	{{ki-vi, 3, plural}}
positional	{{sbj, ki-vi, 3, plural}} {{obj, ki-vi, 3, plural}}

vi- has this content in different positions

Three types of exponence

vi-

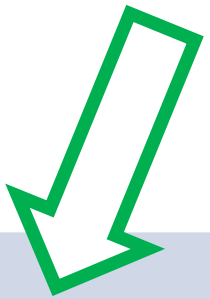
inherent	{{ki-vi, 3, plural}}
positional	{{sbj, ki-vi, 3, plural}} {{obj, ki-vi, 3, plural}}
conflated	{{rel, ki-vi, 3, plural}}

Three types of exponence

vi-

inherent	{{ki-vi, 3, plural}}

vi- has this content when conflated with ***-o***



conflated	{{rel, ki-vi, 3, plural}}

2.
Accounting for inherent and positional exponence

Accounting for inherent and positional exponence

An English rule of exponence

X, N, {plural} → X*s*

Accounting for inherent and positional exponence

An English rule of exponence

X, N, {plural} → X*s*

content expressed by *-s*

morphotactics of *-s*

Accounting for inherent and positional exponence

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Accounting for inherent and positional exponence

The distinction between inherent and positional exponence suggests that rules of exponence should actually consist of two independent parts:

- **exponence declarations** specify inherent exponence;
- **sequencing rules** specify an exponent's linear ordering and its positional exponence.

∴ One source of inflectional polyfunctionality: a formative with fixed inherent exponence acquires different positional exponence from different sequencing rules.

Swahili verb morphology

Inherent exponence declarations

Tense affixes

⟦ *ta*, {fut} ⟧
⟦ *li*, {past} ⟧
⟦ *me*, {completive} ⟧

Noun-class concords

⟦*u*, {{ sbj 2 sg }}⟧
⟦*m*, {{ sbj 2 pl }}⟧
⟦*a*, {{ sbj m-wa 3 sg }}⟧
⟦*ku*, {{ obj 2 sg }}⟧
⟦*wa*, {{ obj 2 pl }}⟧
⟦*m*, {{ obj m-wa 3 sg }}⟧
⟦*ni*, {{ m-wa 1 sg }}⟧

⟦*tu*, {{ m-wa 1 pl }}⟧
⟦*wa*, {{ m-wa 3 pl }}⟧
⟦*u*, {{ m-mi 3 sg }}⟧
⟦*i*, {{ m-mi 3 pl }}⟧
⟦*ki*, {{ ki-vi 3 sg }}⟧
⟦*vi*, {{ ki-vi 3 pl }}⟧

⟦*li*, {{ ji-ma 3 sg }}⟧
⟦*ya*, {{ ji-ma 3 pl }}⟧
⟦*i*, {{ n-n 3 sg }}⟧
⟦*zi*, {{ n-n 3 pl }}⟧
⟦*u*, {{ u-n 3 sg }}⟧
⟦*zi*, {{ u-n 3 pl }}⟧

Swahili verb morphology

Inherent exponence declarations

Tense affixes

⟦ *ta*, {{

⟦ *li*, {{

⟦ *me*, {{

Noun-

⟦*u*, {{ }}⟧

⟦*m*, {{ }}⟧

⟦*a*, {{ sbj m-wa 3 sg }}⟧

⟦*ku*, {{ obj 2 sg }}⟧

⟦*wa*, {{ obj 2 pl }}⟧

⟦*m*, {{ obj m-wa 3 sg }}⟧

⟦*ni*, {{ m-wa 1 sg }}⟧

⟦*u*, {{ m-mi 3 sg }}⟧

⟦*i*, {{ m-mi 3 pl }}⟧

⟦*ki*, {{ ki-vi 3 sg }}⟧

⟦*vi*, {{ ki-vi 3 pl }}⟧

⟦*i*, {{ n-n 3 sg }}⟧

⟦*zi*, {{ n-n 3 pl }}⟧

⟦*u*, {{ u-n 3 sg }}⟧

⟦*zi*, {{ u-n 3 pl }}⟧

⟦X, σ⟧

means

‘affix X is an exponent of property set σ.’

Swahili verb morphology

Inherent exponence declarations

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⟦ *ta*, {fut} ⟧
⟦ *li*, {past} ⟧
⟦ *me*, {completive} ⟧

Noun-class concords

⟦*u*, {{ sbj 2 sg }}⟧
⟦*m*, {{ sbj 2 pl }}⟧
⟦*a*, {{ sbj m-wa 3 sg }}⟧
⟦*ku*, {{ obj 2 sg }}⟧
⟦*wa*, {{ obj 2 pl }}⟧
⟦*m*, {{ obj m-wa 3 sg }}⟧
⟦*ni*, {{ m-wa 1 sg }}⟧

⟦*tu*, {{ m-wa 1 pl }}⟧
⟦*wa*, {{ m-wa 3 pl }}⟧
⟦*u*, {{ m-mi 3 sg }}⟧
⟦*i*, {{ m-mi 3 pl }}⟧
⟦*ki*, {{ ki-vi 3 sg }}⟧
⟦*vi*, {{ ki-vi 3 pl }}⟧

⟦*li*, {{ ji-ma 3 sg }}⟧
⟦*ya*, {{ ji-ma 3 pl }}⟧
⟦*i*, {{ n-n 3 sg }}⟧
⟦*zi*, {{ n-n 3 pl }}⟧
⟦*u*, {{ u-n 3 sg }}⟧
⟦*zi*, {{ u-n 3 pl }}⟧

Affix positions in Swahili verb morphology

negative prefix *ha-*	subject agreement	tense or negative prefix *si-*	object agreement	verb root	final vowel	relative suffix
–4	–3	±2	–1		1	±2

Positional exponence

negative prefix *ha-*	subject agreement	tense or negative prefix *si-*	object agreement	verb root	final vowel	relative suffix
–4	–3	±2	–1		1	±2

Vi-tabu *vi-me-anguka.*

σ-book SBJ:σ-COMPL-fall.down

‘The books have fallen down.’

Positional exponence

When it appears in affix position –3, *vi-* is a positional exponent of subject agreement.

negative prefix *ha-*	subject agreement	tens… nega… pref…			…lative …uffix
–4	–3	±2	–1	1	±2

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negative prefix *ha-*	subject agreement	tense or negative prefix *si-*	object agreement	verb root	final vowel	relative suffix
–4	–3	±2	–1		1	±2

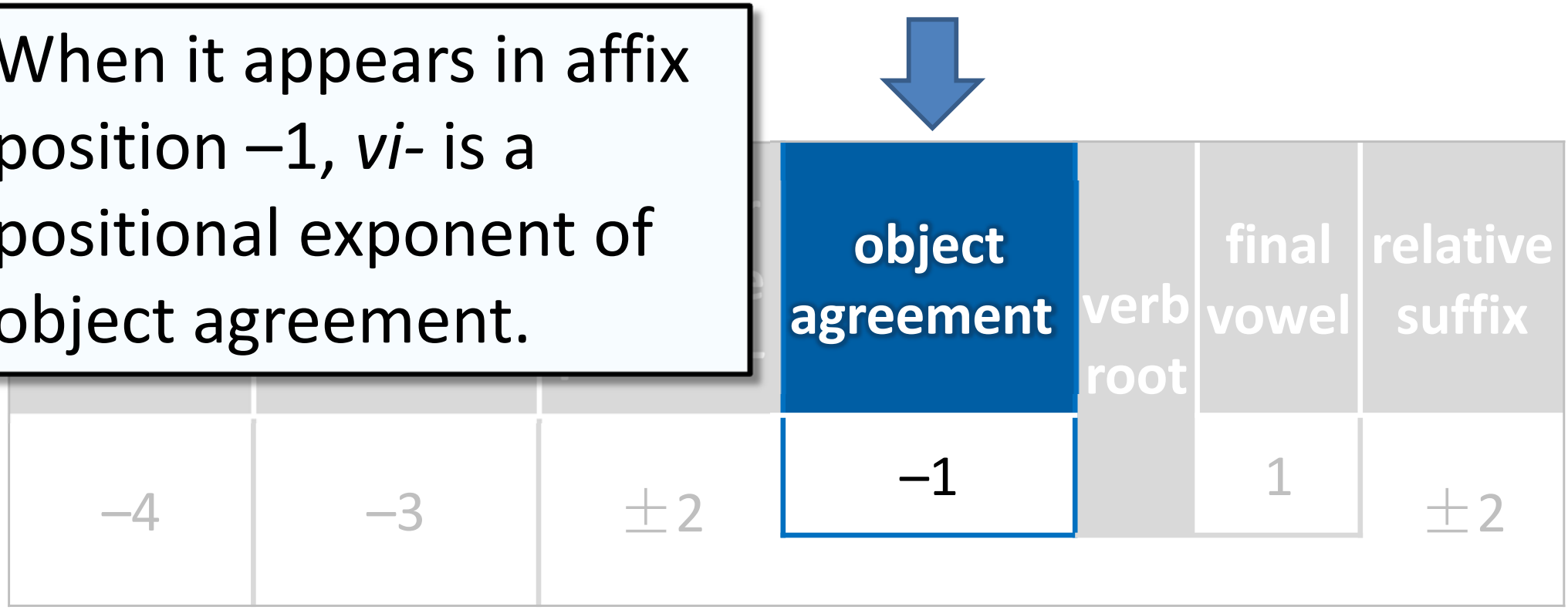
U-me-vi-ona *vi-tabu?*

2SG.SBJ-COMPL-OBJ:σ-see σ-book

‘Have you seen the books?’

Positional exponence

When it appears in affix position –1, *vi-* is a positional exponent of object agreement.



–4	–3	±2	object agreement	verb root	final vowel	relative suffix
			–1		1	±2

U-me-vi-ona *vi-tabu?*

2SG.SBJ-COMPL-OBJ:σ-see σ-book

‘Have you seen the books?’

Positional exponence

negative prefix *ha-*	…	…al …vel	relative suffix
−4	…	…	±2

Most of the Swahili noun-class concords exhibit this sort of positional exponence, one of the sources of polyfunctionality in Swahili verb inflection.

Blocks of sequencing rules

negative prefix *ha-*	subject agreement	tense or negative prefix *si-*	object agreement	verb root	final vowel	relative suffix
–4	–3	±2	–1		1	±2

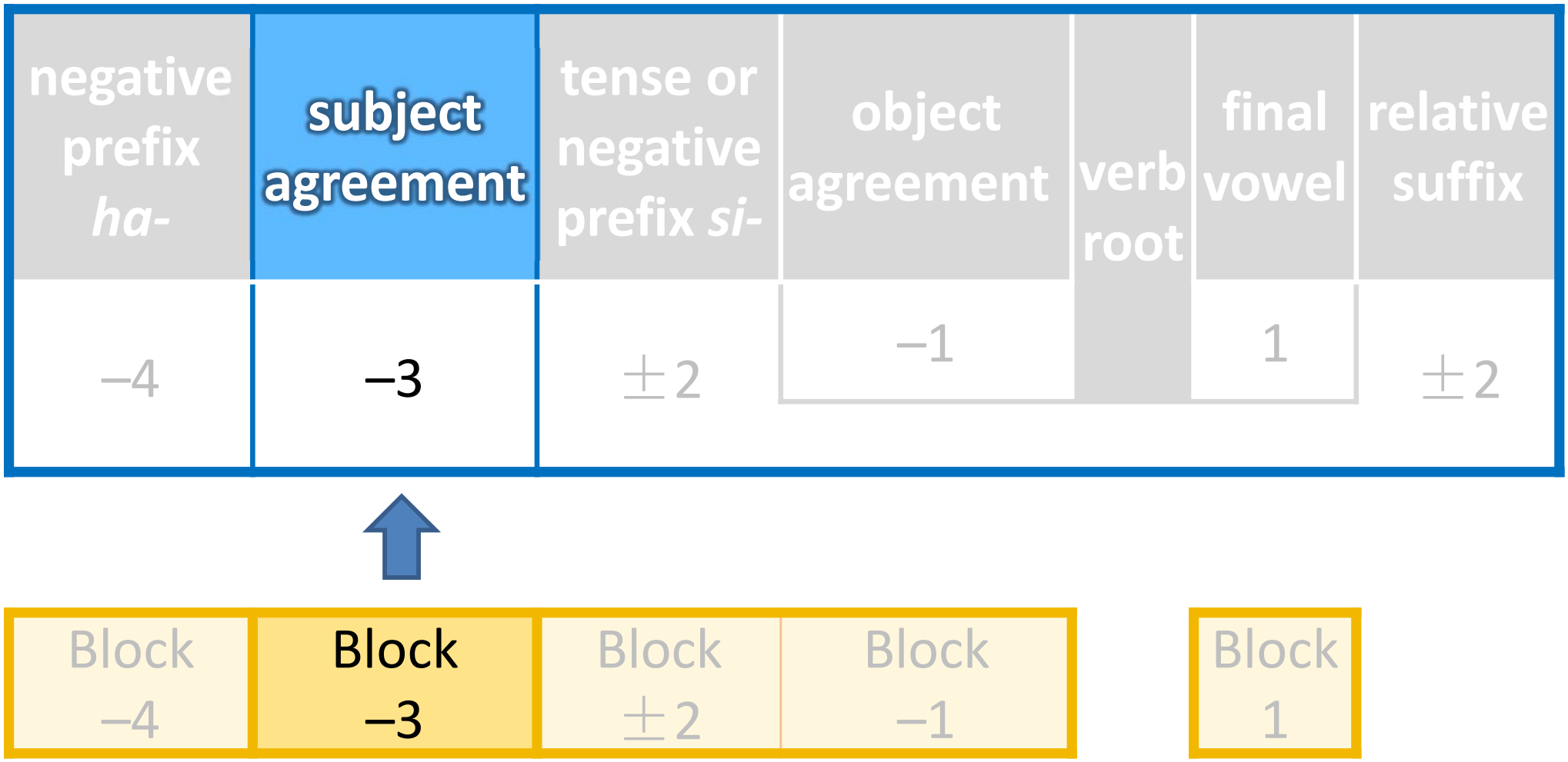
Block –4	Block –3	Block ±2	Block –1	Block 1

Blocks of sequencing rules

negative prefix *ha-*	subject agreement	tense or negative prefix *si-*	object agreement	verb root	final vowel	relative suffix
–4	–3	±2	–1		1	±2

Block –4	Block –3	Block ±2	Block –1		Block 1

Blocks of sequencing rules



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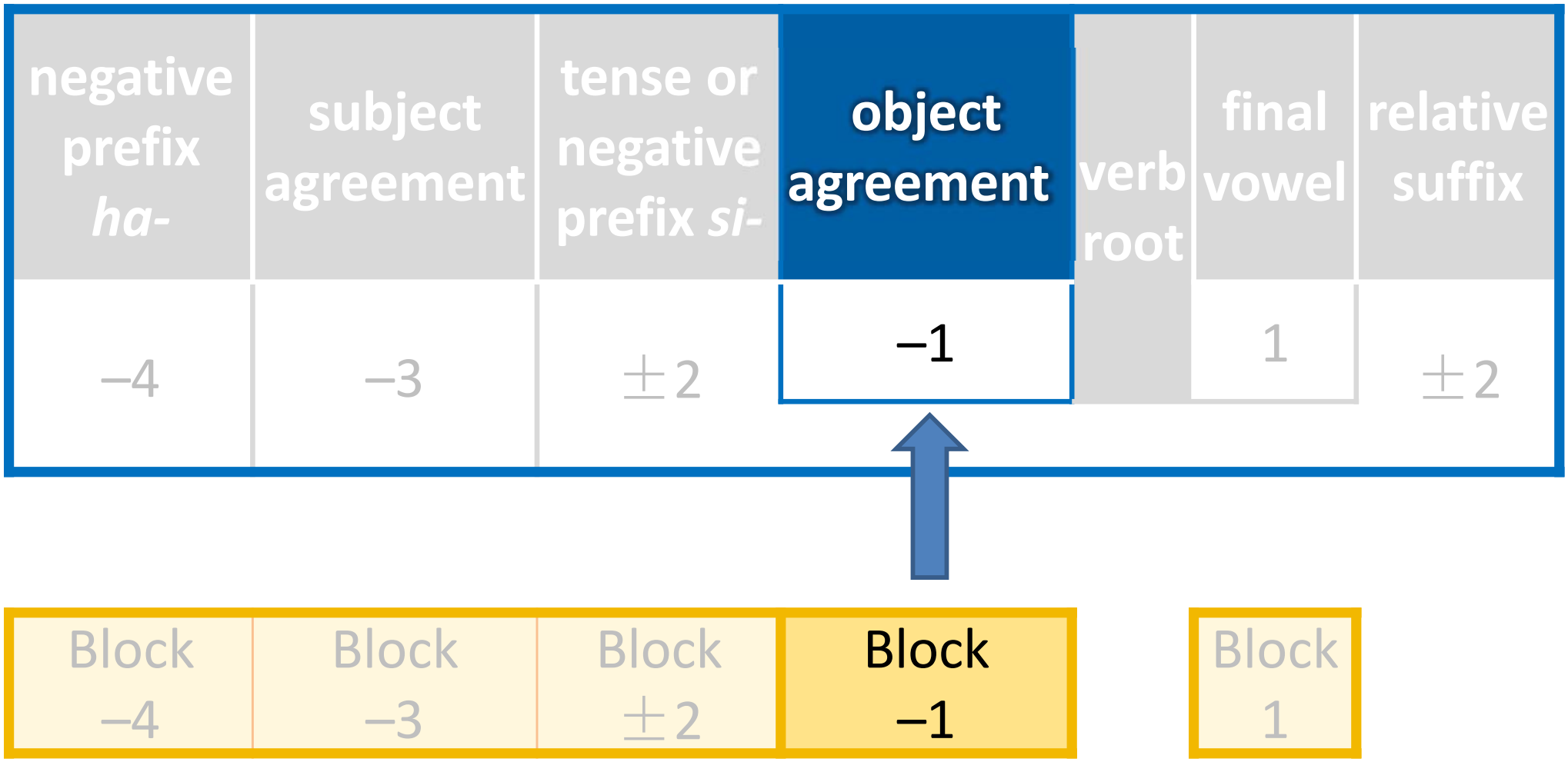
–4	–3	±2	–1		1	±2

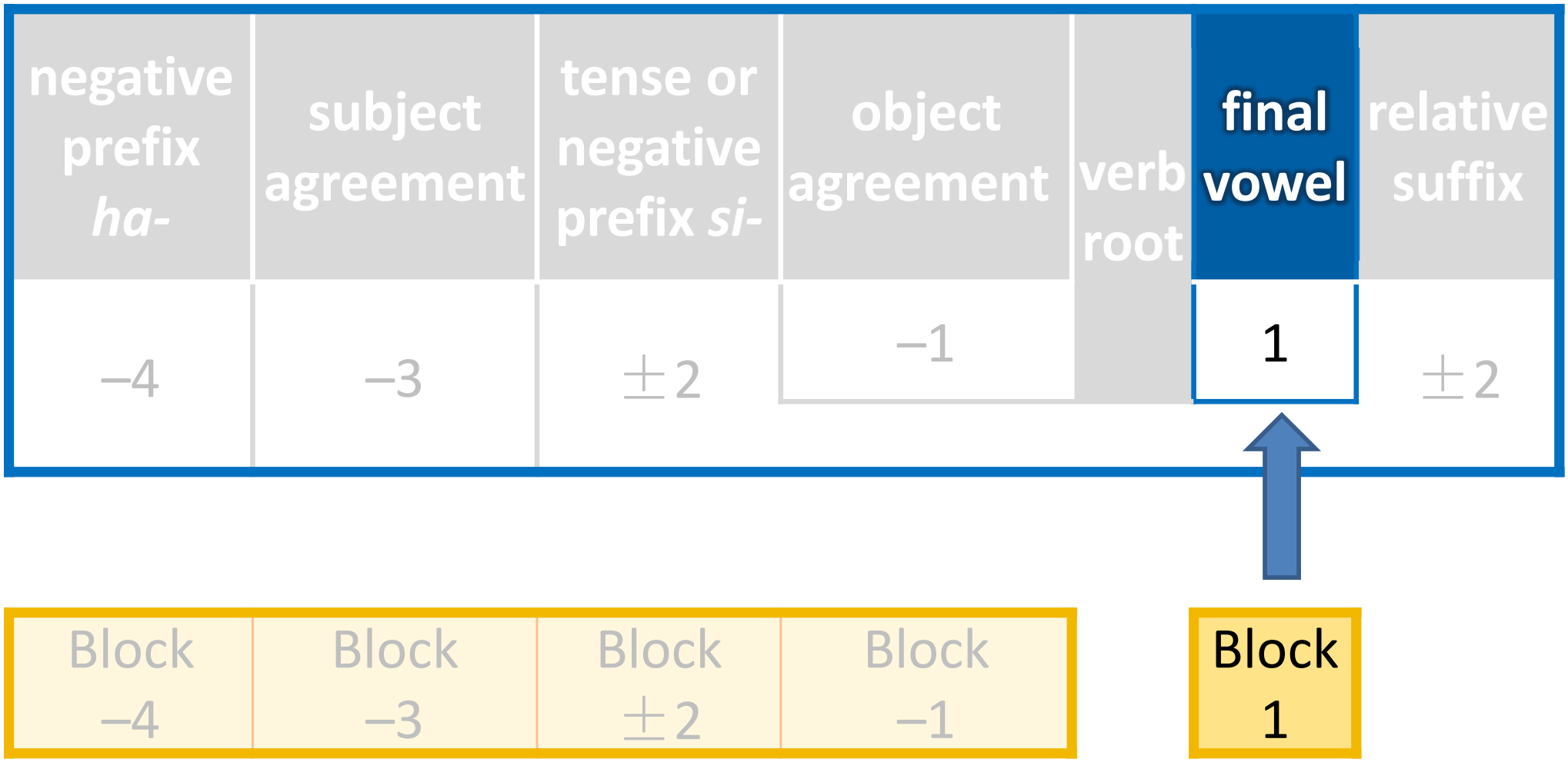
Block –4	Block –3	Block ±2	Block –1	Block 1

ambifixal

Blocks of sequencing rules



Blocks of sequencing rules



Blocks of sequencing rules

negative prefix *ha-*	subject agreement	tense or negative prefix *si-*	object agreement	verb root	final vowel	relative suffix
–4	–3	±2	–1		1	±2

Block –4	Block –3	Block ±2	Block –1	Block 1

Swahili verb morphology

Sequencing rules

Block –1. *Object agreement rules*

For every noun-class concord ⟦ X, τ ⟧,
the Block –1 sequencing rule is Pref(⟦ X, ***s***({{obj}}, τ)⟧).

Block ±2. *Tense rules*

For every tense affix ⟦ X, τ ⟧,
the sequencing rule is Pref(⟦ X, τ ⟧) .

Block –3. *Subject agreement rules*

For every noun-class concord ⟦ X, τ ⟧,
the Block –3 sequencing rule is Pref(⟦X, ***s***({{sbj}}, τ)⟧).

Swahili verb morphology

These sequencing rules all have the form

Pref(⟦ X, τ ⟧) or Suff(⟦ X, τ ⟧)

(for some noun-class concord ⟦ X, τ ⟧)

Swahili verb morphology

The rule

Pref(⟦ X, τ ⟧) or Suff(⟦ X, τ ⟧)

is applicable to the pairing
⟨stem Y, mps ρ⟩
only if ρ is an extension of τ.

Swahili verb morphology

The result of applying

Pref(⟦ X, τ ⟧) or Suff(⟦ X, τ ⟧)

to ⟨Y, ρ⟩ is

⟨XY, ρ⟩ or ⟨YX, ρ⟩.

Swahili verb morphology

Sequencing rules

Block –1. *Object agreement rules*

For every noun-class concord ⟦ X, τ ⟧,
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Swahili verb morphology

Sequencing rules

Block –1. *Object agreement rules*

For every noun-class concord ⟦ X, τ ⟧,
the Block –1 sequencing rule is Pref(⟦ X, ***s***({{obj}}, τ)⟧).

Noun-class concord

vi

{{ ki-vi 3 pl }}

Block –1 : Prefix

vi

{{ obj ki-vi 3 pl }}

Swahili verb morphology

Sequencing rules

Block –1. *Object agreement rules*

For every noun-class concord ⟦ X, τ ⟧,
the Block –1 sequencing rule is Pref(⟦ X, ***s***({{obj}}, τ)⟧).

Noun-class concord	**Block –1 : Prefix**
vi	***vi***
{{ ki-vi 3 pl }}	{{ obj ki-vi 3 pl }}

Swahili verb morphology

positional exponence

Sequencing rules

Block –1. *Object agreement rules*

For every noun-class concord ⟦ X, τ ⟧,
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Noun-class concord

vi

{{ ki-vi 3 pl }}

Block –1 : Prefix

vi

{{ **obj** ki-vi 3 pl }}

positional exponence

Swahili verb morphology

Sequencing rules

Block ±2. *Tense rules*

For every tense affix ⟦ X, τ ⟧,
the sequencing rule is Pref(⟦ X, τ ⟧) .

Swahili verb morphology

Sequencing rules

Block –3. *Subject agreement rules*

For every noun-class concord ⟦ X, τ ⟧,
the Block –3 sequencing rule is Pref(⟦X, ***s***({{sbj}}, τ)⟧).

Swahili verb morphology

Sequencing rules

Block –3. *Subject agreement rules*

For every noun-class concord ⟦ X, τ ⟧,
the Block –3 sequencing rule is Pref(⟦X, ***s***({{sbj}}, τ)⟧).

Noun-class concord	Block –3 : Prefix
vi	***vi***
{{ ki-vi 3 pl }}	{{ sbj ki-vi 3 pl }}

Swahili verb morphology

Sequencing rules

Block –3. *Subject agreement rules*

For every noun-class concord ⟦ X, τ ⟧,
the Block –3 sequencing rule is Pref(⟦X, ***s***({{sbj}}, τ)⟧).

Noun-class concord	**Block –3 : Prefix**
Vi	***Vi***
{{ ki-vi 3 pl }}	{{ sbj ki-vi 3 pl }}

Swahili verb morphology

Sequencing rules

positional exponence

Block –3. *Subject agreement rules*

For every noun-class concord ⟦ X, τ ⟧,
the Block –3 sequencing rule is Pref(⟦X, ***s***({{**sbj**}}, τ)⟧).

Noun-class concord

Vi

{{ ki-vi 3 pl }}

Block –3 : Prefix

Vi

{{ **sbj** ki-vi 3 pl }}

positional exponence

Swahili *vi-me-anguka* ‘(books) have fallen down’

Where σ = { completive {sbj 3 pl ki-vi} },

Swahili *vi-me-anguka* ‘(books) have fallen down’

Where σ = { completive {sbj 3 pl ki-vi} },

⟨*anguka*, σ⟩

Swahili *vi-me-anguka* '(books) have fallen down'

Where σ = { completive {sbj 3 pl ki-vi} },

⟨*anguka*, σ⟩

Block –1 :
not applicable

Swahili *vi-me-anguka* '(books) have fallen down'

Where σ = { completive {sbj 3 pl ki-vi} },

⟨*anguka*, σ⟩

Block ±2 : Prefix

me

{completive}

Swahili *vi-me-anguka* '(books) have fallen down'

Where σ = { completive {sbj 3 pl ki-vi} },

⟨*anguka*, σ⟩

Block ±2 : Prefix

me

{completive}

Swahili *vi-me-anguka* '(books) have fallen down'

Where σ = { completive {sbj 3 pl ki-vi} },

⟨*anguka*, σ⟩

→ ⟨***me-****anguka*, σ⟩

Block ±2 : Prefix

me

{completive}

Swahili *vi-me-anguka* '(books) have fallen down'

Where σ = { completive {sbj 3 pl ki-vi} },

⟨*anguka*, σ⟩

→ ⟨***me-****anguka*, σ⟩

Block –3 : Prefix

Vi

{{sbj 3 pl ki-vi}}

Swahili *vi-me-anguka* '(books) have fallen down'

Where σ = { completive {sbj 3 pl ki-vi} },

⟨*anguka*, σ⟩

→ ⟨***me-****anguka*, σ⟩

Block –3 : Prefix

vi

{{sbj 3 pl ki-vi}}

Swahili *vi-me-anguka* '(books) have fallen down'

Where σ = { completive {sbj 3 pl ki-vi} },

⟨*anguka*, σ⟩

→ ⟨***me-****anguka*, σ⟩

→ ⟨***vi-****meanguka*, σ⟩

Block –3 : Prefix

vi

{{sbj 3 pl ki-vi}}

Swahili *vi-me-anguka* '(books) have fallen down'

Where σ = { completive {sbj 3 pl ki-vi} },

⟨*anguka*, σ⟩

→ ⟨***me-****anguka*, σ⟩

→ ⟨***vi-****meanguka*, σ⟩

Positional exponence vs conflated exponence

X an inherent exponent
{a b c} | X

Positional exponence vs conflated exponence

X an inherent exponent	X a positional exponent
{a b c} | X	{d e} | A X B

Positional exponence vs conflated exponence

X an inherent exponent	X a positional exponent	property set realized by rule sequencing X
{a b c} | X	{d e} | A X B	{a b c d e}

Positional exponence vs conflated exponence

X, Y inherent exponents
{a b} {c d} | | X Y

Positional exponence vs conflated exponence

X, Y inherent exponents	XY a conflated exponent
{a b} {c d} | | X Y	{a b c d} | XY

Positional exponence vs conflated exponence

X, Y inherent exponents	XY a conflated exponent	property set realized by rule sequencing XY
{a b} {c d} | | X Y	{a b c d} | XY	{a b c d}

3.
Accounting for conflated exponence

Swahili relative affixes

Gender	Singular	Plural
m-wa	*ye*	*o*
m-mi	*o*	*yo*
ki-vi	*cho*	*vyo*
ji-ma	*lo*	*yo*
n-n	*yo*	*zo*
u-n	*o*	*zo*

Swahili relative affixes

The Swahili relative affixes specify the noun class (= gender and number) of a verb's relativized argument:

vitabu	*a–vi–taka–**vyo***	*Hamisi*
books.CL.**vi**	SBJ:CL.**m**–OBJ:CL.**vi**–want–REL:CL.**vi**	Hamisi.CL.**m**

'the books which Hamisi wants'

Swahili relative affixes

internal structure

Gender	Singular	Plural
m-wa	*ye*	*o*
m-mi	*o*	*yo*
ki-vi	*cho*	*vyo*
ji-ma	*lo*	*yo*
n-n	*yo*	*zo*
u-n	*o*	*zo*

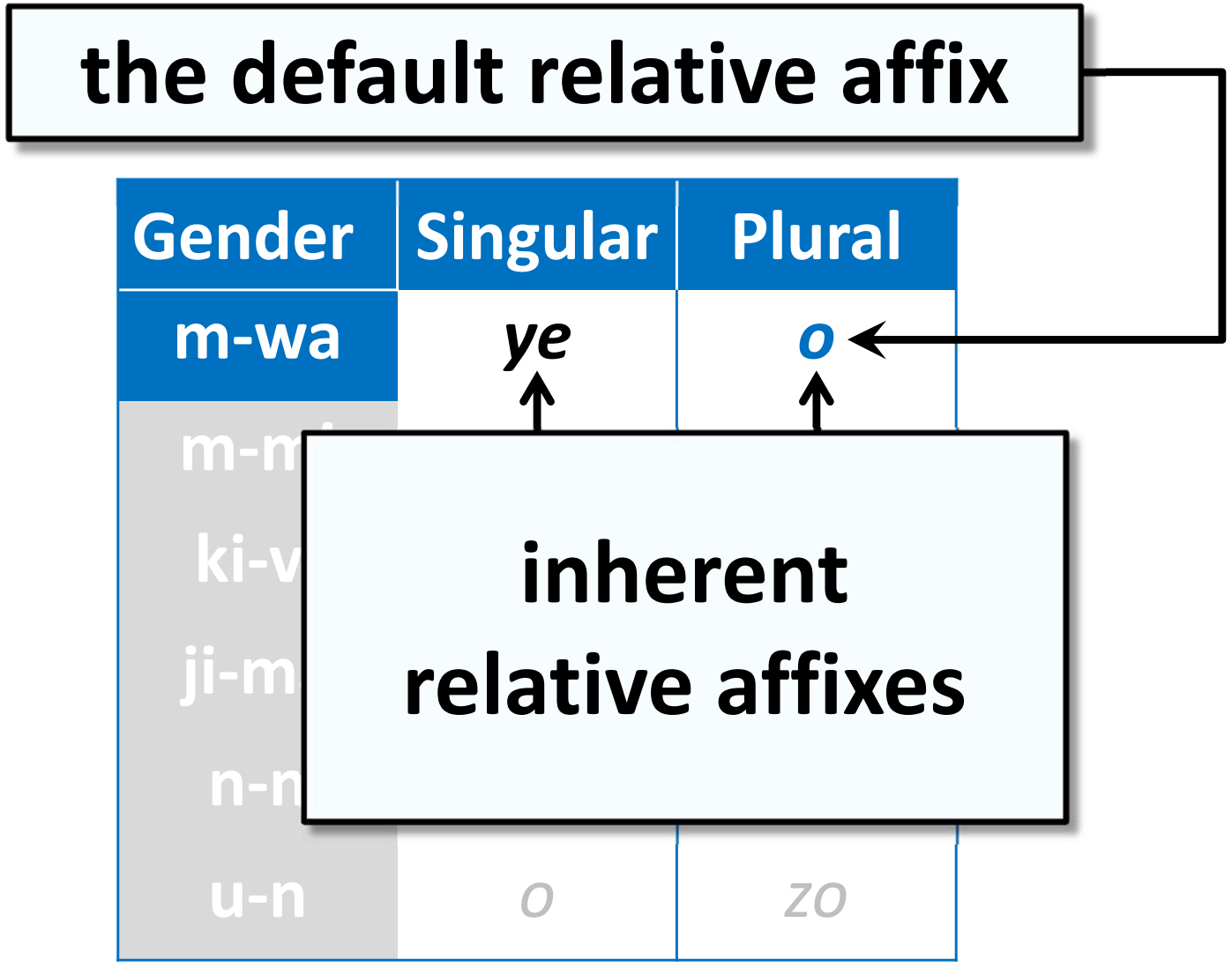
Swahili relative affixes

internal structure

Gender	Singular	Plural
m-wa	*ye*	*o*
m-m		
ki-v		
ji-m		
n-n		
u-n	*o*	*zo*

inherent relative affixes

Swahili relative affixes



Swahili relative affixes

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n-n	*yo*	*zo*
u-n	*o*	*zo*

Verbal concords and relative affixes

	Verbal concords		Relative suffixes	
Gender	**Singular**	**Plural**	**Singular**	**Plural**
m-mi	*u-*	*i-*	*o*	*yo*
ki-vi	*ki-*	*vi-*	*cho*	*vyo*
ji-ma	*li-*	*ya-*	*lo*	*yo*
n-n	*i-*	*zi-*	*yo*	*zo*
u-n	*u-*	*zi-*	*o*	*zo*

Verbal concords and relative affixes

conflated relative affixes

	Verbal concords			
Gender	Singular	Plural	Singular	Plural
m-mi	*u-*	*i-*	***o*** (← *u-o*)	***yo*** (← *i-o*)
ki-vi	*ki-*	*vi-*	***cho*** (← *ki-o*)	***vyo*** (← *vi-o*)
ji-ma	*li-*	*ya-*	***lo*** (← *li-o*)	***yo*** (← *ya-o*)
n-n	*i-*	*zi-*	***yo*** (← *i-o*)	***zo*** (← *zi-o*)
u-n	*u-*	*zi-*	***o*** (← *u-o*)	***zo*** (← *zi-o*)

Verbal concords and relative affixes

conflated relative affixes

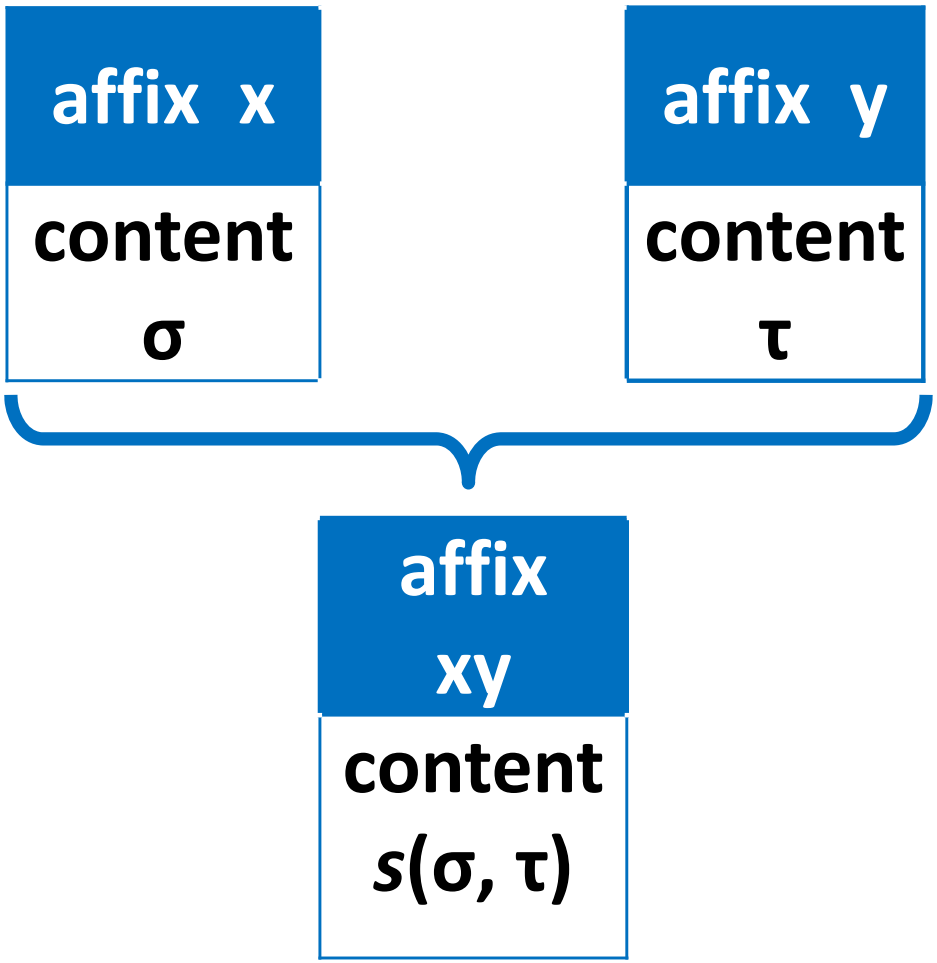
	Verbal concords			
Gender	**Singular**	**Plural**	**Singular**	**Plural**
m-mi	*u-*	*i-*	***o*** (← ***o***)	***yo*** (← ***o***)
ki-vi	*ki-*	*vi-*	***cho*** (← ***o***)	***vyo*** (← ***o***)
ji-ma	*li-*	*ya-*	***lo*** (← ***o***)	***yo*** (← ***o***)
n-n	*i-*	*zi-*	***yo*** (← ***o***)	***zo*** (← ***o***)
u-n	*u-*	*zi-*	***o*** (← ***o***)	***zo*** (← ***o***)

Verbal concords and relative affixes

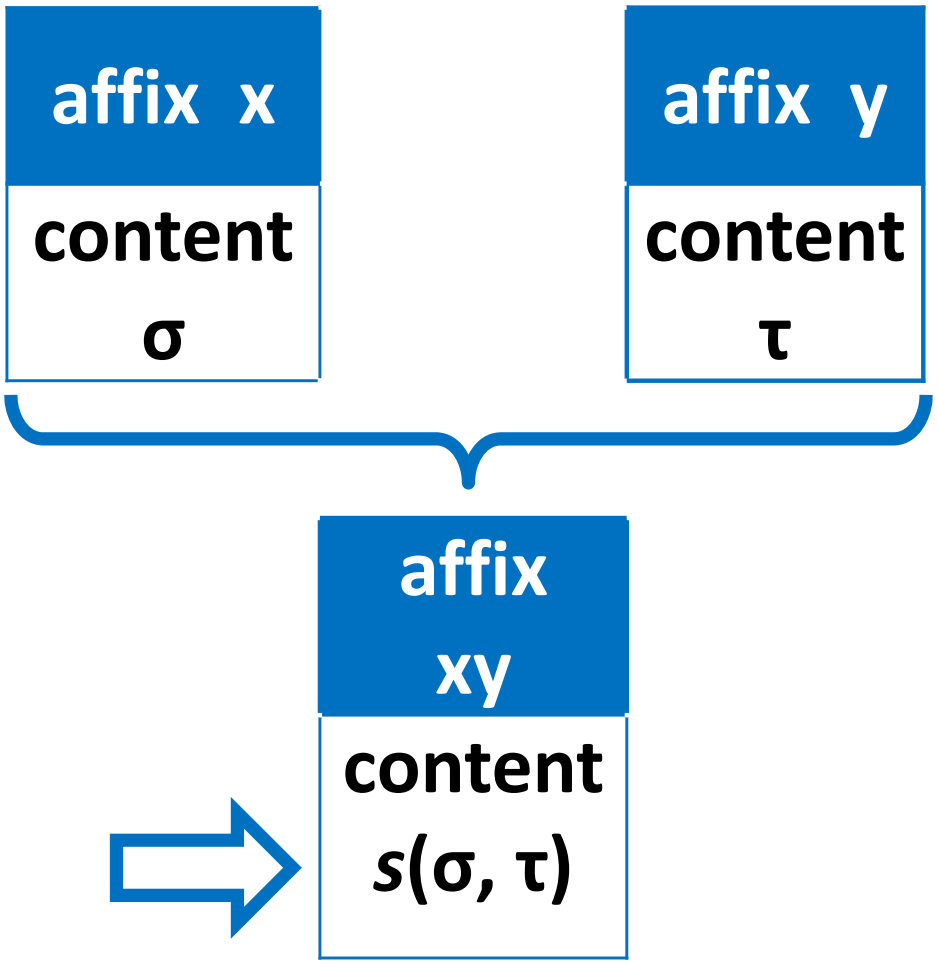
conflated relative affixes

	Verbal concords		Relative affixes	
Gender	Singular	Plural	Singular	Plural
m-mi	*u-*	*i-*	*o* (← *u-o*)	*yo* (← *i-o*)
ki-vi	*ki-*	*vi-*	*cho* (← *ki-o*)	*vyo* (← *vi-o*)
ji-ma	*li-*	*ya-*	*lo* (← *li-o*)	*yo* (← *ya-o*)
n-n	*i-*	*zi-*	*yo* (← *i-o*)	*zo* (← *zi-o*)
u-n	*u-*	*zi-*	*o* (← *u-o*)	*zo* (← *zi-o*)

Conflated exponence

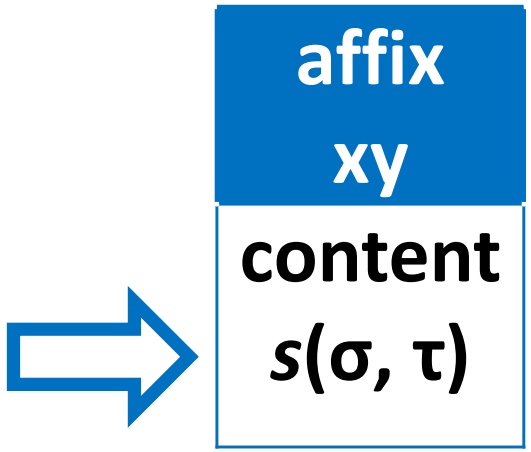


Conflated exponence



Conflated exponence

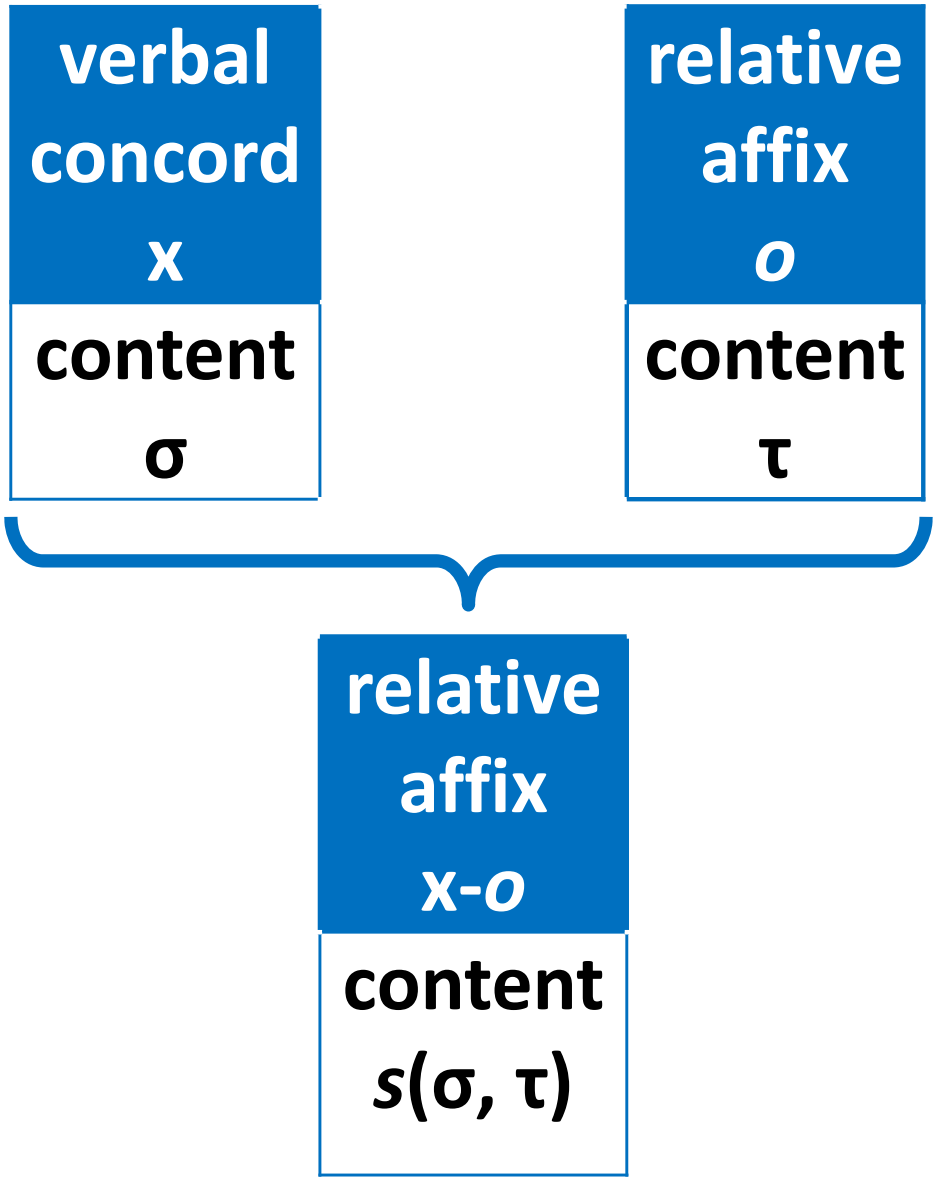
s(σ, τ) is the combination of σ and τ, the smallest well-formed extension of both σ and τ.



Conflated exponence

Although a conflated exponent is simply the combined form and content of its component parts, it may differ in its morphotactics from the combined morphotactics of its parts.

Swahili relative affixes



Swahili relative affixes

By virtue of this conflation, the Swahili noun-class concords take on a third function, that of coding the noun class of a verb's relativized argument.

∴ A second source of inflectional polyfunctionality: an affix takes on an additional function by conflating with another affix.

Swahili relative affixes

vi- : {{ki-vi 3 plural}} *o* : {{rel}}

vyo : {{rel ki-vi 3 plural}}

The distribution of a conflated relative affix such as *vyo* parallels that of the unconflated relative affix *ye*:

ye : {{rel m-wa singular}}.

Swahili relative affixes

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vyo : {{rel ki-vi 3 plural}}

The distribution of a conflated relative affix such as *vyo* parallels that of the unconflated relative affix *ye*:

ye : {{rel m-wa singular}}.

At the same time, its morphotactics is not simply the combined morphotactics of its individual parts.

Swahili relative affixes

an additional morphotactic peculiarity

In the default case, the **relative** affixes are suffixal:

vitabu	*a–vi–taka–**vyo***	*Hamisi*
books.CL.**vi**	SBJ:CL.**m**–OBJ:CL.**vi**–want–REL:CL.**vi**	Hamisi.CL.**m**

‘the books which Hamisi wants’

Swahili relative affixes

an additional morphotactic peculiarity

In the presence of prefix expressing **tense** or **negation**, the **relative** affixes are prefixal:

vitabu	*a–**na**–**vyo**–vi–soma*	*Hamisi*
books.CL.**vi**	SBJ:CL.**m**–TNS–REL:CL.**vi**–OBJ:CL.**vi**–read	Hamisi.CL.**m**

'the books which Hamisi is reading'

vitabu	*a–**si**–**vyo**–vi–taka*	*Hamisi*
books.CL.**vi**	SBJ:CL.**m**–NEG–REL:CL.**vi**–OBJ:CL.**vi**–want	Hamisi.CL.**m**

'the books which Hamisi doesn't want'

Swahili relative affixes

negative prefix *ha-*	subject agreement	tense or negative prefix *si-*	object agreement	verb root	final vowel	relative suffix
–4	–3	±2	–1		1	±2

vi-tabu a-vi-soma-vyo

σ-book 3SG.SBJ-OBJ:σ-read-REL:σ

‘the books which he reads’

Swahili relative affixes

negative prefix *ha-*	subject agreement	tense or negative prefix *si-*	object agreement	verb root	final vowel	relative suffix
–4	–3	±2	–1		1	±2

vi-tabu *a-li-vyo-vi-soma*

σ-book 3SG.SBJ-PST-REL:σ-OBJ:σ-read

‘the books which he read’

Swahili verb morphology

Inherent exponence declarations

Tense-negation affixes

⟦ *ta*, {fut} ⟧
⟦ *li*, {past} ⟧
⟦ *me*, {completive} ⟧
⟦ *si*, {neg –tense} ⟧

Relative affixes

⟦ *ye*, {{rel m-wa sg}} ⟧
⟦ *o*, {{rel}} ⟧

Noun-class concords

⟦*u*, {{ sbj 2 sg }}⟧
⟦*m*, {{ sbj 2 pl }}⟧
⟦*a*, {{ sbj m-wa 3 sg }}⟧
⟦*ku*, {{ obj 2 sg }}⟧
⟦*wa*, {{ obj 2 pl }}⟧
⟦*m*, {{ obj m-wa 3 sg }}⟧
⟦*ni*, {{ m-wa 1 sg }}⟧

⟦*tu*, {{ m-wa 1 pl }}⟧
⟦*wa*, {{ m-wa 3 pl }}⟧
⟦*u*, {{ m-mi 3 sg }}⟧
⟦*i*, {{ m-mi 3 pl }}⟧
⟦*ki*, {{ ki-vi 3 sg }}⟧
⟦*vi*, {{ ki-vi 3 pl }}⟧

⟦*li*, {{ ji-ma 3 sg }}⟧
⟦*ya*, {{ ji-ma 3 pl }}⟧
⟦*i*, {{ n-n 3 sg }}⟧
⟦*zi*, {{ n-n 3 pl }}⟧
⟦*u*, {{ u-n 3 sg }}⟧
⟦*zi*, {{ u-n 3 pl }}⟧

Swahili verb morphology

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⟦ *ye*, {{rel m-wa sg}} ⟧
⟦ *o*, {{rel}} ⟧

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⟦*m*, {{ sbj 2 pl }}⟧
⟦*a*, {{ sbj m-wa 3 sg }}⟧
⟦*ku*, {{ obj 2 sg }}⟧
⟦*wa*, {{ obj 2 pl }}⟧
⟦*m*, {{ obj m-wa 3 sg }}⟧
⟦*ni*, {{ m-wa 1 sg }}⟧

⟦*tu*, {{ m-wa 1 pl }}⟧
⟦*wa*, {{ m-wa 3 pl }}⟧
⟦*u*, {{ m-mi 3 sg }}⟧
⟦*i*, {{ m-mi 3 pl }}⟧
⟦*ki*, {{ ki-vi 3 sg }}⟧
⟦*vi*, {{ ki-vi 3 pl }}⟧

⟦*li*, {{ ji-ma 3 sg }}⟧
⟦*ya*, {{ ji-ma 3 pl }}⟧
⟦*i*, {{ n-n 3 sg }}⟧
⟦*zi*, {{ n-n 3 pl }}⟧
⟦*u*, {{ u-n 3 sg }}⟧
⟦*zi*, {{ u-n 3 pl }}⟧

Swahili verb morphology

Conflated exponence declarations

Conflated relative affixes

The conflation of a noun-class concord ⟦X, σ⟧ and the relative affix ⟦*o*, {{rel}}⟧ ***is a relative affix*.**

Conflated tense-negation affixes

The conflation of a tense-negation affix ⟦X, σ⟧ and a relative affix ⟦Y, τ⟧ ***is a tense-negation affix*.**

Swahili verb morphology

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Swahili verb morphology

Conflated relative affixes

Noun-class concord

vi

{{ ki-vi 3 pl }}

Relative affix

o

{{ rel }}

conflate as

Relative affix

vyo

{{ rel ki-vi 3 pl }}

Swahili verb morphology

Conflated relative affixes

Noun-class concord

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Relative affix

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Swahili verb morphology

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Swahili verb morphology

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Swahili verb morphology

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Swahili verb morphology

Conflated tense-negation affixes

Tense-negation affix

si

{ neg }

Relative affix

vyo

{{ rel ki-vi 3 pl }}

conflate as

Tense-negation affix

sivyo

{ neg { rel ki-vi 3 pl }}

Swahili verb morphology

Conflated tense-negation affixes

Tense-negation affix

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{ neg }

Relative affix

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Swahili verb morphology

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Swahili verb morphology

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- **relative affixes**
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  - conflated
    (= noun-class concord with relative affix *o*), e.g. *vyo*

Swahili verb morphology

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  - inherent, e.g. *ye*
  - conflated
    (= noun-class concord with relative affix *o*), e.g. *vyo*
- **tense-negation affixes**
  - inherent, e.g. *si-*
  - conflated
    (= tense-negation affix with relative affix), e.g. *sivyo-*

Swahili verb morphology

Sequencing rules

Block –1. *Object agreement rules*

For every agreement affix ⟦ X, τ ⟧,
the Block –1 sequencing rule is Pref(⟦ X, ***s***({{obj}}, τ)⟧).

Block ±2. *Rules for tense, negation and relative marking*

For every tense-negation affix ⟦ X, τ ⟧,
the sequencing rule is Pref(⟦ X, τ ⟧).

For every relative affix ⟦ X, τ ⟧,
the sequencing rule is Suff(⟦ X, τ ⟧).

Block –3. *Subject agreement rules*

For every agreement affix ⟦ X, τ ⟧,
the Block –3 sequencing rule is Pref(⟦X, ***s***({{sbj}}, τ)⟧).

Swahili verb morphology

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Swahili verb morphology

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How is competition between these sequencing rules resolved?

Swahili verb morphology

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Swahili verb morphology

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Relative affix

vyo

{{ rel ki-vi 3 pl }}

Block ±2 : Suffix

vyo

{{ rel ki-vi 3 pl }}

Swahili verb morphology

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Relative affix	**Block ±2 : Suffix**
vyo	*vyo*
{{ rel ki-vi 3 pl }}	{{ rel ki-vi 3 pl }}

Swahili verb morphology

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Tense-negation affix

sivyo

{ neg { rel ki-vi 3 pl }}

Block ±2 : Prefix

sivyo

{ neg { rel ki-vi 3 pl }}

Swahili verb morphology

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Tense-negation affix	**Block ±2 : Prefix**
sivyo	*sivyo*
{ neg { rel ki-vi 3 pl }}	{ neg { rel ki-vi 3 pl }}

Swahili verb morphology

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Pāṇini's principle invariably resolves competition in favor of prefixation.

Swahili *asivyovitaka* '(books) that s/he doesn't want'

Where σ =

{ neg {sbj 3 sg m-wa} {obj 3 pl ki-vi} {rel 3 pl ki-vi} }

⟨*taka*, σ⟩

Swahili *asivyovitaka* '(books) that s/he doesn't want'

Where σ =

{ neg {sbj 3 sg m-wa} {obj 3 pl ki-vi} {rel 3 pl ki-vi} }

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Block –1 : Prefix

vi

{{ obj 3 pl ki-vi }}

Swahili *asivyovitaka* '(books) that s/he doesn't want'

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{ neg {sbj 3 sg m-wa} {obj 3 pl ki-vi} {rel 3 pl ki-vi} }

⟨*taka*, σ⟩

→ ⟨***vi-****taka*, σ⟩

Block –1 : Prefix

Vi

{{ obj 3 pl ki-vi }}

Swahili *asivyovitaka* '(books) that s/he doesn't want'

Where σ =

{ neg {sbj 3 sg m-wa} {obj 3 pl ki-vi} {rel 3 pl ki-vi} }

⟨*taka*, σ⟩

→ ⟨***vi-****taka*, σ⟩

Block ±2 : Prefix

sivyo

{ neg { rel 3 pl ki-vi }}

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Where σ =

{ neg {sbj 3 sg m-wa} {obj 3 pl ki-vi} {rel 3 pl ki-vi} }

⟨*taka*, σ⟩

→ ⟨***vi-****taka*, σ⟩

→ ⟨***sivyo-****vitaka*, σ⟩

Block ±2 : Prefix

sivyo

{ neg { rel 3 pl ki-vi }}

Swahili *asivyovitaka* '(books) that s/he doesn't want'

Where σ =

{ neg {sbj 3 sg m-wa} {obj 3 pl ki-vi} {rel 3 pl ki-vi} }

⟨*taka*, σ⟩

→ ⟨***vi-****taka*, σ⟩

→ ⟨***sivyo-****vitaka*, σ⟩

Block –3 : Prefix

a

{{ sbj 3 sg m-wa }}

Swahili *asivyovitaka* '(books) that s/he doesn't want'

Where σ =

{ neg {sbj 3 sg m-wa} {obj 3 pl ki-vi} {rel 3 pl ki-vi} }

⟨*taka*, σ⟩

→ ⟨***vi-****taka*, σ⟩

→ ⟨***sivyo-****vitaka*, σ⟩

→ ⟨***a-****sivyovitaka*, σ⟩

Block –3 : Prefix

a

{{ sbj 3 sg m-wa }}

Swahili *asivyovitaka* '(books) that s/he doesn't want'

Where σ =

{ neg {sbj 3 sg m-wa} {obj 3 pl ki-vi} {rel 3 pl ki-vi} }

⟨*taka*, σ⟩

→ ⟨***vi-****taka*, σ⟩

→ ⟨***sivyo-****vitaka*, σ⟩

→ ⟨***a-****sivyovitaka*, σ⟩

4.
Discussion
and summary

An explanatory account of Swahili verb inflection

This approach to modeling Swahili verb inflection correctly entails that by default, a subject-agreement affix has the same form as the corresponding object-agreement affix.

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They are based on a common pool of inherent exponence declarations.

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Moreover, it correctly entails five facts about the relative affixes:

(a) the relative prefixes have the same form as the relative suffixes;

(b) the relative suffixes are mutually exclusive with the tense-negation prefixes;

Their sequencing rules belong to the same rule block, and are therefore in paradigmatic opposition.

An explanatory account of Swahili verb inflection

Moreover, it correctly entails five facts about the relative affixes:

(a) the relative prefixes have the same form as the relative suffixes;

(b) the relative suffixes are mutually exclusive with the tense-negation prefixes;

(c) the relative suffixes are mutually exclusive with the relative prefixes;

An explanatory account of Swahili verb inflection

Moreover, it correctly entails five facts about the relative affixes:

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Their sequencing rules belong to the same rule block, and are therefore in paradigmatic opposition.

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The relative affixes only appear as prefixes as a consequence of being conflated with a tense-negation prefix; these conflations are themselves tense-negation prefixes.

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This analysis makes it possible to say that each Swahili noun-class concord has constant bit of content (of which it is an inherent exponent) but may express additional content according to its position or to its conflation with other affixes.

Summary

Three kinds of exponence:

inherent,
positional and
conflated.

Rules of inflectional exponence have two parts:
an **exponence declaration** and a **sequencing rule**.

Affixes may be conflated, and their conflation may have special morphotactic properties.

Wider applications

Il le donne.

Il ne le donne pas.

Ne le donnez pas!

Wider applications

Il le donne.

Il ne le donne pas.

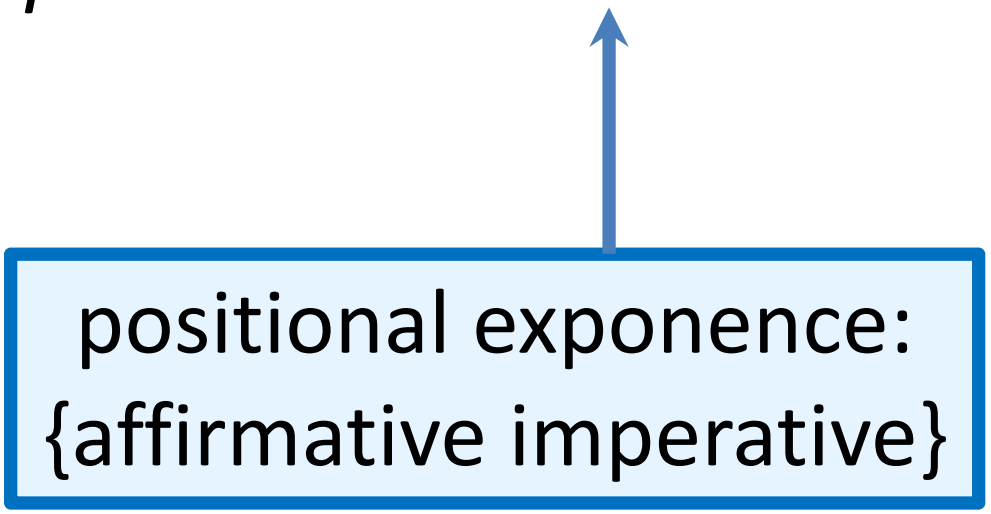
Ne le donnez pas! Donnez-le!

Wider applications

Il le donne.

Il ne le donne pas.

Ne le donnez pas! *Donnez-le!*



Wider applications

Il le donne.
Il ne le donne pas.
Ne le donnez pas! Donnez-le!

Sequencing rules

Wider applications

Il le donne.
Il ne le donne pas.
Ne le donnez pas! Donnez-le!

Sequencing rules

For every accusative or dative pronominal clitic ⟦ X, τ ⟧,
there is a default sequencing rule Pref(⟦ X, τ⟧).

Wider applications

Il le donne.
Il ne le donne pas.
Ne le donnez pas! Donnez-le!

Sequencing rules

For every accusative or dative pronominal clitic ⟦ X, τ ⟧, there is a default sequencing rule Pref(⟦ X, τ⟧).

For every accusative or dative pronominal clitic ⟦ X, τ ⟧, there is an additional sequencing rule Suff(⟦ X, ***s***({affirmative imperative}, τ)⟧).

Wider applications

Ne le lui donnez pas!

Donnez-le-lui!

Wider applications

Ne le lui donnez pas!

Donnez-le-lui!

Wider applications

Ne le lui donnez pas!

Donnez-le-lui!

conflated exponence

Wider applications

Ne le lui donnez pas!

Donnez-le-lui!

Conflated exponence declarations

Wider applications

Ne le lui donnez pas!

Donnez-le-lui!

Conflated exponence declarations

The conflation of a 3rd-person accusative pronominal affix ⟦X, σ⟧ and a 3rd-person dative pronominal affix ⟦Y, τ⟧ is a pronominal affix.

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