12. INFIX GENESIS IN SOUTHERN CUSHITIC

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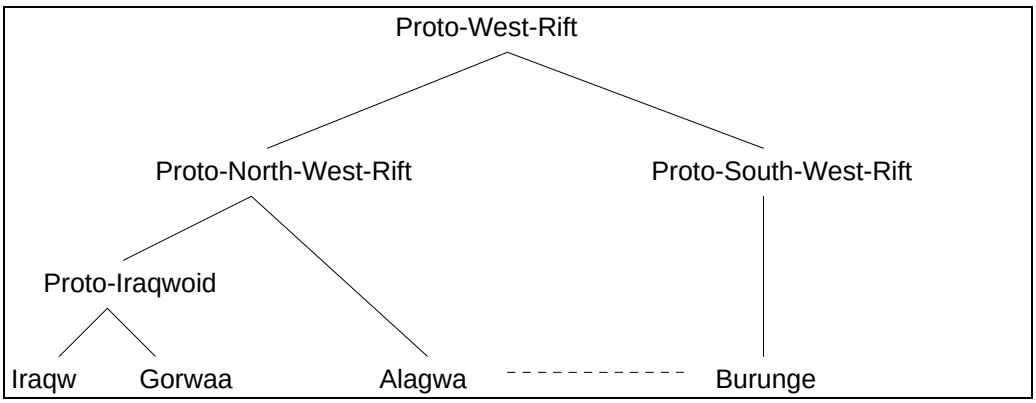
Introduction

One of the most salient traits of Afrasian languages, specifically the Semitic languages, is the well known root-and-pattern system (Hetzron 1987: 651): consonantal skeletons that articulate some basic lexical idea and which are filled up with vowels that tend to carry grammatical meaning (Diakonoff 1988: 44ff.), described as ablaut, apophony, or intercalation, most generally to be viewed as infixes[1], taxonomically. These infixes have attracted the attention and imagination of historical Afrasianists for a long time (Rössler 1950, Petráček 1960-64, Greenberg 1955, Brockelmann 1908, Vycichl 1959). One of the most widespread of these infixes is the so-called internal *-aa-* for the nominal plural and for verbal intensive, pluractional, or habitual connotations (Diakonoff 1965: 65, 1988: 64; Greenberg 1955; Newman 1990: 134). Most Afrasianists (e.g. Petráček 1961: 525; Zaborski 1978: 376) tend to regard it as a common Afrasian heritage from a very distant past. Its presence in a modern language seems to be ranked as a number-one diagnostic for genetic membership in AA[2].

Although it is possible that instances of internal *-aa-* in modern AA languages go back to PAA directly, a caveat against hasty interpretation of infixes as archaisms should be raised here, since the retention view is prone to distorting a much more complex historical reality, as it neglects the possibility that infixes, more specifically internal *-aa-*, might have arisen at some later stage, independently and even quite recently, in some languages, and that they might have been subject to subsequent cycles of renovation.

The West Rift languages of Southern Cushitic offer the rare opportunity for studying the mechanisms of a particular case of infix genesis which shows a recent innovation of internal *-aa-* that is definitely not a direct transmission from PAA times and which also has some bearing on typological issues, since the innovation takes a path that has not been described so far.

The languages in question are Iraqw, Gorwaa, Burunge and Alagwa that form the West Rift group of Southern Cushitic[3], the only unproblematic one of the three branches in Ehret's (1980: 132) classification. Based on detailed recent investigations (Kießling 1999), West Rift internal genetic relations could be visualized as follows:



Infixes of the shape -*VC*-, -*VVC*- and -*VV*- occur in nominal as well as in verbal derivation in all the four languages mentioned and can be reconstructed for the historical predecessor, Proto-West-Rift.

The rise of infixes from a typological point of view

Ultan 1975 summarizes some basic characteristics of infixes as opposed to ordinary affixes with regard to parameters such as frequency, position, stability, function, and geographic distribution. According to him infixes are rare, as compared to the frequency of other affixes, and their presence in any language also implies the presence of suffixes and/or prefixes; there are no languages with infixes only. In predominantly prefixing languages, infixes tend to intrude into the root close to the initial position, whereas in predominantly suffixing languages, they tend to be inserted close to the root-final position. Infixes are not as stable as other affixes. Due to difficulties in informational processing in the brain, they either tend to be reduced to prefixes or suffixes, or they undergo rapid semantic decay and merge with the lexeme (lexicalization) much sooner than other affixes. Possibly as a consequence of this, infixes tend to be restricted to the derivational domain; but they also take over inflectional functions, e.g. in Semitic and Berber. Geographically, they occur predominantly in Austro-Asiatic languages of South Eastern Asia, in Afrasian, mostly in Semitic, Berber, Chadic, and Cushitic, and infrequently scattered in language families all over the world. Under a historical perspective, such fragile entities as infixes arise from other affixes either through metathesis (Ultan 1975: 178) or via entrapment of inner affixes (Ultan 1975: 180). There is of course the possibility of secondary infixes arising under analogy of already existent infix patterns (Ultan 1975: 184). Besides entrapment and analogy, Southern Cushitic shows another path of infix genesis, so far unaccounted for: partial entrapment by reanalysis of morpheme boundaries.

Infix genesis by suffix entrapment

Semantic bleaching of peripheral affixes in affix chains sometimes results in what Ultan (1975: 180ff.) calls "entrapment of the inner affixes", i.e. the fusion of outer affixes by which the root turns inner affixes into infixes, one of the most common sources of infixes, also attested in the WR languages of Southern Cushitic, e.g. in verbal derivations. WR has quite an extensive array of verbal derivational affixes which follow a strict order which could be reconstructed for PWR roughly as follows:

(1) Order of verbal derivational affixes in West Rift

$$\text{COM} - \text{APL} - \left\{\begin{matrix}\text{FRQ}\\ \text{DIS}\end{matrix}\right\} - \text{R} - \left\{\begin{matrix}\text{PRO1}\\ \text{PRO2}\\ \text{INT}\end{matrix}\right\} - \text{INCH} - \text{DUR} - \left\{\begin{matrix}\text{MED}\\ \text{CONT}\end{matrix}\right\} - \text{CAU}$$

The affixes which have developed infix allomorphs along the lines of the "entrapment model" are the progressives *-aC_z and *-VVC_z, the intensive *-*aa*C_z, and the durative *-*im*. Of these only the durative is a primary suffix, whereas the intensive and the progressives are secondary suffixes, i.e. they apply only to bases that have already been extended by one primary derivational suffix at least. The following reconstructions of PWR verbal derivations illustrate the secondary characteristics of the progressive and the intensive suffixes that serve as the base for later infix creation:

(2) Reconstruction of PWR secondary stems on a durative base

simplex	DUR	PRO1	PRO2	INT
**ʔooʔ* "speak, say"	*ʔooʔ-im*	*ʔooʔ-aʔ-im*	*ʔooʔ-iiʔ-im*	*ʔooʔ-aaʔ-im*
**neet* "play"	*neet-im*	*neet-at-im*	*neet-iit-im*	*neet-aat-im*
**dif* "thresh"	*dif-im*	*dif-af-im*	*dif-iif-im*	*dif-aaf-im*
**buʔ* "pay"	*buʔ-um*	*buʔ-aʔ-um*	*buʔ-uuʔ-um*	*buʔ-aaʔ-um*
**daqʼ* "skin"	*daqʼ-am*	*daqʼ-aqʼ-am*	*daqʼ-aaqʼ-am*	*daqʼ-aaqʼ-am*
**guʔ* "sleep"	*guʔ-um*	[*guʔ-uʔ-am-im*]	[*guʔ-uuʔ-um-im*]	*guʔ-aaʔ-im*

**geeʕ* "belch"	*geeʕ-im*	*geeʕ-aʕ-im*	*geeʕ-iiʕ-im*	-
**fiis* "steal"	-	*fiis-as-im*	*fiis-iis-im*	*fiis-aas-im*
**gwiʕ* "swallow"	*gwiʕ-im*	*gwiʕ-aʕ-im*	-	*gwiʕ-aaʕ-im*

(3) Reconstruction of PWR secondary stems on a continuative base

simplex	CONT	PRO1	INT
**dooɬ* "cultivate"	*doɬ-it*	*doɬ-aɬ-it*	*doɬ-aaɬ-it*
**fool* "dig"	*fol-it*	*fol-al-it*	*fol-aal-it*
**fiits'* "sweep"	*fits'-it*	*fits'-ats'-it*	*fits'-aats'-it*
**faad* "count"	*fad-it*	*fad-ad-it*	*fad-aad-it*
**gweed* "open"	*gwed-it*	*gwed-ad-it*	*gwed-aad-it*

Progressive 1 in modern Alagwa, specialized to indicate imperfectivity in non-past contexts, builds on durative stems by inserting the vowel *-a* plus a reduplication of the final consonant of the verbal root.

(4) Alagwa derivation of progressive 1 via durative

simplex	DUR	PRO 1
hub "carry"	*hub-im*	*hub-ab-im*
gootɬ' "grind"	*gootɬ'-im*	*gootɬ'-atɬ'-im*
mut "pierce"	*mut-im*	*mut-at-im*
gub "rot"	(**gub-im*)	*gub-ab-im*
fatɬ' "collect honey"	(**fatɬ'-im*)	*fatɬ'-atɬ'-im*

In modern Burunge and Alagwa, progressive 2, indicating the imperfective aspect in the past tense, operates on duratives and inserts a suffix which combines a long vowel copied from the right (the primary suffix) and a repetition of the final consonant of the root copied from the left:

(5) Burunge derivation of progressive 2 via durative

simplex	DUR	PRO 2
fiis "steal"	*fiis-im*	*fiis-iis-im*
gereged "carry"	*gereged-im*	*gereged-iid-im*
kitaħ "drink"	*kitaħ-am*	*kitaħ-aaħ-am*

(6) Alagwa derivation of progressive 2 via durative

simplex	DUR	PRO 2
xab "marry"	*xab-im*	*xab-iib-im*
yaʕab "send"	*yaʕab-im*	*yaʕab-iib-im*
ʔooʔ "speak"	*ʔooʔ-im*	*ʔooʔ-iiʔ-im*

The intensive suffix has also acquired a habitual reading and operates on continuatives and duratives by inserting the long vowel *-aa* plus a repetition of the consonant immediately preceding the morpheme.

(7) Alagwa derivation of intensive via durative

simplex	DUR	INT
q'uuʔ "give off smoke"	*q'uuʔ-um*	*q'uuʔ-aaʔ-um*
ts'uf "sweat"	*ts'uf-im*	*ts'uf-aaf-im*
haaʔut "go away"	*haaʔ-um-it*	*haaʔ-um-aam-it*

(8) Burunge derivation of intensive via continuative

simplex	CONT	INT
fool "dig"	*fol-id*	*fol-aal-id*
ħeek "draw water"	*ħek-id*	*ħek-aak-id*
fiitʃ' "sweep"	*fitʃ'-id*	*fitʃ'-aatʃ'-id*

It is quite common in WR for outer affixes, such as the mediopassive, the inchoative, the durative, and the causative to get frozen, so that the derived verbal stem becomes lexicalized as a new base, the original root dropping out of use. But although the affix is frozen to the root semantically, it is not from a morphological point of view, since the old morpheme boundary reappears for the insertion of derivational affixes, in accordance with the order of suffixes sketched above in (1). So the suffixes are still treated as suffixes with respect to morpheme order, although semantically they are not due to lexicalization, root and affix forming a semantic unit.

Thus, the Alagwa verbs *ts'uħut* "cough" and *ʕisit* "sneeze" have to be analyzed as lexicalized mediopassives morphologically, derived from synchronically non-existent roots **ts'uħ* and **ʕis*, since the derivation of the durative, the progressives, and the intensive causes the old boundary reappears: they are inserted according to the scheme above in (1).

(9) Alagwa: lexicalized mediopassives and causatives, with durative, progressive, and intensive "infixed"

*simplex	CAU / MED	DUR	PRO 1 / PRO 2 / INT
**ts'uħ*	*ts'uħ-ut* "cough"	*ts'uħ-um-it*	*ts'uħ-um-aam-it*
**ʕis*	*ʕis-it* "sneeze"	*ʕis-im-it*	*ʕis-im-aam-it*
**maah*	*maah-as* "ask"	*maah-am-is*	*maah-am-iim-is*
**ʔih*	*ʔih-it* "answer a call"	*ʔih-im-it*	*ʔih-im-iim-it*
**xiiŋg*	-	*xiiŋg-im* "snore"	*xiiŋg-iig-im*
**xiiŋg*	-	*xiiŋg-im* "snore"	*xiiŋg-ag-im*
**xwereʔ*	*xwereʔ-es* "fry"	*xwereʔ-em-is*	*xwereʔ-em-am-is*
**fir*	-	*fir-im* "ask for"	*fir-ar-im*
**taant*	-	*taant-im* "cook"	*taant-at-im*
**ʔaans*	-	*ʔaans-im* "start" (SWA)	*ʔaans-as-im*
**puh*	-	*puh-um* "smash"	*puh-aah-um*

Some examples from Burunge (10), Iraqw (11) and Proto-West-Rift (12):

(10) Burunge lexicalized mediopassives, with durative, progressive, and intensive "infixed"

*simplex	MED	DUR	PRO	INT
**tʃ'uħ*	*tʃ'uħud* "cough"	*tʃ'uħ-um-id*	*tʃ'uħ-uuħ-um-id*	*tʃ'uħ-um-aam-id*
**ʕis*	*ʕisid* "sneeze"	*ʕis-im-id*	*ʕis-iis-im-id*	*ʕis-im-aam-id*

(11) Iraqw derivation of intensive

Simplex	CAU / MED	DUR	PRO	INT
[**niʕ*]	-	*niʕ-iim* "dance"	-	*niʕ-aaʕ-im*
[**siħ*]	*siħ-iit* "stand"	*siħ-iim-iit*	-	*siħ-im-aam-iit*
[**ʕakw*]	*ʕak-uut* "jump"	*ʕak-m-iit*	-	*ʕak-m-aam-iit*
[**hiʔ*]	*hiʔ-iit* "walk"	*hiʔ-iim-iit*	-	*hiʔ-im-aam-iit*
[**ʔiw*]	*ʔiw-iit* "sit, stay"	-	*ʔiw-iiw-iit*	*ʔiw-aaw-iit*
gooʔ "carve"	-	*gooʔ-iim* "write"	*gooʔ-iiʔ-iim*	*gooʔ-aaʔ-iim*

[**had*]	*haniis* "give	*han-m-iis*	-	*han-m-aam-iis*

(12) PWR examples: lexicalized primary stems with secondary durative, progressive, or intensive "infixed"[4]

simplex	CAU / MED	DUR	PRO1	PRO2	INT
[***ʔax*]	**ʔax-as* "listen"	*ʔax-am-is*	*ʔax-ax-am-is*	-	*ʔax-am-aam-is*
[***baq'*]	**baq'-at* "wait"	*baq'-am-it*	*baq'-aq'-am-it*	-	*baq'-am-aam-it*
[***fir*]	-	**fir-im* "ask"	*fir-ar-im*	*fir-iir-im*	*fir-aar-im*
[***tɬ'at*]	-	**tɬ'at-im* "dream"	-	*tɬ'at-iit-im*	-
[***deʔ*]	-	**deʔ-em* "herd"	-	-	*deʔ-aaʔ-em*

Note that these morphemes – for the durative, progressive, and intensive – have started along the way to infixhood, at least insofar as the "root" has no claim to independent existence; it is not entirely straightforward to break up the base into root and affix.

In some cases the behaviour of secondary suffixes such as the intensive could be used as diagnostic evidence for fossilized morphemes such as the PWR stative suffix **-V?*. The fact that the intensive affix intrudes into the base, cutting off glottal-stop endings, raises the suspicion that this very glottal-stop ending may be a former suffix.

(13) Burunge and Alagwa intensive stems with an archaic stative in **-V?*

	*simplex	stative	intensive
BUR	**xuur*	*xuuruʔ* "snore"	*xuur<aar>uʔ*
BUR	**ɬaħ*	*ɬaħaaʔ* "endure pain"	*ɬaħ<aaħ>aaʔ*
BUR	**ts'ots'*	*tʃ'otʃ'oʔ* "be noisy"	*tʃ'otʃ'<aatʃ'>oʔ*
BUR	**fud*	*fuduʔ* "bubble"	*fud<aad>uʔ*
BUR	**ʕup*	*ʕupuʔ* "be sullen"	*ʕup<aap>uʔ*
BUR	**maħ*	*maħaaʔ* "ferment"	*maħ<aaħ>aaʔ*
BUR	**taf*	*tafaʔ* "be straight"	*taf<aaf>aʔ*
ALA	**xal*	*xalaʔ* "be tough"	*xal<aal>aʔ*

Once this process of entrapment of inner affixes was established in Burunge, it seems as if it was carried over by analogy to other verb stems which were in fact bare triradical roots without any petrified suffix. Thus examples such as the Burunge intensives in (14) can only represent full-fledged "infix" status, since there is no way whatsoever to do away with the terminal consonants as former suffixes (Kießling 1994: 106):

(14) Burunge intensive infix *-aaC_y-* applied to triradical roots

BUR simplex	BUR intensive
q'uruʕ "grumble"	*q'ur<aar>uʕ*
hiigupuʕ "stoop down"	*hiigup<aap>uʕ*
hiinapaʕ "stick to, be glued to"	*hiinap<aap>aʕ*
diliq' "be attentive"	*dil<aal>iq'*
nakatʃ' "be slippery"	*nak<aak>atʃ'*
habatɬ' "show one's teeth"	*hab<aab>atɬ'*

This kind of combination of lexicalization and "entrapment of inner affixes" (Ultan 1975: 180ff.) is one of the main paths of infix genesis, well-attested in several infix-languages all over the world, e.g. Indonesian and Tagalog: "...entrapment, the result of outer-affix decay and fusion with the root, an inner affix then becoming an infix" (Ultan 1975: 189).

Infix genesis within a framework of reduplication and haplology

There is a slightly different channel of infix genesis within the framework of morphological reduplication and haplology. In nominal derivation, such as the derivation of noun plurals, reduplicative suffixes (or rather "reduplicatory", following Greenberg 1955) of the shape *-aC$_z$V* have been used in PWR. Diachronically, these suffixes tend to be reduced on two opposite lines at different stages of the development of the West Rift languages (15), a perfect illustration of the fact that in historical linguistics same inputs may yield totally different, even opposite results. The first process starts by eliding the suffix vowel *a* between identical consonants, which triggers a reduction of long vowels inside the stem, motivated by syllable weight restrictions. The second process has quite the opposite effect: an originally short stem vowel becomes lengthened inside the stem, due to a fusion of stem vowel and suffix vowel which is the consequence of a haplological loss of the root final consonant. Evidence for both processes is presented below.

(15) Channels of reduction of reduplicative suffixes of the shape *-aC$_z$V*:

a. **CVVC$_z$-aC$_z$V* → *CVVC$_z$-C$_z$V* (syncope) → *CVC$_z$-C$_z$V* (syllable reduction) → *CVC$_z$-V* (degemination)

b. **CaC$_z$-aC$_z$V* → *Ca-aC$_z$V* (haplological loss of consonant)

The first chain of developments (15a) was responsible for the rise of vowel-reductive plural suffixes first in PWR and then later in PIRQ. Thus, nouns like PWR **tuu?aa* "dead body, carcass" built their plurals via reduplication, **tuu?a?u*, which is retained in modern Alagwa and Burunge. At the PIRQ stage, then, syncope (**tuu??u*), syllable reduction (**tu??u*), and degemination (**tu?u*) operated, with the result that vowel reduction has become morphologized in the number paradigm of modern Gorwaa and Iraqw: *tuu?aa* SG vs. *tu?u* PL. The same process must have operated earlier at the Pre-West-Rift level, deriving a couple of reductive nominal plural forms, e.g. PWR **labalu* PL (< ***labaalalu*, derived from the singular **labaala* "spear"), establishing an older layer of morphophonological vowel reduction, present in all the modern WR languages, and largely reminiscent of the subtractive plurals found in Beja, e.g. *yam*, plural of *yaam* "belly" (Zaborski 1986: 11f.).

The second process (15b) is much more restricted. It is at work in modern Alagwa. Here, in deriving nominal plurals and progressive verbal stems, an infix *-aa-* develops via haplological deletion of root consonants, resulting in a fusion of root and suffix. Regarding the nominals, the two reduplicatory plural suffixes in (16), *-aC$_z$aa* and *-aC$_z$u*, have developed allomorphs that consist of the suffixes *-aa* and *-u*, respectively, both of them combining with a long vowel infix *-aa-*. This process is probably restricted to nouns with a short root vowel *a*. Regular examples without haplology would be PWR **tuu?aa* "dead body, carcass" forming the plural **tuu?a?u*, and **?amoo* "way, path" forming the plural **?amamu*.

(16) Alagwa: haplological reduction of the nominal plural suffixes *-aC$_z$aa* and *-aC$_z$u*

singular	original plural with the suffixes *-aC$_z$aa* and *-aC$_z$u*	haplologically reduced plural
kwari "year"	*kwar$_1$-ar$_2$aa* →	*kwaØar$_2$aa* → *kwaaraa*
bala "day"	*bal$_1$-al$_2$u* →	*baØal$_2$u* → *baalu*
kwała "chain of beads"	*kwał$_1$-ał$_2$u* →	*kwaØał$_2$u* → *kwaału*
yakwaa "calabash"	*yakw$_1$-ak$_2$u* →	*yaØak$_2$u* → *yaaku*

The nouns *kwari* "year" and *bala* "day" apply the plural suffixes *-aC$_z$aa* and *-aC$_z$u*, respectively, to derive their plurals *kwar$_1$ar$_2$aa* and *bal$_1$al$_2$u*. An optional deletion of the original final consonant of the root C_1 in *kwaØar$_2$aa* and *baØal$_2$u* triggers an automatic reanalysis of the reduplicatory consonant C_2 as the original root consonant, which is preceded by a long vowel *aa* now, the result of a fusion of the vowels of the root and the suffix, to be regarded as an infix vis-à-vis the short vowel of the singular in the morphological paradigm. The former suffix has been reduced, with part of it being incorporated into the root as an infix. To be precise, it is not only infixes that arise within this framework, but a fixed pattern of infix plus suffix.

In the verbal derivation, the progressive suffix *-aC$_z$* of Alagwa alternates optionally with the infix allomorph *-aa-*. For example, the verb *?ar* "see" derives - via durative *?arim* - a progressive stem *?ar$_1$ar$_2$im*. As soon as the original C_1 is deleted in *?aØar$_2$im*, the reduplicatory consonant C_2 is reanalysed as the original one and the long vowel we are left with has become an infix.

(17) Alagwa: haplological reduction of the first progressive suffix *-aC$_z$*

Simplex	primary derivation	progressive stem with suffix *-aC$_z$*	haplologically reduced progressive stem
ʔar "see"	*ʔar-im* (DUR)	*ʔar$_1$-ar$_2$-im* →	*ʔaØar$_2$im* → *ʔaarim*
kwaɬ "throw"	*kwaɬ-am* (DUR)	*kwaɬ$_1$-aɬ$_2$-am* →	*kwaØaɬ$_2$am* → *kwaaɬam*
faar[5] "count"	*far-it* (CONT)	*far$_1$-ar$_2$-it* →	*faØar$_2$it* → *faarit*

The same reduction operates on the second progressive suffix *-VVC$_z$* of Alagwa. Contraction under conditions of haplology is responsible for the rise of the infix allomorph *-VV-*. Again, the decisive point is that haplology affects the original root consonant, not its repetition in the suffix. Exactly this step provokes the reanalysis of the repeated consonant as part of the root. The direct consequence of this readjustment of morpheme boundaries is that the original long suffix vowel slips into the root, merging with the short root vowel in a single long vowel and creating an alternation of an internal short vowel in the simplex and the durative versus an internal long vowel in the progressive. Thus, *kitaɬ* "drink" in (18a) derives, via intermediary durative *kitaɬam*, the second progressive form *kitaɬaaɬam* which is reduced by deletion of the first instance of *ɬ* to *kitaaɬam* with a long vowel infix *-aa-*.

(18a) Alagwa: haplological reduction of the second progressive suffix *-VVC$_z$*

simplex	durative	progressive	contraction
ʔilaniɬ "sprout"	*ʔilaniɬ-im*	**ʔilaniɬ$_1$-iiɬ$_2$-im* →	*ʔilaniØiiɬ$_2$im* → *ʔilaniiɬim*
kitaɬ "drink"	*kitaɬ-am*	**kitaɬ$_1$-aaɬ$_2$-am* →	*kitaØaaɬ$_2$am* → *kitaaɬam*
tuʕ "strip off, uproot"	*tuʕ-um*	**tuʕ$_1$-uuʕ$_2$-um* →	*tuØuuʕ$_2$um* → *tuuʕum*
ʔilatiɬ "drip, dribble"	**ʔilatiɬ-im*	**ʔilatiɬ$_1$-iiɬ$_2$-im* →	*ʔilatiØiiɬ$_2$im* → *ʔilatiiɬim*
magaɬ "observe, watch"	**magaɬ-am*	**magaɬ$_1$-aaɬ$_2$-am* →	*magaØaaɬ$_2$am* → *magaaɬam*
kiliq' "show teeth, smile"	**kiliq'-im*	**kiliq'$_1$-iiq'$_2$-im* →	*kiliØiiq'$_2$im* → *kiliiq'im*
kirig "sell; buy"	**kirig-im*	**kirig$_1$-iig$_2$-im* →	*kiriØiig$_2$im* → *kiriigim*
kwandik "measure off a field"	**kwandik-im*	**kwandik$_1$-iik$_2$-im* →	*kwandiØiik$_2$im* → *kwandiikim*
dif "beat"	**dif-im*	**dif$_1$-iif$_2$-im* →	*diØiif$_2$im* → *diifim*
xuʔ "know"	**xuʔ-um*	**xuʔ$_1$-uuʔ$_2$-um* →	*xuØuuʔ$_2$um* → *xuuʔum*

The same haplology also affects lexicalized suffixes in Alagwa and creates long infix vowels:

(18b) Alagwa: haplological reduction of the second progressive *-VVC$_z$* in combination with lexicalized suffixes

basis	durative	progressive	contraction
**deʔ*	*deʔem* "herd, tend"	**deʔeeʔem*	*deʔeem*
ts'uɧut "cough"	*ts'uɧumit*	**ts'uɧuuɧumit*	*ts'uɧuumit*
haaʔut "go away"	*haaʔumit*	**haaʔuuʔumit*	*haaʔuumit*
kaʔas "break"	*kaʔamis*	**kaʔaaʔamis*	*kaʔaamis*
tafis "push"	*tafimis*	**tafiifimis*	*tafiimis*
ʔaxas "hear"	*ʔaxamis*	**ʔaxaaxamis*	*ʔaxaamis*
feeɧis "rip, tear"	*feeɧimis*	**feeɧiiɧimis*	*feeɧiimis*
q'eetis "break"	*q'eetimis*	**q'eetiitimis*	*q'eetiimis*
ts'aq'ut "show disgust by making hissing sound"	*ts'aq'umit*	**ts'aq'uuq'umit*	*ts'aq'uumit*
ʔeets'oboʔos "smelt"	*ʔeets'oboʔomis*	**ʔeets'oboʔooʔomis*	*ʔeets'oboʔoomis*
ʔeets'oboʔot "melt"	*ʔeets'oboʔomit*	**ʔeets'oboʔooʔomit*	*ʔeets'oboʔoomit*
ʔeematɬ'it "dodge"	*ʔeematɬ'imit*	**ʔeematɬ'iitɬ'imit*	*ʔeematɬ'iimit*

ts'uku? "thatch"	*ts'uku?um*	**ts'uku?uu?um*	*ts'ukuu?um*
tɬ'aħas "forbid, refuse"	*tɬ'aħamis*	**tɬ'aħaaħamis*	*tɬ'aħaamis*
naħat "hide oneself"	*naħamit*	**naħaaħamit*	*naħaamit*
ʔeexaxar "clean by scrubbing"	**ʔeexaxarim*	**ʔeexaxaraarim*	*ʔeexaxaarim*

This kind of haplological deletion and long-vowel creation also operates on a purely phonological level in Alagwa, i.e. not across a synchronic morpheme boundary: a form like *ʔororoki* "fruit of a thorn tree" is optionally reduced to *ʔooroki*.

These synchronic findings can be utilized to interpret other cases of infixes in the WR languages on the same lines, e.g. the internal or broken nominal plurals which combine, strictly speaking, an infix *-ee-* with another suffix, mostly *-oo* or *-i*, as shown in the following table.

(19) West Rift examples of broken plurals with infix *-ee-* and suffixes *-oo* or *-i*

singular	plural
PWR **maħatu* "shadow (of tree)"	**maħeetoo*
PWR **yaʕati* "sandal"	**yaʕeetoo*
PWR **dagana* "initiated girl"	**dageenoo*
PWR **kitara* "shelf; hut"	**kiteeroo*
PWR **kwaʔal-aʔoo* "widow, poor woman"	**kwaʔeeli*
PWR **ts'aʕat-imo* "infant"	**ts'aʕeetoo*
PIRQ **fuq'unoo* "fingernail"	**fuq'eeni*
PNWR **siħinoo* "tooth"	PIRQ **siħeeni*
ALBU *gwaʕaba* "throat"	*gwaʕeeboo*
ALBU *saʔama* "river bed"	*saʔeemoo*
ALBU *gwiħira* "dog"	*gwiħeeri*

In all four modern WR languages there is some kind of allomorphic relationship between the infix strategies and certain suffixes for nominal plural, the infix strategies being confined to nouns of a certain shape with restrictions on syllable structure and quality of final consonants. Mous 1993, Mous 1996, and Kießling 1994 observe that in Iraqw and Burunge, respectively, the combined plural infix-suffixes $<C_y>ee<C_z>$*-aa*, $<C_y>ee<C_z>$*-oo*, $<C_y>ee<C_z>$*-i* stand in a paradigmatic relationship to the plural suffixes *-eeraa*, *-eemoo*, and *-eeri*, respectively, coming very close to a complementary distribution that is conditioned by syllable structure. Thus, a 2-radical singular noun such as Alagwa **łeħee* "moon" takes the suffix *–eeri* to form the plural **łeħeeri*, whereas a 3-radical singular such as Alagwa *gwiħira* "dog" pluralizes by the corresponding infix/suffix pattern to form *gwiħeeri*. Mous 1996, discussing the broken plurals of Iraqw within the framework of optimality theory from a strictly synchronic point of view, argues that, due to syllable sequence restrictions, the two broken plural formations $<C_y>ee<C_z>$*-i* and $<C_y>ee<C_z>$*-oo* are related as allomorphs to the "sound" plural suffixes *-eeri* and *-eemoo*, respectively: triradical nouns do not allow the suffixes *-eeri* and *-eemoo* and therefore insert the long vowel *ee* as an infix in front of the final root consonant (which takes the place of the suffix consonant), with the rest remaining as a suffix. These phonotactically conditioned allomorphies are sketched in table (20) for all the West Rift languages.

(20) Phonologically conditioned allomorphy of suffixes and infix/suffixes in the WR languages

	2-radical singular	3-radical singular
IRQ, GOR, ALA, BUR	*-eeri*	*-ee-*$<C_z>$*-i*
ALA, BUR	*-eemi*	*-ee-*$<C_z>$*-i*
IRQ, GOR, ALA, BUR	*-eemoo*	*-ee-*$<C_z>$*-oo*
(IRQ), ALA, BUR	*-eemaa*	*-ee-*$<C_z>$*-aa*
(ALA), BUR	*-eeraa*	*-ee-*$<C_z>$*-aa*

Diachronically, haplological reduction and reanalysis of the root are responsible for these allomorphies. So it seems that all instances of the infix *-ee-* in the nominal plural paradigm must be traced back to suffix vowels which have slipped into the root due to a succession of consonant elisions and reinterpretations of morpheme boundaries.

One hint in this direction can be gleaned from the reconstruction of the PWR plural form **ts'ufireeri* of **ts'ufiraaŋw* "tongue" and its development in modern Burunge. What we observe here is the same principle of reanalysis of original suffix material (consonants) as part of the root: the long vowel of the nominal plural suffix *-eeri* is incorporated into lexical roots. Originally, the noun **ts'ufiraaŋw* "tongue" pluralized by suffix **-eeri* to **ts'ufireeri* in PWR. This stage is attested by the modern plurals *ts'ifreeri?* (Gorwaa) and *ts'ifreeri* (Iraqw[6]). But Pre-Burunge took a different course: syncope changed **ts'ufireeri* to **tʃ'ufr$_1$eer$_2$i*[7], then the consonant cluster *fr$_1$* was resolved by elision of *r$_1$*. As in modern Burunge the resulting plural form *tʃ'ufeer$_2$i* is in direct paradigmatic contrast to the singular *tʃ'ufar$_1$aŋ*, the consonant *r$_2$* of the plural which was part of the original suffix is identified with the final root consonant *r$_1$* of the singular, whereby the long vowel *ee* of the original suffix slips into the nominal root and has to be analysed as an infix synchronically.

Another factor conspiring to the rise of infixes is a process of distant assimilation of consonants. A telling example is the variation in the modern reflexes of the plural of PNWR **siħinoo* "tooth": Iraqw has *siħeeni* (GOR *siħeeni?*), whereas Alagwa has *siħeeri*. The most convincing way to explain the difference in the final consonants is to reconstruct a plural form **siħin-eeri*, with the singular taking an ordinary plural suffix **-eeri*. Then, syncope creates **siħneeri* and modern Alagwa resolves the consonant cluster by deleting the nasal to give *siħeeri*. Thus the Alagwa plural lost the final consonant of the singular in this context. In Proto-Iraqwoid something else happened. There was a progressive assimilation[8] of the suffix consonant, resulting in the intermediate form **siħineeni*, which was reduced via syncope and consonant deletion to give the modern *siħeeni*.

(21) Historical model of the emergence of the infix *-ee-* in the nominal plural paradigm

singular	pluralisation via suffix, distant assimilation	syncope	consonant cluster simplification
BUR *tʃ'ufaraŋ* "tongue"	**tʃ'ufar$_1$-eer$_2$i*	**tʃ'ufr$_1$eer$_2$i*	**tʃ'uf∅eer$_2$i → tʃ'ufeer$_2$i*
IRGO *ts'ifiraaŋw* "tongue"	**ts'ifir$_1$-eer$_2$i*	**ts'ifr$_1$eer$_2$i*	---
IRGO **siħinoo* "tooth"	**siħin-eeri → *siħin$_1$een$_2$i*	**siħn$_1$een$_2$i*	**siħ∅een$_2$i → siħeen$_2$i*
ALA *siħinoo* "tooth"	*siħin-eeri* (no assimilation)	*siħneeri*	**siħ∅eeri → siħeeri*
IRGO **digima* "boundary"	**digim-eeri → *digim$_1$-eem$_2$i*	**digm$_1$eem$_2$i*	**dig∅eem$_2$i → digeem$_2$i*
IRGO **wakari* "chin"	**wakar$_1$-eer$_2$i*	**wakr$_1$eer$_2$i*	**wak∅eer$_2$i → wakeer$_2$i*
IRGO **duʔuma* "leopard"	**duʔum-eeri → *duʔum$_1$-eem$_2$i*	**duʔm$_1$eem$_2$i*	**duʔ∅eem$_2$i → duʔeem$_2$i*
IRGO **ʕaantani* "termite hill"	**ʕaantan-eemoo → *ʕaantan$_1$een$_2$oo*	**ʕaantn$_1$een$_2$oo*	**ʕaant∅een$_2$oo → ʕaanteen$_2$oo*

Conclusion

In West Rift there are two competing strategies of haplology operating on reduplicative extensions, the two leading to quite contrary morphophonological results, which again proves the statement that diachronic development from the same exposition may result in totally different scenarios.

1. Vowel syncope in reduplicated syllables gives rise to clusters of geminated consonants, long vowels in preceding syllables are reduced to short ones for reasons of syllabic weight, followed by a simplification of the geminated consonants to single ones (PWR **labaal-alu → *labaallu → *laballu → *labalu*). This process morphologizes vowel reduction in the derivational paradigm, e.g. PWR **labaala* "spear" vs. **labalu* PL. In this context vowel reduction could be viewed as the infixation of a subtractive morpheme.
2. Erosion of the first consonant in a haplological sequence [...*aC$_1$-aC$_2$*...] → [...*aØ-aC$_2$*...] provokes a paradigmatically motivated reanalysis of the remaining copy *C$_2$* as the original *C$_1$*: [...*-aa-C$_1$*...], which entraps the suffix vowel within the root, turning it into an infix vis à vis the basic form. Thus, either long vowels of the suffix get entrapped between root consonants (PIRQ **wakar-eeri → *wakr-eeri → *wak-ee-<r>-i*: PIRQ **wakari* "chin" vs. *wakeeri* PL), or a long infix vowel arises as a coalescence of a root vowel

and a suffix vowel (ALA *bal-alu* → *baalu*: ALA *bala* "day" vs. *baalu* PL). Typologically, this process could be fit into Ultan's 1975 scheme under the heading of entrapment, although it is not a simple entrapment of an inner suffix in suffix chains, but rather involves a special kind of fusion of parts of an original suffix with the root, leaving a somewhat reduced suffix behind as the result of a reanalysis of the morpheme boundaries. The original suffix is split up into a shorter suffix and an infix: part of the suffix remains and another part slips into the root as an infix.

General Cushitic perspective

What do these remote Southern Cushitic developments mean for Cushitic in general and how do they fit into the Afrasian picture?

Vocalic infixes of special functions have been described under the label "apophony" in Cushitic: "a systematic substitution of vowels within stems to indicate difference of number in nouns or of tense and mood in verbs" (Hayward 1995: 14). The second – verbal – function is important in Zaborski's (1975: 163ff.) sketch of the relative chronology of the Cushitic verb with respect to the morphological expression of subject and tense/aspect. According to him, the most archaic stage (1) is characterized by a more or less balanced coexistence of the old Afrasian prefix conjugation, coupled with an apophony for tense/aspect marking (on the basis of an opposition of **i* for perfective and **a* for imperfective) and the old Cushitic suffix conjugation that arose from a periphrastic construction with an auxiliary verb "be" or "say" which was reduced to a vowel. This stage is represented by Beja and Saho-Afar[9]. In the next stage (2), testified by modern Somali, Rendille, and Dhaasanac, the prefix conjugation recedes dramatically and gives way to the suffix pattern, fossilized remnants of the prefix pattern and the ancient apophony being left in the paradigms of a handful of verbs for basic activities ("eat", "say", "drink", "know", "stand" etc.). One step further, the apophony tends to be abandoned, whereas vestiges of the prefix conjugation are retained (Awngi). The next stage (3) sees the total loss of the apophony and the prefix conjugation with retention of the old suffix conjugation, attested in Oromo and Bayso, while most Agaw languages together with Highland East Cushitic innovate a new type of suffix conjugation, replacing the old one. The final trend in this scenario is marked by the steady decline of the suffix conjugation accompanied by the rise of preverbal clitics that tend to cluster in Wackernagel position to form a new syntactic constituent sometimes called "selector". This last stage seems to be most advanced in Southern Cushitic, especially in Iraqw and Gorwaa, which have both widely abandoned the older suffix conjugation, shifting distinctions to morphophonemic alternations of stem-final consonants and root-internal vowel quality and quantity. What has not been recognized yet is that in modern Alagwa, and to a lesser extent in Iraqw and Gorwaa, another tendency prevails that "re-innovates" an apophony similar to the old type with internal *-aa-* for the imperfective aspect as opposed to a short internal vowel *a* for the perfective. It becomes obvious here that, drawing on material from the verbal derivational apparatus, Southern Cushitic reinstalls an infix of a well-known AA shape which is, however, not directly related to other AA instances of this infix, but rather a recent innovation.

In the nominal domain infixes appear under the heading of "internal" or "broken plural". There is a decisive progression from centre to periphery with regard to the activity of internal plurals in Cushitic. In general the periphery – Beja and Saho-Afar to the extreme north (Zaborski 1986: 11ff., 44ff.) and the West Rift group with Iraqw, Gorwaa, Alagwa, and Burunge to the extreme south (Mous 1993: 53, 58f.; Kießling 1994: 52f., 59) – shows operative internal marking of nominal plurals, whereas the centre seems to have abandoned them, with occasional vestiges retained in Arbore, Dhaasanac, Bayso, Somali (mostly Arabic loans), and Agaw (mostly transfers from Ethiosemitic, see Zaborski 1986: 264ff.). But this picture does not reflect the historical reality directly, since the internal nominal plurals within the WR subgroup of Southern Cushitic (Kießling 1999) have been shown to be fairly recent innovations. Rather, these innovations obscure the general cline on the north-south axis which is also characteristic of the verbal domain.

With regard to different kinds of internal pluralisation techniques, Zaborski (1986: 298) remarks that "[i]nternal plural in Afar-Saho and in Beja is certainly archaic and at least partially going back to Proto-Afrasian though there are very few ablauts that Afar-Saho and Beja have in common [...] Actually there is a clear difference between the two: while both use the opposition short : long, Beja has long degree in the singular while Afar-Saho has it in the plural." As demonstrated by the Southern Cushitic evidence this difference does not necessarily hint at a difference in origin, in fact both types of alternations could exist side by side in one and the same language and even go back to the very same origin, although on different levels of reconstruction. Thus ALA *q'wamu*, plural of *q'waama* "cattle fold" with the short vowel in the plural is the result of a vowel shortening within the framework of reduction of the reduplicatory plural **q'waamamu* on PWR level, whereas ALA *baalu*, plural of *bala* "day" with the long

vowel in the plural is the result of a haplological consonant deletion in the reduplicatory plural **balalu* in Pre-Alagwa. It would be illuminating to see if any evidence could be found that justifies an internal reconstruction of **yaamVm* for Beja *yam*, plural of *yaam* ”belly” (Zaborski 1986: 12), or **nuugVg* for Beja *nug*, plural of *nuug* ”female breast” (Zaborski 1986: 15), and if, accordingly, Afar *rigiida*, plural of *rigid* ”foot” (Zaborski 1986: 49), could be traced back to a reduplicatory form **rigidida* which was reduced under haplology.

From the AA perspective things are naturally not simpler. Orel/Stolbova 1995 do not offer any morphological reconstruction and Ehret (1995: 52f.) reconstructs only two processes of stem-internal derivation for PAA[10], which have nothing to do with either plurality or tense/aspect. The notorious internal *-aa-*, although ubiquitious in Afrasian, has an ambigious status as a plural marker (Newman 1990: 51; Diakonoff 1965: 66ff.; Kuryłowicz 1958, 1976). Thus, Newman (1990: 134) is very hesitant to reconstruct an internal **–aa-* for Proto-Chadic, but rather seems to be inclined to accept independent innovations (1990: 134): "Even though internal-*a* noun plurals are widely found in Chadic, the evidence for reconstructing them back to the PC level is weak." In contrast to Newman, Greenberg 1955 supports the view that the internal *-aa-* is very ancient in Afrasian and that the modern instances can be viewed as reflexes of an internal proto-Afrasian morpheme. Regarding the verbal inflectional system, Hetzron (1987: 651) concludes that "[i]t is likely that an internal *a* is to be posited to mark the non-past in Afroasiatic".

But a reconstruction like this might not be necessary, if reductory processes operating on reduplicating morphemes related to the ones sketched above on the basis of Southern Cushitic evidence could be held responsible for the rise of internal *-aa-* plurals and imperfectives / non-pasts in other branches of AA. Thus, Newman 1977 concludes that most instances of internal *-aa-* in Chadic must have arisen by way of deletion of an original suffix, accompanied by compensatory lengthening of the preceding final stem vowel: a development that comes close to the Southern Cushitc model of internal *–aa-*creation sketched above. Meinhof (1936: 51) implicitly deduces the inner plural from a former reduplicated one and in discussing the origin of Berber (Shilḥ) *a*-infixes he suspects an ”entrapment” model (1912: 101): "Das schließende *-a* des Plural ist aber in sehr vielen Fällen in den Stamm eingedrungen und am Schluß ganz weggefallen." Diakonoff (1965: 66) seems to favour a similar model of the rise of *-aa-* infixes from suffixes on AA level, since according to him some instances of infixes "can be explained as a result of contraction and other phonetic changes under the influences of stress …". It should be checked in this context if there could not be established a historical relation between internal *-aa-* plurals and what Greenberg (1955: 199) calls reduplicatory suffix plurals of the type *-aC* or *-aCV* also in these cases, all the more so since the favorite position of internal *-aa-* between penultimate and final consonant in most languages hints at a suffix origin. If this could be demonstrated, one might be tempted not to reconstruct an internal *-aa-* plural for PAA at all; instead the occurence in modern languages could be ascribed to independent innovations of recent times, probably even successive waves of renovations of internal *-aa-* plurals through the same channel.

What remains as an ancient Afrasian trait, however, is the disposition for developing and tolerating infixes or patterns of this kind. Thus, Newman’s final remark on Proto-Chadic (1990: 134) could be rephrased for Afrasian: "If [Proto-Afroasiatic] did not have internal-*a* plurals, what explains their presence throughout the family? Can one speak of an Afroasiatic "drift" that predisposes individual [Afroasiatic] languages to employ vocalic mutation or infixation for grammatical or morphological purposes?"

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NOTES

1. An infix, in contrast to a nonperipheral affix in an affix chain, is understood to be a morpheme that intrudes into another morpheme, mostly into a lexeme, and changes this lexeme into a discontinuous one. Thus, nominal plural affixes of Arabic such as *-aa-* in *ban-aa-dir* (< *bandar* "harbour") and of Hausa such as *-àa-* and *-aa-* in *gulàabee* (< *gulbii* "river"), *dawaakii* (< *dookìi* "horse"), and *siràadaa* (< *sirdìi* "saddle"), qualify as infixes, whereas Swahili inner verbal prefixes in prefix chains, such as *ku-* "you" or *na-* for present tense in *ni-na-ku-penda* "I love you", do not. The term ”infix” is stretched here to subsume as well the cases of vocalic patterns as a means to easily refer to

that part of a complex morphological pattern that intrudes into the lexical root, in contrast to that part that might rather be viewed as ”suffixed” or ”prefixed”.

2. Abbreviation of linguistic units: AA Afrasian, ALA Alagwa, ALBU Alagwa and Burunge, BUR Burunge, GOR Gorwaa, IRGO Iraqw and Gorwaa, IRQ Iraqw, PAA Proto-Afrasian, PIRQ Proto-Iraqwoid, PNWR Proto-North-West-Rift, PWR Proto-West-Rift, SWA Swahili, WR West Rift. Abbreviations of grammatical categories: APL applicative, C_y penultimate consonant of the root, C_z terminal consonant of the root (index motivated by alphabetical order), CAU causative, COM comitative, CONT continuative, DIS distributive, DUR durative, FRQ frequentative, INCH inchoative, INT intensive, MED mediopassive, PL plural, PRO progressive, R root, SG singular, <> marks consonants that belong to the root when citing infix/suffix patterns.

3. The Southern Cushitic data presented here have been collected by the author in the course of four fieldwork trips to Tanzania in 1991/92 (Burunge), 1993 (Iraqw and Gorwaa), 1995 (Alagwa), and 2000 (Alagwa again).

4. Gaps in this table indicate that no reconstruction on the basis of modern reflexes is possible because the respective form is attested in only one of the modern WR languages.

5. No error in vowel length here. An originally long vowel is reduced in primary derivation *far-it* which could be traced back to a reduction of a former reduplication **faar-ar-it*.

6. Here it is Iraqw which is more conservative than Burunge.

7. The sound change **ts'* > **tʃ'* is a purely phonetic shift of the place of articulation.

8. The same type of distant assimilation of consonants, operating regressively, is also attested in a couple of other plurals, e.g. Iraqw *ba?eesoo* ~ *baseesoo* (< *ba?asa* "bushbuck").

9. In Saho-Afar the vitality of the prefix-conjugation and the apophony seems to be due not so much to retention from Proto-Cushitic or Afrasian times, but to a revitalization or reinforcement by contact with Tigrinya (Hayward/Orwin 1991).

10. A stem-internal vowel lengthening for deverbative nouns and a substitution of a stem vowel **a* or **i* by an infix **-u-* for deriving transitive verbs from intransitive ones.

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