

Day 4 “Phonological decomposition of inflectional markers”

Case study 2: Somali verb inflection

(joint work with X. Barillot and S. Bendjaballah)

(This work has been published as X. Barillot, S. Bendjaballah & N. Lampitelli Verbal Classes in Somali: Allomorphy has no Classificatory Function. *Journal of Linguistics* 54(1): 3–43)

1. Introduction

(1) Recall: allomorphy (cf a.o. Bonet & Harbour 2012):

- a. a given feature is spelled out as two or more distinct exponents
- b. *phonologically conditioned* allomorphy: predictable from the phonological rules of the language *vs morphologically conditioned* allomorphy.

- [e]-[ɛ] alternation in French (*loi de position*)
 - i. [mele] ‘to mix’ (il) [mɛl] ‘he mixes’
 - ii. [pene] ‘to have difficulties’ (il) [pɛn] ‘he has difficulties’
 - iii. [pɣete] ‘to lend’ (il) [pɣɛt] ‘he lends’

/e/ => [ɛ] /C C#

- [k]-[s] alternation in French:
 - i. [elɛktxik] ‘electrical’ [elɛktxis-ite] ‘electricity’
 - ii. BUT: [ki] ‘who’ [likid] ‘liquid’

(2) Somali:

- a. 3 main verbal classes (Orwin 1995, Saeed 1993) must be distinguished because the relevant suffixes trigger a morphologically conditioned allomorphy.
- b. => allomorphy is taken to have a central role in the Somali verb morphology: it has a classificatory function.

(3) Aims:

- a. to show that alleged cases of morphologically conditioned allomorphy can be reduced to phonologically conditioned allomorphy: surface forms result from the application of regular phonological rules to underlying structures.
- b. => the notion of ‘verbal class’ can be dispensed with.

2. Somali verbal morphology

2.1. General information

(4) The Somali verb template (adapted from Saeed 1993: 38-39)

(a)	(b)	(c)	(d)	(c')
root	lexical morpheme (LEX)	personal morpheme (PNG)	tense-aspect-mood morpheme (TAM)	personal morpheme (PNG)
<i>ke:n</i>	∅	<i>t</i>	<i>a:</i>	<i>n</i>
"bring"		2 nd	present	plural

(5) a. TAM: -*aj-* (past) and -*a:-* (present).

b. PNG (1st class)

	sg	pl
1	∅	<i>n</i>
2	<i>t</i>	<i>t ... n</i>
3m	∅	∅ ... <i>n</i>
3f	<i>t</i>	

c. LEX:

	V, N, Adj	> V
<i>am</i> medio-passive	<i>mil</i> "dissolve s.t."	<i>milam</i> "dissolve"
<i>o:b</i> inchoative	<i>qab</i> "truth"	<i>qabo:b</i> "become true"
<i>tam</i> reciprocal	<i>ul</i> "stick"	<i>ultam</i> "fight each other with sticks"
<i>e:</i> causative	<i>jar</i> "small"	<i>jare:</i> "make small"
<i>o</i> autobenefactive	<i>fur</i> "open"	<i>furo</i> "open for oneself"

(6) class 1: • no LEX
• LEX that trigger predictable stem- & PNG-alternations (e.g. *tam*, *am*, *o:b*) [i.e. phonologically conditioned]

class 2: LEX = causative

- class 2a: LEX = *i*
- class 2b: LEX = *e:*

class 3: LEX = autobenefactive

- class 3a: LEX = *so*
- class 3b: LEX = *o*

(7)		a. class 1	b. class 2a	c. class 2b
imperative	2s	<i>mar</i>	<i>mar-i</i>	<i>ʃar-e:</i>
infinitive		<i>mar-i</i>	<i>mar-in</i>	<i>ʃar-ajn</i>
progressive (present)	1s	<i>mar-aj-a:</i>	<i>mar-in-aj-a:</i>	<i>ʃar-ajn-aj-a:</i>
present	1s	<i>mar-a:</i>	<i>mar-i-j(j)-a:</i>	<i>ʃar-e:-j(j)-a:</i>
	2s	<i>mar-t-a:</i>	<i>mar-i-s-a:</i>	<i>ʃar-aj-s-a:</i>
	3ms	<i>mar-a:</i>	<i>mar-i-j(j)-a:</i>	<i>ʃar-e:-j(j)-a:</i>
	3fs	<i>mar-t-a:</i>	<i>mar-i-s-a:</i>	<i>ʃar-aj-s-a:</i>
	1p	<i>mar-n-a:</i>	<i>mar-in-n-a:</i>	<i>ʃar-ajn-n-a:</i>
	2p	<i>mar-t-a:-n</i>	<i>mar-i-s-a:-n</i>	<i>ʃar-aj-s-a:-n</i>
	3p	<i>mar-a:-n</i>	<i>mar-i-j(j)-a:-n</i>	<i>ʃar-e:-j(j)-a:-n</i>
		"pass, tie up"	"make pass"	"anger"

		d. class 3a	e. class 3b
imperative	2s	<i>mar-so</i>	<i>mar-o</i>
infinitive		<i>mar-san</i>	<i>mar-an</i>
progressive (present)	1s	<i>mar-san-aj-a:</i>	<i>mar-an-aj-a:</i>
present	1s	<i>mar-sad-a:</i>	<i>mar-t-a:</i>
	2s	<i>mar-sa-t-a:</i>	<i>mar-a-t-a:</i>
	3ms	<i>mar-sad-a:</i>	<i>mar-t-a:</i>
	3fs	<i>mar-sa-t-a:</i>	<i>mar-a-t-a:</i>
	1p	<i>mar-san-n-a:</i>	<i>mar-an-n-a:</i>
	2p	<i>mar-sa-t-a:-n</i>	<i>mar-a-t-a:-n</i>
	3p	<i>mar-sad-a:-n</i>	<i>mar-t-a:-n</i>
		“make pass for o.s.”	“tie up for o.s.”

2.2. Deviant patterns in class 1

(8) Class 1 displays some apparent deviant patterns:

- a. These patterns are triggered by general phonological rules
- b. These rules are fully predictable on the basis of the phonological context

(9A) /l+t/ → [ʃ] (Saeed 1993: 26, 301).

- a. *hadal* “talk.imp2s” *hadal-t-a:* “talk”-2s-present > *hadafa:* “you talk”
- b. *be:l* “community” *be:l-ta* “community”-det > *be:ʃa* “the community”

(8B) /t/ → [d] / V_V (Saeed 1993: 302)

- a. *ʃi-t-a:* “cry out”-2s-present > *ʃida:* “you cry out”
- b. *mindi-ta* “knife”-det > *mindida* “the knife”

(9C) Ø → V_i / V_iC_C{C,#} (Saeed 1993: 27-28, 295)

- a. *gudub* “cross!”, *gudubta:* “you cross” vs *gudba:* “I cross”
- b. *nirig* “camel foal”, *nirigta* “the camel foal” vs *nirigo* “camel foals”

(9D) /k/, /g/ → [g] / _# (Saeed 1993: 27-28)

- a. *buka:* “I am sick” vs *bug* “be sick!”
- b. *taga:* “I go” vs *tag* “go!”
- c. *ilko* “teeth” vs *ilig* “tooth”
- nirigo* “camel foals” vs *nirig* “camel foal”

(9E) /m/, /n/ → [n] / _ {C, #} (Saeed 1993: 301)

- | | | | |
|----|--------------------------|---------------------|------------------|
| | __# | /__C | /__V |
| a. | 2s. imp. | 2s.present | 1s.present |
| | /m/ <i>do:n</i> “dredge” | <i>do:nta:</i> | vs <i>do:ma:</i> |
| | /n/ <i>do:n</i> “want” | <i>do:nta:</i> | vs <i>do:na:</i> |
| b. | sg | sg-definite article | pl. |
| | /m/ <i>tʃin</i> “arm” | <i>tʃinta</i> | vs <i>tʃimo</i> |
| | /n/ <i>dan</i> “aim” | <i>danta</i> | vs <i>dano</i> |

(9) The application of the rules above is fully predictable on the basis of the phonological context => these verbs belong to the same class, class 1.

2.3. Deviant patterns in classes 2 and 3 cannot be derived from general phonological rules

(11) PNG allomorphy

PNG	Class 1	Class 2 (a & b)	Class 3 (a & b)
1s	∅	∅	∅
2s	t	s	t
3ms	∅	∅	∅
3fs	t	s	t
1p	n	n	n
2p	t	s	t
3p	∅	∅	∅

(12) class 2 (a and b) vs class 1:

2s/3fs/2p /t/ surfaces as [s].

Given rule (9b), we would expect **mari-d-a*:

(13) class 3 (a and b) vs class 1:

2s/3fs/2p /t/ surfaces as [t] in intervocalic position.

Given rule (9b), we would expect **mar-sa-d-a*;, **mar-a-d-a*:

(14) LEX : class 1: no allomorphy

	stem	LEX	PNG	TAM
imperative 2s				
1s/3ms/3p (=before V)	mar	∅	∅	a:
2s/3fs/2p (=before C except <i>n</i>)			t	
1p (=before <i>n</i>)			n	

(15) LEX : class 2a: allomorphy

	stem	LEX	?	PNG	TAM
imperative 2s					
1s/3ms/3p (=before V)	mar	i	j(i)	∅	a:
2s/3fs/2p (=before C except <i>n</i>)				s	
1p (=before <i>n</i>)			n	n	

(16) LEX : class 2b: allomorphy

	stem	LEX	?	PNG	TAM
imperative 2s					
1s/3ms/3p (=before V)	mar	e:	j(i)	∅	a:
2s/3fs/2p (=before C except <i>n</i>)				s	
1p (=before <i>n</i>)			aj	n	

(17) LEX : class 3a: allomorphy

	stem	LEX	?	PNG	TAM
imperative 2s					
1s/3ms/3p (=before V)	mar	so	d	∅	a:
2s/3fs/2p (=before C except <i>n</i>)				t	
1p (=before <i>n</i>)				n	

(18) LEX : class 3b: allomorphy

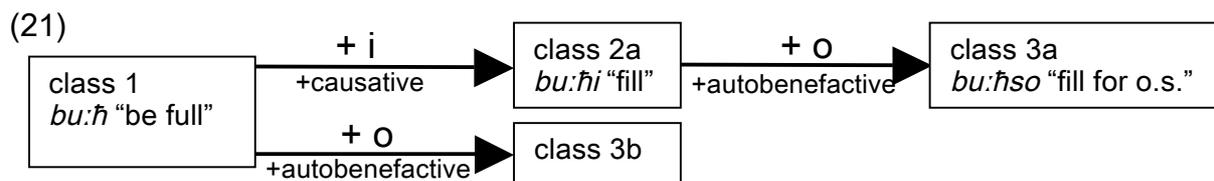
	stem	LEX	?	PNG	TAM
imperative 2s					
1s/3ms/3p (=before V)	mar	∅	t	∅	a:
2s/3fs/2p (=before C except <i>n</i>)				t	
1p (=before <i>n</i>)			a	n	

3. The allomorphy of the causative marker

3.1. The identity of -s in class 3a

- (19)
- | | | | | | | | | |
|----|--------------|---|------------|---|-----------|-----------------|-------------------|----------------------|
| a. | <i>mar</i> | | | | | “pass, tie up” | | |
| b. | <i>mari</i> | = | <i>mar</i> | + | <i>i</i> | “make pass” | | |
| | | | “pass” | | causative | | | |
| c. | <i>maro</i> | = | <i>mar</i> | + | | <i>o</i> | “tie up for o.s.” | |
| | | | “tie up” | | | autobenefactive | | |
| d. | <i>marso</i> | = | <i>mar</i> | + | <i>s</i> | + | <i>o</i> | “make pass for o.s.” |
| | | | “pass” | | causative | | autobenefactive | |

- (20)
- | | | |
|------------------|------------------------|----------------------------|
| class 1 | class 2a | class 3a |
| <i>bu:ħ</i> | <i>bu:ħi</i> | <i>bu:ħso</i> |
| “be full” | “fill” | “fill for o.s.” |
| <i>did</i> | <i>didi</i> | <i>didso</i> |
| “disperse” | “disperse s.t.” | “chase away for o.s.” |
| <i>dilla:ʃ</i> | <i>dilla:ʃi</i> | <i>dilla:ʃso</i> |
| “be cracked” | “crack, tear s.t. off” | “tear, crack for o.s.” |
| <i>urur</i> | <i>ururi</i> | <i>ururso</i> |
| “gather (intr.)” | “gather, collect” | “gather, collect for o.s.” |



(22) Derivation from CVCVC-verbs

- a. 60 class 3a verbs derived from a CVCVC stem (source: APS 1985 and Zorc 1993) : 53 = CV_iCV_iCso, 6 = CVCCiso, 1 = both CV_iCV_iCso and CVCCiso
- | | | | |
|------|----------------------|---------------------------|--------------------------------|
| b. | class 1 | class 2a | class 3a |
| i. | <i>qurun</i> | <i>qurmi</i> | <i>qurunso</i> |
| | “rot, stink” | “cause to rot, stink” | “cause to rot, stink for o.s.” |
| | <i>taran</i> | <i>tarmi</i> | <i>taranso</i> |
| | “be multiplied” | “cause to multiply” | “get more for o.s.” |
| ii. | <i>ereg</i> | <i>ergi</i> | <i>ergiso</i> |
| | “give s.t. on trust” | “lend s.t. to s.o.” | “take s.t. in trust” |
| iii. | <i>korođ</i> | <i>kordji</i> | <i>kordiso, korođso</i> |
| | “be increased” | “cause to grow, increase” | “increase for o.s.” |

(23) allomorphy of the causative suffix

- | | | | |
|----|------------------------------|------|------------------------------------|
| a. | in isolation | -i | <i>bu:ħi</i> “fill” |
| b. | before a derivational suffix | | |
| | i. VC __ | -s- | <i>bu:ħso</i> “fill for o.s.” |
| | ii. {CC, V} __ | -is- | <i>ergiso</i> “take s.t. in trust” |

3.2. The representation of the causative marker

(24) Element Theory (KLV 1985, 1990, Backley 2011: 41)

Fusion

[a] = A	[e] = I A
[i] = I	[o] = U A
[u] = U	

(25) CV-framework (Lowenstamm 1996, Scheer 2004):

- a. The skeletal tier consists of a strict alternation of non branching nuclei (C) and non branching onsets (V).
- b. The distribution of empty V is constrained by the Empty Category Principle.

(26) Empty Category Principle (KLV 1985):

An empty V position may be phonetically non-interpreted iff it is properly governed.

(27) Proper Government (KLV 1985):

A properly governs B iff

- (i) A governs B from the right to the left.
- (ii) A is not properly governed.

(28) a. *gudub* “cross!” vs *gudba*: “I cross” but *gudubta*: “you cross”
 b. *gurun* “rot” vs *gurmi*: “cause to rot” but *gurunso* “cause to rot for o.s.”
 (cf. rule 9c above)

(29) Licensing (Charette 1989, 1991, Scheer & Ségéral 2001: 138):

An empty Nucleus may neither govern nor license.
 A filled Nucleus may both govern and license.

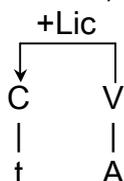
(30) CAUS CV
 I t

(31) distribution of [t]

		APS 1985	Zorc 1993	Keenadiid 1976	
a.	initial	#tV	1512	1041	584
	onset after coda	...CtV...	1280	960	481
	intervocally	...VtV	1026	690	370
b.	final	t#	1 ^(L)	14 ^(L)	1 ^(L)
	coda	...tC...	11 ^(L)	22 ^(L)	2 ^(L)
	geminate	...tt...	0	1 ^(L)	0

(L) stands for “loanwords”.

(32) In Somali, *t* must be licensed by the following V-position.

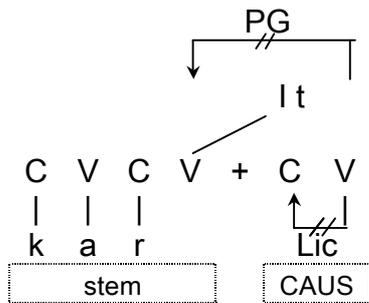


(33) CAUS in isolation: the data

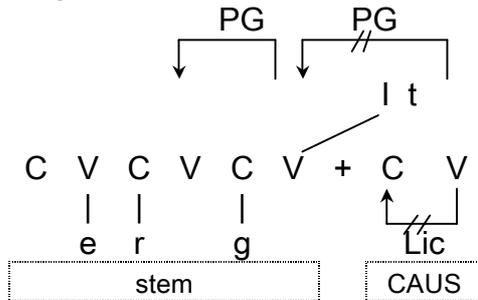
	base		causative
a.	CVC	<i>kar</i> "boil" [intr]	<i>kari</i> "boil s.t., cook"
b.	CVVC	<i>bu:ħ</i> "be full"	<i>bu:ħi</i> "fill"
c.	CVCVC	<i>ereg</i> "entrust s.t."	<i>ergi</i> "entrust s.t. to s.o."

(34) CAUS in isolation : representations

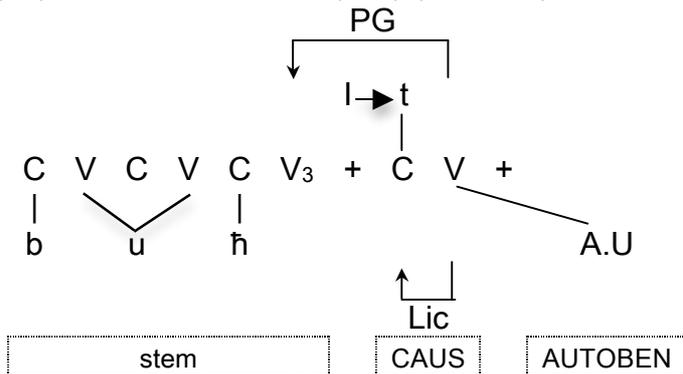
a. *kari* "boil s.t."



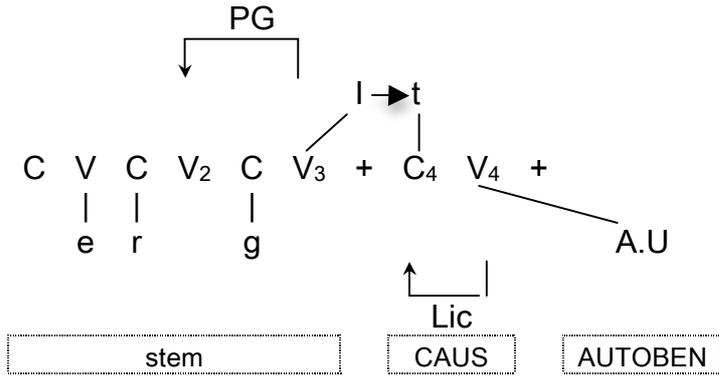
b. *ergi* "entrust s.t. to s.o."



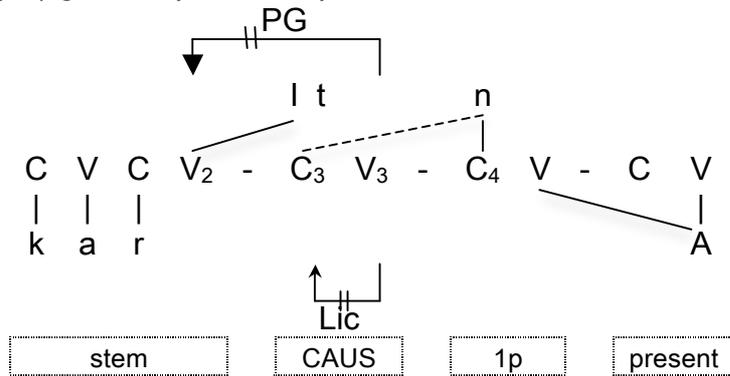
(35) CAUS+AUTOBEN (CV(V)C verbs): *bu:ħ-s-o* "fill for o.s."



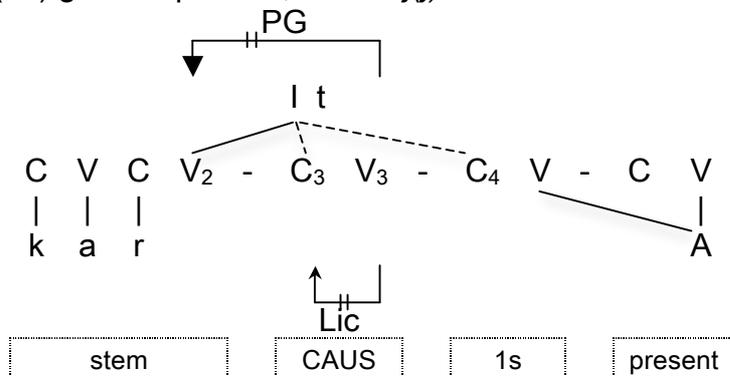
(36) CAUS+AUTOBEN (CVCVC verbs): *ergiso* “take s.t. in trust”



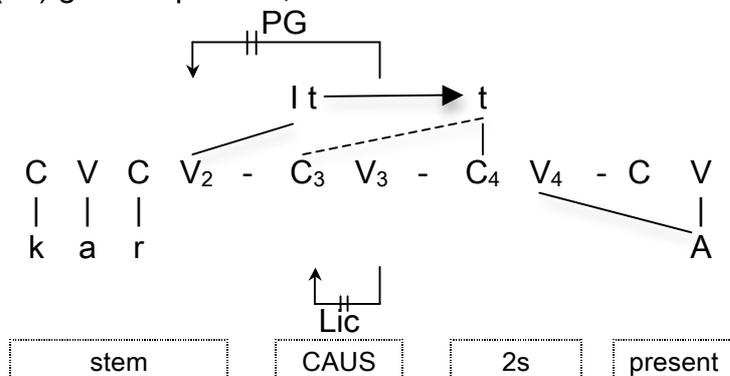
(37) general present, 1p: *karinna*:



(38) general present, 1s: *karij(j)a*:



(39) general present, 2s: *karisa*:



(40) Underlying geminates (Barillot 2002)

C ₀	V/∅ alternation	phonological status / V_V
{t, k, w, ʃ, tʃ}	never	always long
{b, d, g, d, l, m, n, r, h, ʔ, ʕ, ɸ}	always	always short
{s, f, q, j}	sometimes	short & long
	qosol "laugh!" vs qosla: "I laugh"	short
	fasax "divorce!" vs fasaxa: "I divorce"	long

3.3. The representation of -e:

- (41) a. noun > class 2b ʃaro "anger" ʃare: "anger, make angry"
 ʃafo "dinner" ʃafe: "have dinner"
 bijo "water" bije: "add water to s.t., dilute"
- b. adjective > class 2b adag "hard, strong" adke: "make strong, harden"
 af "sharp point" afe: "sharpen"
 ʃad "white" ʃadde: "whiten"

- (42) noun/adj class 2b class 3a
- adag adke: adkajso
 "hard, strong" "make strong, harden" "make strong for o.s., resist"
- af afe: afajso
 "sharp point" "sharpen" "sharpen for o.s."
- bijo bije: bijajso
 "water" "add water to s.t., dilute" "dilute for o.s."
- ʃad ʃadde: ʃaddajso
 "white" "whiten" "whiten for o.s."

(43) LEX in classes 2a and 2b

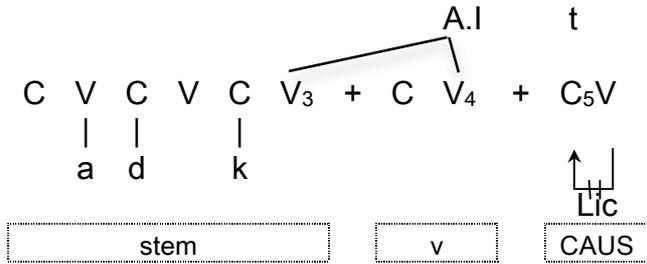
		2a	2b
inflection	imperative 2s		
	1s/3ms/3p (=before V)	i	e:
	2s/3fs/2p/1p (=before C)		aj
derivation	before autobenefactive -o, stative -an, etc.	(i)s	ajs

- (44) a. CVCV b. CVCV
- \ / | |
- A.I A I
- [e:] [aj]

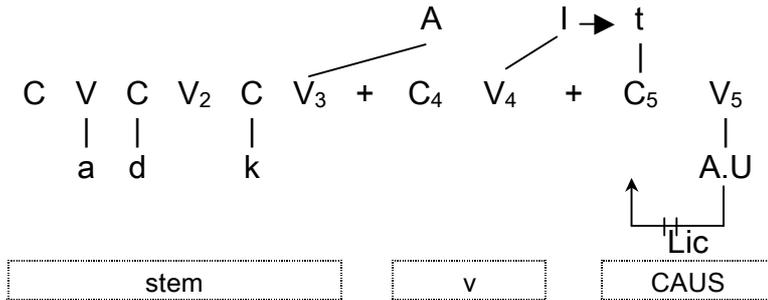
(45) C V + C V



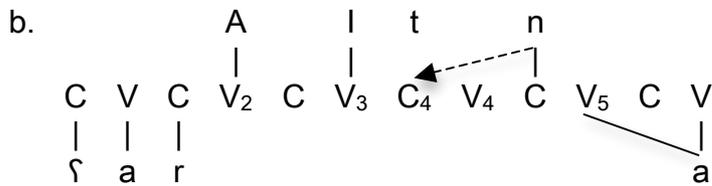
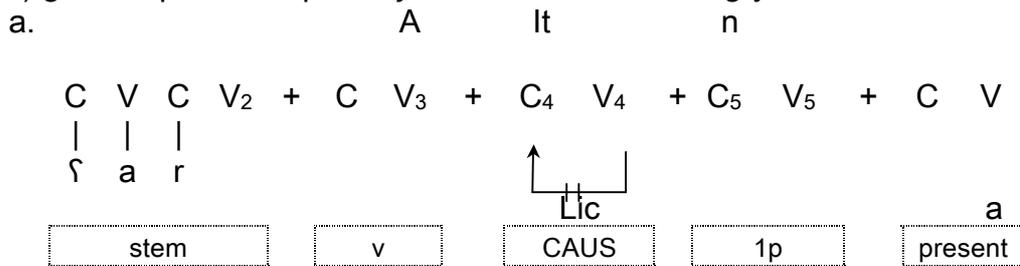
(46) |A|+CAUS in isolation: *adke*: “make strong, harden”



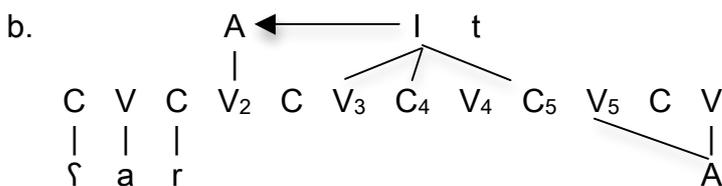
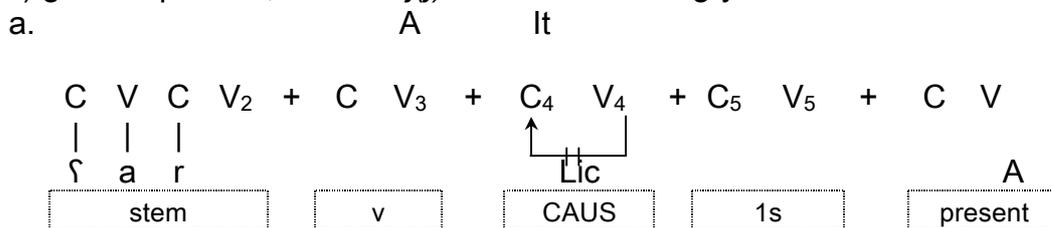
(47) |A|+CAUS+AUTOBEN: *adkajso* “make strong for s.o.”



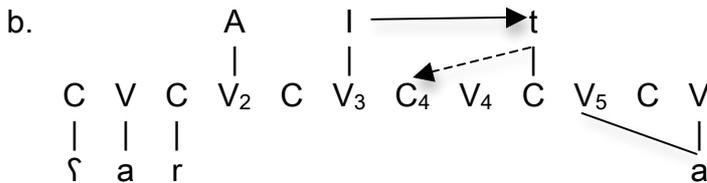
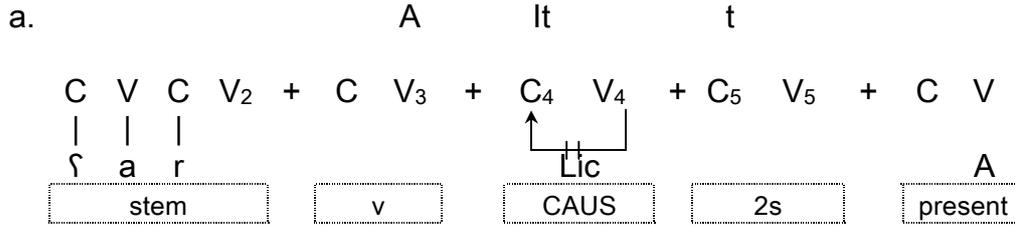
(48) general present, 1p: *ʃarajjna*: “we make s.o. angry”



(49) general present, 1s: *ʃare:j(j)a*: “I make s.o. angry”



(50) general present, 2s: *ʕarajsa*: “you make s.o. angry”



4. Classes 3a and 3b

4.1. The autobenefactive marker

=> Analysis based on Barillot (2002) and Barillot & Ségéral (2005)

(51) AUTOBEN allomorphy

		3a	3b
inflection	imperative 2s	o	o
	1s/3ms/3p (=before V)	ad	t
	2s/3fs/2p (=before C except <i>n</i>)	a	a
	infinitive/progressive/1p (=before <i>n</i>)	an	an
derivation	before stative -an, etc.	<i>DNA</i>	

(52) a. AUTOBEN displays a very similar allomorphy in both classes

b. The only difference lies in 1s/3ms/3p forms. There, two differences are found:

- i. the vowel *-a-* appears in class 3a, only;
- ii. class 3a has *-d-* while class 3b has *-t-*.

(53)

a. 3b, 1s: *marta*: “I tie up for myself” b. 3a, 1s: *marsada*: “I make pass for myself”



(54) AUTOBEN CV
 A t

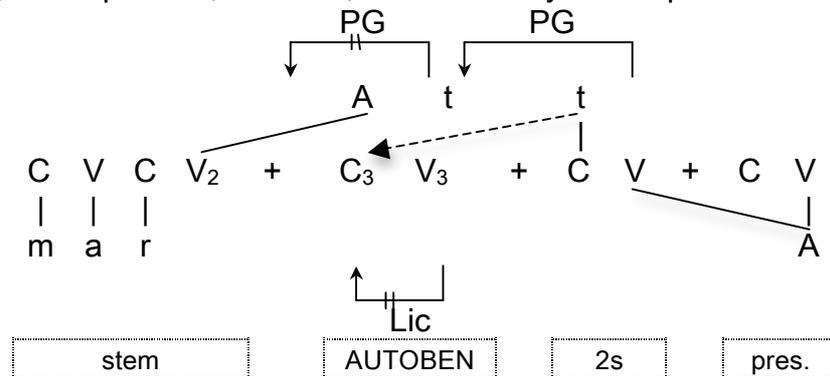
(55) A problem?

	class 1	class 3a	class 3b
present 2s	mar-t-a:	mar-s-a-t-a:	mar-a-t-a:
		intervocalic [t]	
			no putative CCC

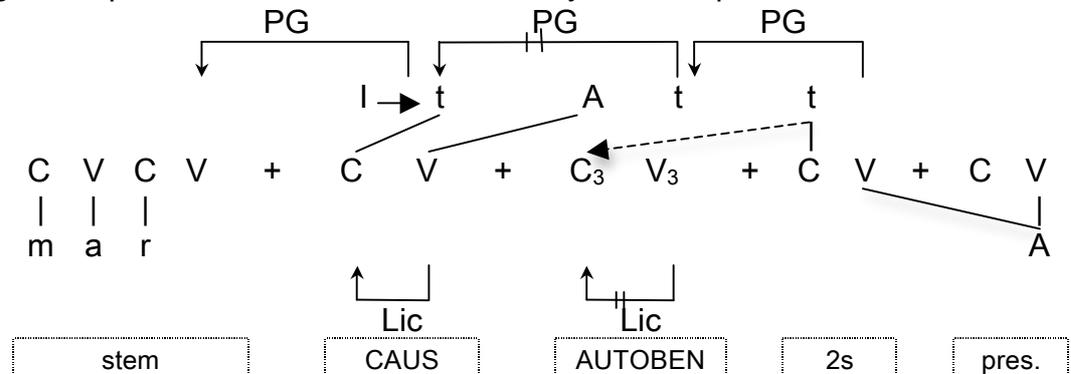
=> Solution: virtual geminates (Ségéral & Scheer 2001)

(56) *marata:* "you tie up for yourself" = *mar* "tie up for o.s." *at* AUTOBEN *t* 2s *a:* TAM

(57) a. general present, class 3b, 2s: *marata:* "you tie up for o.s."

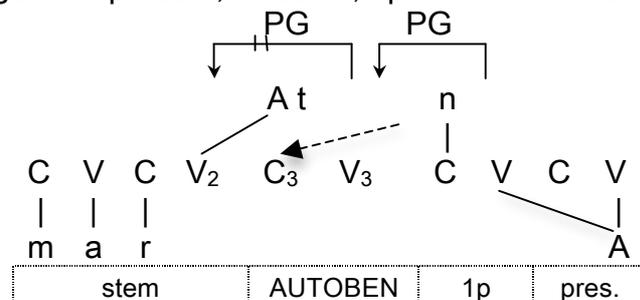


b. general present, class 3a, 2s: *marsata:* "you make pass for o.s."

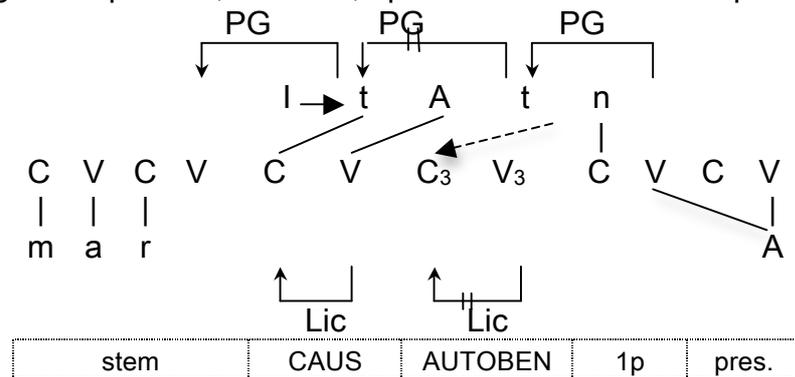


4.2 1p and imperative 2s

(58) a. general present, class 3b, 1p: *maranna:* "we tie up for o.s."



b. general present, class 3a, 1p: *marsanna*: “we make pass for o.s.”



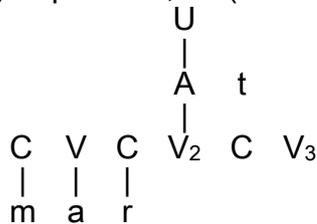
- (59) sg pl sg+DET pl+DET
- a. *na:g* “woman” *na:go* *na:ga-ha*
 - b. *inan* “boy” *inammo* *inamma-da*
 - c. *ilig* “tooth” *ilko* *ilka-ha*
 - d. *ho:jo* “mother” *ho:ja-da*

(60) *a# in Somali
APS 1985

a#	e#	i#	o#	u#
27	991	1015	2390	2

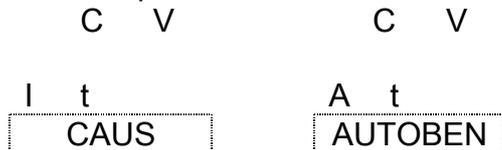
- (61) a. [a] = |A|
b. [o] = |U A|

(62) Imperative, 2s (class 3b): *maro* “tie up for yourself!”

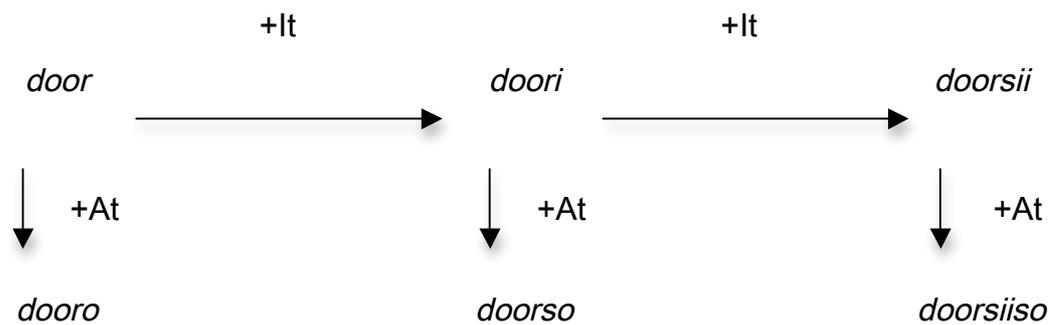


5. Conclusion

(63) Unified representations of the causative and the autobenefactive:



(64) Somali derivational morphology



(65) Our approach:

- a. we dispense with the notion of paradigm as a linguistic active object;
- b. paradigms result as the output of phonological computation and do not need to be specified in advance in the lexical entry of each verb.

Selected references

- [APS] = Agostini, F., Puglielli, A. and Siyaad, Ciise Mohamed (eds). 1985. *Dizionario Somalo Italiano*. Rome: MAE, Dipartimento per la Cooperazione allo Sviluppo.
- Backley, Philip. 2011. *An Introduction to Element Theory*. Edinburgh: Edinburgh University Press.
- Barillot, Xavier. 2002. *Morphophonologie gabaritique et information consonantique latente en somali et dans les langues est-couchitiques*. PhD dissertation, Université Paris 7.
- Barillot, Xavier and Philippe Ségéral. 2005. On phonological processes in the '3rd conjugation' of Somali. *Folia orientalia* 41, 115-131.
- Bonet, Eulàlia and Daniel Harbour. 2012. Contextual allomorphy. In: Jochen Trommer (ed), *The Morphology and Phonology of Exponence*, Oxford: Oxford University Press, pp. 195-235.
- Charette, Monik. 1989. The Minimality Condition in Phonology, *Journal of Linguistics* 23, 213-243.
- Charette, Monik. 1991. *Conditions on Phonological Government*, Cambridge: Cambridge University Press.
- Keenadiid, Yaasiin Cismaan. 1976. *Qaamuuska Af-Soomaaliga* - Firenze (E. Ariani).
- [KLV] = Kaye, Jonathan, Lowenstamm, Jean, Vergnaud, Jean-Roger, 1985. The internal structure of phonological elements: a theory of charm and government. *Phonology Yearbook* 2, 305-328.
- [KLV] = Kaye, Jonathan, Lowenstamm, Jean, Vergnaud, Jean-Roger, 1990. Constituent structure and government in phonology. *Phonology Yearbook* 7, 193-231.
- Lowenstamm, Jean. 1996. CV as the only syllable type. In: Jacques Durand and Bernard Laks (eds.), *Current Trends in Phonology*, Manchester: Salford, pp. 419-441.
- Orwin, Martin. 1995. *Somali*. New York: Routledge.

Saeed, John Ibrahim. 1993. *Somali Reference Grammar* (second revised edition). Kensington (Maryland): Dunwoody Press.

Scheer, Tobias. 2004. *A lateral theory of phonology. Vol 1: What is CVCV, and why should it be?* Mouton de Gruyter, Berlin.

Scheer, Tobias and Philippe Ségéral. 2001. La coda miroir. *Bulletin de la Société Linguistique de Paris* 96, 107-152.

Ségéral, Philippe and Tobias Scheer. 2001. Abstractness in phonology: the case of virtual geminates. In Katarzyna Dziubalska-Kolaczyk (ed.), *Constraints and preferences*, Berlin: Mouton de Gruyter, pp. 311-337.

Zorc, David R. 1993. *Somali-English Dictionary with English index*. Kensington (Maryland): Dunwoody Press.