

# A NOTE ON "BLIND" VERBS IN BERBER<sup>1</sup>

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Berber has a class of verbs which exhibit an alternation between a geminate CiCi and a sequence uC, or, equivalently, between u and C. To see how this alternation is manifested, consider the data in (1), where I give two verbal forms (aorist and causative) and a nominal one (deverbal).<sup>2</sup>:

(1)

	AORIST	CAUSATIVE	DERIVED NOUN	
a.	frs	ss-frs	afra	"to sharpen"
	fsi	ss-fsi	afsay	"to melt"
b.	ffR	ss-ufR	ufuR	"to go out"
	gg <sup>o</sup> z	zz-ugz	uguz	"to go down"
	bbk	-----	ubuk	"to hit"
c.	gg <sup>o</sup>	-----	ugu	"to wash"
	zzu	-----	uzu	"to plant"

As we can see, the aorist of the verbs in (1b) and (1c) exhibits an initial geminate consonant (ff, gg<sup>o</sup>, bb, zz) while the causative and the deverbal exhibit a sequence VC (uf, ug, ub, uz), instead. The verbs in (1a), that I give only for comparison, are regular and don't show any alternation.

The problem addressed here is why the forms in (1b,c) exhibit the alternation in question 3. The account I propose in this article is couched in the theoretical framework of Phonological Government (see Kaye, Lowenstamm and Vergnaud 1990 and the references therein). It rests on three main points:

- First, the forms in (1b,c) (henceforth ffR-verbs) are supposed to involve the so-called "blind" roots,<sup>4</sup> that is, they begin with a high vocoid, viz. U.
- Second, I assume, with Guerssel 1990a, that high vocoids cannot appear in an initial onset which is not governed.
- Third, I also assume, with Lowenstamm, 1991, that "vocalic elements must be associated with branching nuclei".

The paper is organised as follows: in section 1 I present briefly the Charm and Government Theory. In section 2 I explain why I consider that ffR-verbs derive from blind roots, in section 3 I address the problem of initial glides and discuss two alternatives, in section 4 I present my own proposal and in section 5 I show how the

proposed analysis accounts for the behaviour of blind roots when the corresponding verbs are causativized or nominalized.

## **1. Theoretical background:**

The theoretical model I assume here is the Theory of Charm and Government (henceforth TCG). According to this theory, Phonological structures are defined in terms of dependency relations. A phonological structure in a given language is well-formed if the relations between its constituents don't violate (i) certain universal principles provided by the theory, and (ii) the parameters specific to the language in question.

### **1.1. Universal principles**

The relations inside and between phonological constituents are defined in TCG in terms of two notions: Charm and Government.

Charm is a property which is defined on the segmental tier. Segments can belong to one and only one of these three sets:

(2)

- i- positively charmed segments : vowels.
- ii- negatively charmed segments : obstruents.
- iii- charmless segments : nasals, liquids and glides.

The property of charm is fundamental for the characterisation of the possibility for a segment to occupy certain positions in a phonological constituent. TCG recognises three syllabic constituents: the onset (O), the rhyme (R) and the nucleus (N). All these constituents are specific governing domains.

"Government is defined as a binary, asymmetric relation holding between two skeletal positions [...] For a governing relation to hold, two types of conditions must be met: formal and substantive. Formal conditions will involve the notions of locality and directionality. The substantive conditions define to what segmental material a skeletal point may be associated given its position within a governing domain." (KLV 1990:198). There are two types of government:

#### **1.1.1. Intraconstituent government**

It holds between the members of the same syllabic constituent. A syllabic constituent is well formed if it does not violate the following principles:

- the binarity principle, that is, a constituent cannot dominate more than two sub-constituents. In other words, a constituent is maximally binary branching.
- the government relation principle: there must be a government relation between the two members of a constituent.
- the head-initial principle: in a branching constituent, the leftmost member is the governor and the rightmost the governee.

- the charm principle: the two members of a branching constituent must have a certain property of charm:

- a. Charmed segments may govern, charmless segments may be governed
- b. Positively charmed segments may not occur in non-nuclear position; negatively charmed segments may not occur in nuclear positions (KLV 1990:202).

### 1.1.2. Interconstituent government

A government relation holds also between syllabic constituents with the same conditions on the charm properties of the segments. But, Unlike intra-constituent government, interconstituent government is right-to-left, that is, the rightmost constituent is the governor and the leftmost the governee. There exist four types of interconstituent government:

- Rhyme-Onset : R governs O
- Nucleus-to-nucleus : N2 governs N1
- Onset-to-rhymal consonant : O governs a rhymal consonant
- Onset-to-onset (Guerssel and Lowenstamm 90) : holds only between the two members of a geminate.

TCG assumes also that empty syllabic constituents are allowed in phonological structures. As far as empty nuclei are concerned, their distribution is governed by a principle called Empty Category Principle (ECP). ECP says that if a nucleus is properly governed, it can remain empty (Guerssel 1990a for a discussion of ECP). Or, equivalently, an empty nucleus is licensed if it is properly governed, i.e. governed by another realised nucleus.

### 1.2. Berber syllabic structure

In the remainder of this paper, I assume the syllabification pattern argued for in Guerssel (1990). Three main proposals have been made by Guerssel.

First, the canonical syllable in Berber is CV. Neither onsets nor nuclei can branch. Only inter-constituent Government relations are therefore relevant.

Second, nuclei can be underlyingly empty.

Third, only vowels can appear in a nucleus position. Consonants cannot therefore be syllabic.

Fourth, an empty nucleus must be realised if it is not properly governed and if the preceding onset is not licensed.

There are several onset-licensing situations:

- an onset licensed by a subsequent realised nucleus,
- an onset licensed by an empty nucleus which is properly governed,
- an onset licensed by a final empty nucleus,
- an onset licensed by a subsequent onset with which it forms a geminate,
- a neutrally charmed onset licensed by a charmed one,
- a negatively charmed onset licensed by another negatively charmed onset which has a more complex internal structure.

## 2. The source of ffR-verbs:

One may claim that ffR-verbs involve strong monoliteral (1c) or strong biliteral (1b) roots, i.e. roots which contain only true consonants (viz. g<sup>o</sup>, z for (1c) and fR, g<sup>o</sup>, bk for (1b)). This hypothesis cannot be maintained for a number of reasons. First, if we adopt this hypothesis, we must postulate that the vowel u involved in the alternation is inserted either by a morphological rule or by a phonological epenthesis rule.

Postulating a morphological rule would have to explain why this u fails to appear for example in the forms derived from other biliteral verbs, like those given in (2):

(2)	AORIST	CAUSATIVE	DERIVED NOUN	
	dl	ss-dl	*ss-udl	addal "to cover"
	rR	ss-rR	*ss-urR	tirRi "to be warm"
	nz	zz-nz	*zz-unz	----- "to be sold"
	Rr	ss-Rr	*ss-uRr	tiRri "to read"

The morphological insertion of u would also fail to explain why the u of the causative does not undergo the u/a ablaut which is characteristic of the true morphological u found in other verbs. Compare, for example, the ffR-verbs in (3a) with ablauting verbs in (3b):

(3)	AORIST	PRETERIT	
a.	ss-ufR	ss-ufR	"cause X to go out "
	zz-ugz	zz-ugz	"cause X to go down"
b.	ss-adn	ss-udn	"cause X to be ill"
	\$\$-a\$k	\$\$-u\$k	"cause X to come"

There are also problems associated with the epenthesis approach. It must define the context of epenthesis in a way that not only prevents the rule from applying to the causatives in (2) but also prevents the epenthetic u from undergoing the ablaut process in (3b). And further, it must be noted that even if epenthesis were to be motivated, its context could not be defined on purely phonological grounds.

The conclusion to be drawn from the preceding discussion is that the ffR-verbs must be considered as involving blind roots which all contain an initial high vocoid U. This may be seen in (4), where a root is provided for each of the verbs in (1)

(4)

ROOT	AORIST	CAUSATIVE	DERIVED NOUN
UfR	ffR	ss-ufR	ufuR
Ug <sup>o</sup> z	gg <sup>o</sup> z	zz-ugz	uguz
Ubk	bbk	-----	ubuk
Ug <sup>o</sup>	gg <sup>o</sup>	-----	ugu
Uz	zzu	-----	uzu

Having motivated the postulation of an initial high vocoid U in the root of ffR-verbs, we can now start to state the basic ingredients which will contribute to explaining the behaviour of ffR-verbs.

### 3. A constraint on initial glides

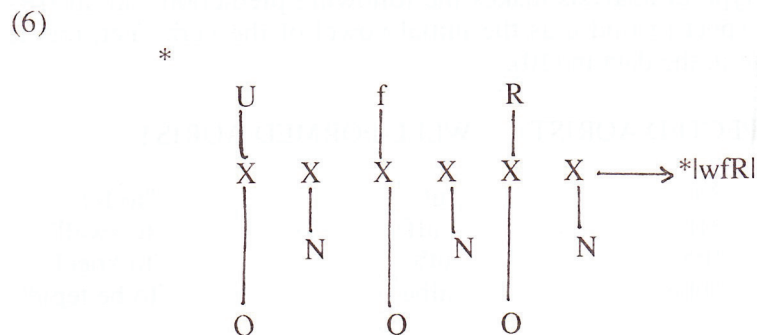
A close examination of Berber lexical items reveals that words never start phonetically with glide-consonant sequences<sup>5</sup>. Thus, the initial sequences in (5a) are well-formed while those in (5b) are not.

(5)

a.	wa	b.	*wt
	wu		*wf
	wi		*wd
	ya		*yz
	yi		*yd
	yu		*yk

This restriction was accounted for by Guerssel (1990), who showed that glides are excluded from positions not governed by a vowel or by a second member of a geminate. In this article, I adopt Guerssel's proposal, but only to account for initial GC clusters<sup>6</sup> and I will refer to this constraint as "Initial Glide Constraint" (henceforth IGC).

The IGC is fundamental for the explanation of at least one aspect of the behaviour of ffR-verbs: why the radical U fails to associate with the first onset of the Template. Indeed, if U were associated with the first onset, we would obtain the situation in (6), which is prohibited by the IGC.

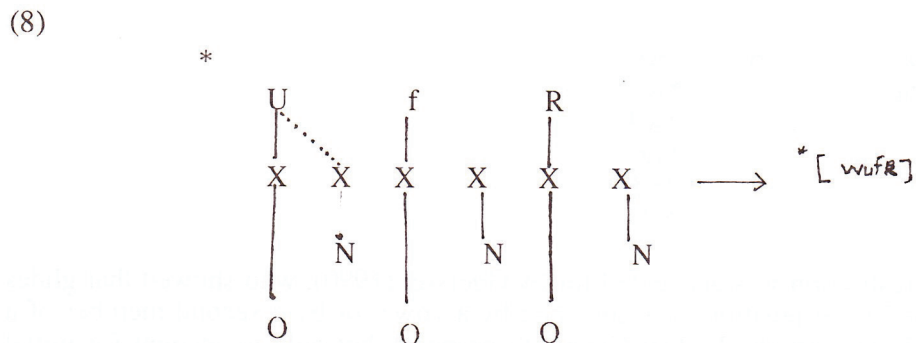


If we accept the IGC explanation of the non-association of U with the initial onset, it remains, nevertheless, to be explained why this U is not associated with the first nucleus of the Template to yield \*[ufR]. This form is not attested though Berber contains a great number of words with begin with a vowel (e.g., ukr "to steal", amz "to catch", isk "horn"). Is there also a constraint on the association of the U to a nuclear position? There are two possible approaches.

3.1. One may claim that the problem addressed has nothing to do with the existence of any constraint on the association of the U to a nuclear position. The problem can be solved for example by postulating a convention like (7):

(7) All C-slots of a template must be satisfied.

Although tempting, an analysis which makes use of (7) would only give a possible account of the spreading of the second radical consonant on the first onset position, but would not say anything about the impossibility of associating U with the first nucleus. In fact, we can imagine a situation like (8), where U is associated both with the first onset and with the first nucleus:



Even though (7) is not violated, (8) is ill-formed. To account for this ill-formedness, one could add a further condition which would say something like (9):

(9) U cannot be associated with both an onset and a nucleus.

The combination of (7) and (9) yields the right result, i.e. [ffR].

Nevertheless, this type of analysis makes the following prediction: in all ffR-verbs, we must never expect to find u as the initial vowel of the verb. Yet, this is wrong as we can observe in the data in (10).

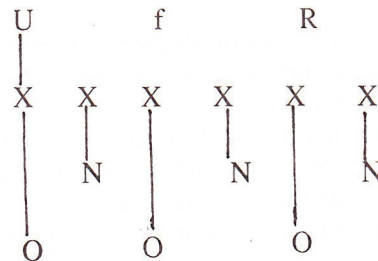
(10)

ROOT	EXPECTED AORIST	WELL-FORMED AORIST	
Ut	*tt	ut	"to hit"
Uf	*ff	uff	"to swell"
Ut\$	*tt\$	ut\$	"to kneel"
Ulb	*llbu	ulbu	"to be tepid"

The well-formed string in the rightmost column of (10) are not those expected under the analysis using (7) and (9). The only way to integrate these forms into the analysis is to invoke some other reason which makes the analysis more complicated. We will see that our own account of the ffR-verbs does not meet any serious difficulty when dealing with (10).

3.2. The alternative analysis to be discussed here is one under which one can claim that, all other things being equal, the U fails to associate to N because it is lexically pre-linked to the first onset, viz.

(11) ROOT



After the other associations have been made, a repair strategy (Paradis 1989) intervenes. It delinks U from the first onset (for the initial [wC] is prohibited), then the second radical consonant f spreads on this empty onset, yielding the correct form [ffR]. There are a number of problems with this analysis.

First, it is not desirable to postulate a diacritic association (the pre-linking of U) which is deleted at the first opportunity.

Second, this analysis also does not say anything about the problem raised above, i.e. the impossibility of associating U to the available nuclear position. Why could the delinked U not be associated with the subsequent nucleus?

The third drawback, and probably the most important one, is that the pre-linking analysis claims that the radical U is a true consonant which can never surface as a vowel. But, as we saw above (see columns 2 and 3 in (1b,c), for example), the U in question surfaces either as a consonant or as a vowel. In addition to this, the analysis makes the prediction that, if nominalized, ffR-verbs would behave like verbs with strong roots:

(12)

	ROOT	EXPECTED FORM	ATTESTED FORM	
a. strong roots	firs	afras	afras	"to sharpen"
	mrz	amraz	amraz	"to have a head"
injury"	wfR	*awfaR	ufuR	"to go out"
b. ffR-verbs	wgz	*awgaz	uguz	"to go down"

Once more the prediction made by the pre-linking hypothesis is false, and there is no way to rule out the generated forms (\*awfaR, \*awgaz) on phonological grounds.

A final problem is that under this analysis one is forced to say different things about (10) and about initial geminating ffR-verbs (namely, that the initial U of the verbs in (10) is prelinked to a nucleus, while the initial U of ffR-verbs is not), otherwise it would be impossible to derive both the right forms in (10) and in (1b,c). This is an additional reason to abandon the pre-linking hypothesis.

#### 4. Berber vowels are long

The postulation of certain underlying phonological properties does not have to be made on phonetic or functional grounds. These factors are important and can guide the linguist in his/her decision, but we can imagine situation where this kind of linguistic factors lack totally when dealing with a particular phenomenon. In this case, the phonologist has to resort to other criteria (which are strictly theory-internal ones) such as the simplicity of the analysis, the possibility to account for phenomena which otherwise would remain accidental or unexplained, etc.

In the phonology of Berber for example, the vowels, i, u and a have always been treated as short. This decision has been dictated essentially by factors of a phonetic nature (i, u and a are short because they never surface phonetically as long).

The treatment I would like to propose for the problem discussed here lies on a hypothesis which has been defended for other languages (see Lowenstamm 1991 and the references therein).

The hypothesis is that Berber vowels i, u, and a are in fact long. More exactly, I would like to prove that if these vowels are treated as underlyingly long, the alternation shown by ffR-verbs would receive a straightforward account. Let us then make the assumption in (13)<sup>7</sup>:

- (13) Berber vowels i, u, a must be associated with branching nuclei.

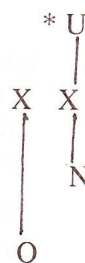
(13) says that in (14) for example, only (a) is a well-formed representation, while (b) is not.

(14)

a



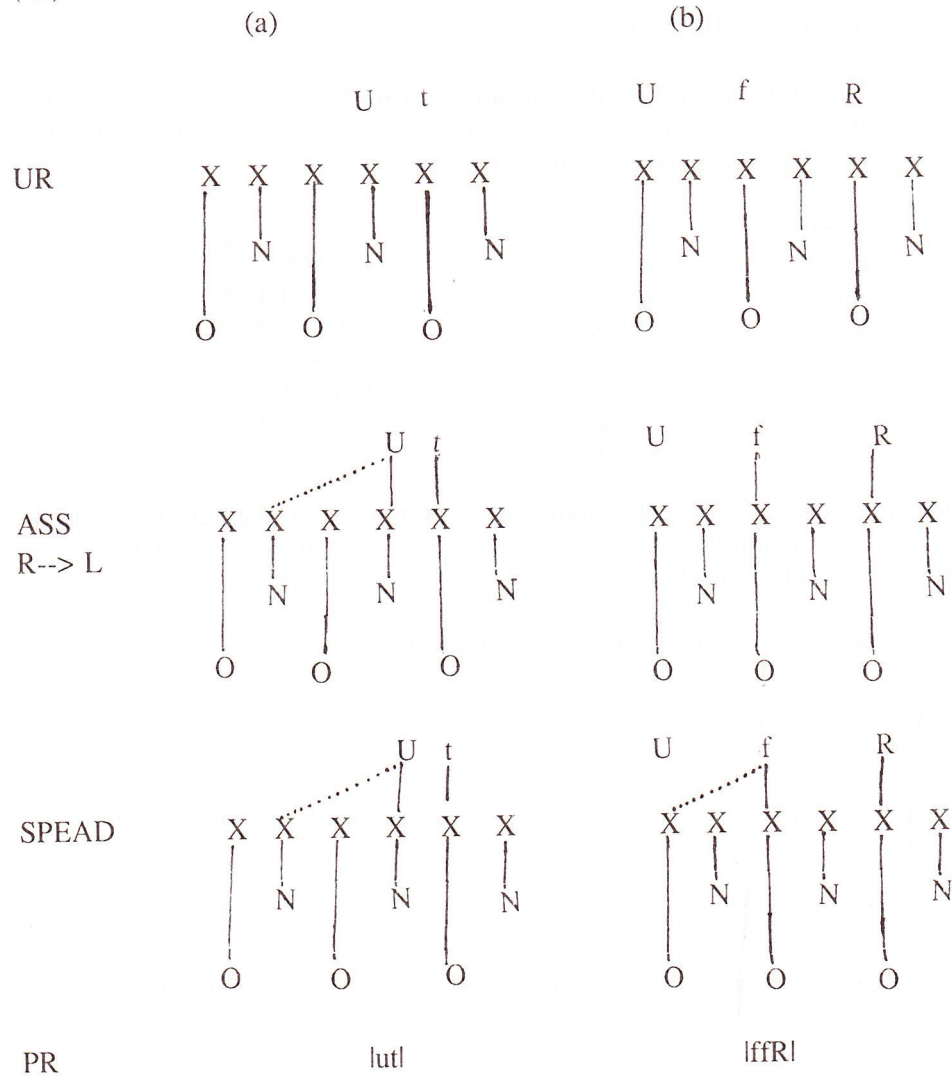
b





If we combine (13) with the assumptions that (i) ffR-verbs involve the so-called blind roots beginning with U, and that (ii) initial glides are excluded from positions not governed, the account for the behaviour of ffR-verbs becomes trivial. The combination of these three assumptions makes a clear prediction about the surface nature of the radical U : U will surface as a vowel u only if it can be linked to two nuclear positions, otherwise it will fail to associate and the second radical consonant will spread on the first onset. These two situations are given in (15a) and (15b) respectively:

(15)



As we can see, it is now clear why *ut* and *ffR*, even though both involve blind roots and identical templates, behave differently. The difference lies in the number of available nuclear positions to which *U* has access.

## 5. Further evidence

As we have already pointed out above, geminating *ffR*-verbs retrieve their unassociated radical *U* when they are causativized or nominalized. How can the analysis defended here account for this fact?

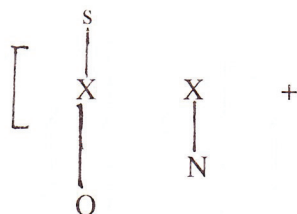
### 5.1. The causative of *ffR*-verbs:

In the normal cases, see (16a), the causative form of a verb is obtained by the prefixation of the causative morpheme [*s(s)-*]. But in the case of *ffR*-verbs, the prefixation of [*s(s)-*] is accompanied with a vowel, see (16b).

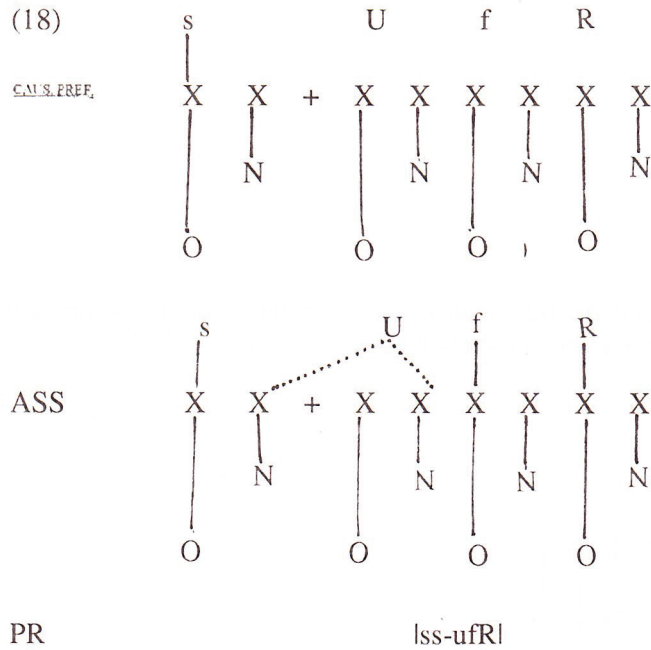
(16)	BASE	CAUSATIVE	
a.	<i>nu</i>	<i>ss nu</i>	" to cook"
	<i>mun</i>	<i>s-mun</i>	" to accompany"
	<i>frR</i>	<i>ss frR</i>	" to be twisted"
	<i>ndudi</i>	<i>s-ndudi</i>	" to react"
b.	<i>UfR</i>	<i>ss-ufR</i>	" to go out"
	<i>Ugz</i>	<i>zz-ugz</i>	" to go down"
	<i>UIR</i>	<i>ss-uir</i>	" To lick"

Under our analysis, the reappearance of *U* as a vowel in the causative can be straightforwardly accounted for if we suppose that the causative prefix has the underlying representation in (17) 8.

(17) Underlying representation of the causative prefix



In other words, the derivation of a causative verb consists of the prefixation of (17) to a given base, viz.:



We thus see that the absence of radical gemination on the surface in the causative form is due to the fact that the second nuclear position needed for the realisation of the vowel u has been provided by the prefix: now, the u can be realised. The prediction is again clear: the radical U will surface as a vowel if any morphological process provides an additional free nucleus with which the U can be associated. This is indeed the case as we will see in the case of the nominalization.

## 5.2. Nominalized ffR-verbs<sup>9</sup>

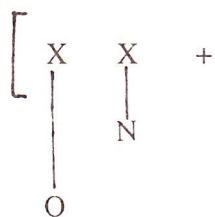
Berber deverbative nouns can involve different phenomena. The most relevant property for our purpose is the fact that the overwhelming majority of these nouns begin with a vowel. This initial vowel can be provided by the root (19a) or spelled out as a default vowel [a] when the base does not contain a vowel (19b).

(19)

	ROOT	AORIST	DEVERBAL
a.	UfR	ffR	ufuR
	Ug <sup>o</sup> z	gg <sup>o</sup> z	uguz
b.	frs	frs	afras
	mrz	mrz	amraz

The contrast between strong roots and blind roots in (19) constitutes a sound argument for the analysis proposed in this paper. Indeed, if we assume that the nominal prefix consists of a CV syllable with no segmental material as in (20).

(20) Noun-prefix

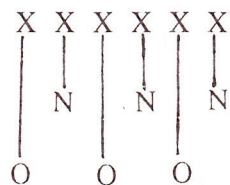


we obtain the situation predicted by our analysis: the prefix provides a nuclear position with which the radical U can be associated, as we can see in (21)<sup>10</sup>.

(21)

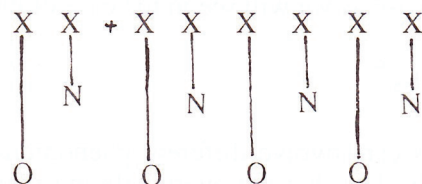
U f R

BASE

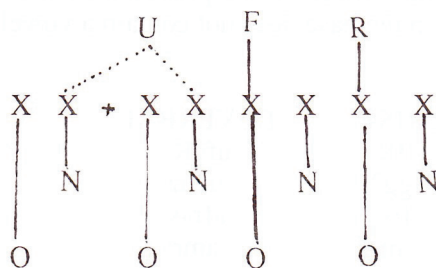


U f R

N - PREF



ASS



PR

lufuRl

## Conclusion

The aim of this short note was to account for the particular behaviour of the initial glides found in the roots of some Berber verbs? I tried to show that this behaviour can be easily accounted for if Berber vowels are considered long. It would be interesting to check if there are other phenomena in Berber that support this idea.

## Notes

1) This work was made possible with the support of SSHRC # 410910716. During the months I spent within the Groupe de Recherche en Linguistique Africainiste at UQAM, I had invaluable discussions with J. Lowenstamm, M. Guerssel and J.-F. Prunet whom I thank not only for their comments but also for their sincere liking. Thanks also for F. Dell and Elisabeth Selkirk for their comments.

2) The dialect referred to here is that of tachelhit, spoken in South Morocco. The following notation is used:

ʃ = unvoiced alveolar fricative, j = voiced alveolar fricative, y = palatal glide,

R = voiced uvular fricative,

0 = labialization. Other symbols are usual.

3) The problem of this class of verbs was also addressed (directly or indirectly) by El Medlaoui (1985) and Iazzi (1991). See this last work for more references.

4) This denomination comes from the Arabic Grammatical Tradition.

5) There is a small number of violations of these constraints. But they are mostly loanwords (e.g. wrt) or forms involving onomatopoeic roots (e.g. wzwz).

6) Non initial GC clusters are not concerned by the IGC. They can be found even though the glide is not in a position governed by a vowel.

7) This parameter is inspired by Lowenstamm (1991).

8) I will not say anything about the other changes involved in causative formation (i.e. the quantity alternation and assimilation of the causative prefix). These matters are not relevant here. For more information, see Boukous (1987), Jebbour (1990, 1992), Guerssel (1990b), Iazzi (1991), Lasri (1991).

9) I focus here only on the relevant aspects for our discussion. For more information about noun-derivation see Jebbour (in prep.)

10) The appearance of a second vowel in the nouns in (18) is irrelevant to this paper. The reader can find an explicit account of this problem and other related phenomena in Jebbour (in preparation).

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