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RECONSTRUCTION OF THE PROTO-BERBER LIGHT VERBS

by

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INTRODUCTION

In a recent paper, I have argued that the so-called heavy verbs, verbs that have three or more stem vowels in their original Proto-Berber stem shape, can be reconstructed with two apophonic classes which are mostly predictable by their stem shape (Van Putten forthcoming). In this paper I will discuss the reconstruction of the light verbs, that is, verbs with two vowels in their stem. These light verbs are far more numerous, and make up the majority of the underived verbs in Berber languages. Much of the reconstruction of the verbs of this type has already been undertaken by the momentous work of Prasse (1973). However, this reconstruction is primarily based on Tuareg. As such, it is not always clear how Prasse's reconstruction lines up with non-Tuareg evidence, and since his work several important new insights into the historical phonology of Berber, and new comparative evidence of descriptions of Berber varieties (including new insight into the phonology of Tuareg) have emerged. These allow us to reexamine the reconstruction of these verbs and update Prasse's reconstruction.

A major update to the reconstruction of the light verbal system was proposed by Kossmann (2001b), who reconstructs a Proto-Berber glottal stop *ʔ on the basis of comparative evidence primarily from Zénaga. As a result, many of what previously looked like roots with two consonants that somehow behaved like they had three now could be reconstructed as reconstructions with three consonants (e.g. {2} **ǎrzəʔ* 'to break').¹ As such, *ʔ is

1. Throughout the article I refer to verbs with a number in between curly braces {#}. These refer to entries in the appendix, where I give the reconstruction as well as the complete comparative evidence of the verb discussed.

an important element for the reconstruction of several light verb classes. The *ʔ generally functions identically to a regular consonant when it is the last root consonant; however, in all varieties of Berber except Zenaga this consonant has been lost. Simply put: *ʔ is lost completely; unaccented *ǣʔ is lost in the Zenatic languages but mostly retained as *-a* in Tashlhiyt and Tamazight; accented *-ǣʔ shows up as *-a* in most varieties, as *-u* in several Zenatic varieties and as *-o* in Ghadames.

Moreover, Prasse assumes that the verbs in the light verb class that have a plain vowel (*a, u*) originate from a sequence of a central vowel followed by a hypothetical ‘laryngeal’ consonant **H*, *ǣ*H* yielding *a* and *ǣ*H* yielding *u*. For example, he assumes that **agəm* ‘to draw water’ was originally *ǣ*Hgəm* (conjugation I.A.3, Prasse 1973, 96). While it is true that in some ways the plain vowels seem to simply behave as plain versions of the central vowels and thus such a reconstruction is not unreasonable, there is little evidence in favour of it. What speaks against such an analysis is that even when we assume **agəm* was originally the triradical *ǣ*Hgəm* we are still required to reconstruct verbs with an inherent plain vowel for verbs such as *agdəh* ‘to be equal’ (Prasse’s conjugation I.B.1). These two types (*ǣ*Hgəm* and **agdəh*) can be harmonized into a single conjugational class if we assume both had an inherent plain vowel in the first vowel slot.

Table 1: Comparison of the reconstruction of Prasse’s conjugations I.A.3 and I.B.1

	Aorist	Perfective	Imperfective
Ahaggar Tuareg	<i>agəm</i>	<i>ugām</i>	<i>tagām</i>
Mali Tuareg	<i>aǧəm</i>	<i>oǧām</i>	<i>taǧām</i>
Prasse’s reconstruction	*ǣ <i>hgīm</i>	*ǣ <i>hgām</i>	*ǣ <i>hgām</i>
Ahaggar Tuareg	<i>agdəh</i>	<i>ugdāh</i>	<i>tugdāh</i>
Mali Tuareg	<i>agdəh</i>	<i>ogdāh</i>	<i>tagdāh</i>
Prasse’s reconstruction	* <i>agdəh</i>	* <i>ugdāh</i>	?

As no variety of Berber retains traces of Prasse’s supposed **H* radical in these cases, and as its apophonic behaviour is identical to a regular plain vowel, it is in my opinion not particularly helpful to reconstruct the light verbal system at such a level of abstraction. Instead, we will see that verbs may behave more or less identically regardless of whether the stem contains plain vowels or central vowels, and it is rather the number and type of vowels in a stem that determine its inflectional behaviour.

As in my paper on the heavy verbs, I will describe the verbal system of the light verbs according to vocalic melodies as used with great success for the synchronic description of the Ayer Tuareg and Ghadames verbal systems (Kossmann 2011; 2013), making use of the abstract representation

of low vowels (A) and high vowels (Θ). When the low vowel melody (A) is applied to a central vowel slot (ṽ), the reflex is *ǎ* and to a plain vowel slot (v̄) the reflex is *a*. The high vowel melody (Θ) yields *ə* for central vowels and usually *u* (but sometimes *i*) for plain vowels. These melodies are applied to a stem from left to right and if the melody is described with a →, this means that the previous stem vowel will be repeated until each vowel slot is filled. So a melody Θ-A→ applied to two vowel slots is equivalent to Θ-A, and applied to three vowel slots is equivalent to Θ-A-A.

Table 2: Vowel melodies and vowel slot

	A	Θ
ṽ	*ǎ	*ə
v̄	*a	*u (*i)

TYPE 1 LIGHT VERBS WITHOUT A PLAIN VOWEL IN THE SECOND VOWEL SLOT

The light verbs are typically characterised by A-Θ vocalism in the aorist, and Θ-A vocalism in the perfective.² Moreover, a difference in stress appears to be present, where the aorist has the stress on the first stem vowel, whereas the perfective has the stress on the last stem vowel. The imperfective formation is trisyllabic and has the vocalism is Θ-A→. However, several additional morphological processes take place. Verb stems that start with ṽcc geminate the second consonant (*ǎlməd, imperfective *əlməmməd).³ Verb stem that start with ṽcṽ geminate the first consonant, and the central vowel that follows is changed to a plain vowel (*ǎgəṇ imperfective *əggan). In all other cases, the imperfective is formed by prefixing *ṽtt- to the stem.

In this description, some of the rarer verb types like v̄ccv̄c, v̄ccv̄?, v̄cṽc and v̄cṽv̄? (i.e. Prasse's conjugations I.B.1-7, see Prasse 1973, 127–39) simply behave identically to the more common light verb types and may be included as part of the same class.

2. On a possible pre-Berber origin of these vowel melodies see Kossmann & Suchard (2018).

3. Unless the first consonant is *ʔ, in which cases this gemination does not apply. This exceptional behaviour of the *ʔ verbs was first remarked upon by Lameen Souag on his web blog, and may point to an important fact about the quality of *ʔ, which may have rather been realized as vocalic glottalisation, rather than a true consonant. <https://lughat.blogspot.com/2011/04/why-h1-and-h2-were-not-valid-onsets-in.html> (accessed November 18, 2021).

Table 3: Reconstruction of the basic light verb

Stem Shape		Aorist A-Θ	Perfective Θ-A	Imperfective Θ-A-A (c ² > c̃ ²)	
ṽccṽc	{1}	*ǎlməd	*ǎlmǎd	*ǎlǎmmǎd	‘learn’
ṽccṽ?	{2}	*ǎrzəd?	*ǎrzǎ?	*ǎrǎzzǎ?	‘break’
(c ¹ > c̃ ¹ ; ṽ ^f > ṽ ⁱ)					
ṽcṽc	{3}	*ǎgən	*ǎgǎn	*ǎggǎn	‘lie down’
ṽcṽ?	{4}	*ǎgəd?	*ǎgǎ?	*ǎggǎ?	‘make, do’
(ṽtt- + STEM)					
ṽcṽc	{5}	*ǎgəm	*ugǎm	*ǎtt-ǎgǎm	‘draw water’
ṽcṽ?	{7}	*ǎfəd?	*ufǎ?	*ǎtt-ǎfǎ?	‘find’
ṽc̃ṽc	{8}	*ǎffəy	*ǎffǎy	*ǎtt-ǎffǎy	‘go out’
ṽc̃ṽ?	{9}	*ǎkkəd?	*ǎkkǎ?	*ǎtt-ǎkkǎ?	‘pass by’
ṽ?cṽc	{10}	*ǎ?kər	*ǎ?kǎr	*ǎtt-ǎ?kǎr	‘steal’
ṽccṽc	{11}	*ǎGdǎβ	*uGdǎβ	*ǎtt-ǎGdǎβ	‘be equal’
ṽccṽ?	{12}	*ǎškəd?	*uškǎ?	*ǎtt-ǎškǎ?	‘get lost’
ṽc̃ṽc	{13}	*ǎzzəl	*uzzǎl	*ǎtt-ǎzzǎl	‘run’
ṽc̃ṽ?	{16}	*ǎyyəd?	*uyyǎ?	*ǎtt-ǎyyǎ?	‘let, leave’

TYPE 2: LIGHT VERBS WITH A PLAIN VOWEL IN THE SECOND SYLLABLE

The above discussion reformulates the Proto-Berber verbal system unifying Prasse’s verbal classes I.A and I.B.1-7. There is, however, one verb type in the I.A subgroup, namely I.A.8, the type *ǎlku* (Prasse 1973, 115) that falls outside of this description. In what follows I will argue that this verb does not belong to this general verb class, but rather forms a parallel subclass of the light verbs, with separate aorist and imperfective vocalic melodies, triggered by the presence of a plain vowel as the second stem vowel.

As Prasse considers the verbs of the type *ǎlku* to be part of the same vocalisation pattern as the verbs we have discussed in the previous section, he reconstructs an A-Θ melody for the aorist and a Θ-A melody for the perfective. Thus his reconstruction looks as follows (Prasse 1973, 115):

Table 4: Prasse’s reconstruction of conjugation I.A.8.

	Aorist	Perfective	Imperfective
Ahaggar Tuareg	<i>əlku</i>	<i>əlka</i>	<i>əlukku*</i>
Prasse’s Proto-Berber	<i>*ālkūH</i>	<i>*ūlkāH</i>	?

* As we will see in the following discussion, the second imperfective vowel of verbs with such geminated stems tends to be a central vowel *ǎ* or *ə*. In Ahaggar Tuareg we see a plain vowel *əlukku* instead of expected *ələkku*, and we see the same pattern in the regular light verb *əkannās* instead of *əkānnās*. This appears to be a Tuareg-internal innovation. There is some evidence that this is a secondary development, as Mali Tuareg still retains the original imperfective stem *əkānnās* which it uses exclusively as the prohibitive stem, the central vowel in the stem is also retained in the negative imperfective *əkānnas*, verbs of Prasse’s type I.A.8 likewise have short forms for the prohibitive and negative imperfective *raddu* (Heath 2005, 337).

This reconstruction is not without its problems. First and most prominently, and readily admitted by Prasse himself, is the shape of the imperfective which seems to have a $\Theta \rightarrow$ melody rather than the predicted $\Theta\text{-}A \rightarrow$ melody. Had this verb really belonged to the verb class where Prasse places it, we would predict an imperfective ***əlākka*.

But also the reconstruction of the **A- Θ* melody for the aorist is problematic. Prasse (1973: 115, I.A.8.d) suggests that the unexpected $\Theta \rightarrow$ melody that we see in the aorist is the result of analogy with the strong verbs of the type **ālməd* which undergo regular and synchronically productive vowel harmony (*ǎ...ə > ə...ə*) to *əlməd* in Tuareg (Kossmann 2011, 22). This explanation is not unreasonable from a Tuareg-internal perspective, but comparative data shows that it does not work.

If we examine verbs of this type in other varieties of Berber, we see that they all have the unexpected imperfective formation (see appendix). Moreover, in Ghadames, we find that verbs of this type *also* have the $\Theta \rightarrow$ melody in the aorist, e.g. {21} *əmdu* P *əmda* I *əməddu* ‘to finish’. As Ghadames does not have a *ǎ...ə* \rightarrow *ə...ə* vowel harmony, and simply retains the *A- Θ* vocalism in the strong verb, e.g. {1} *ālməd* ‘to learn’, the analogy that Prasse invokes cannot explain the form in Ghadames Berber, nor can it explain the {21} Zenaga *umḍih* ‘to be used up’. Based on comparative evidence then, we should reconstruct verbs of this type with a Proto-Berber $\Theta \rightarrow$ melody in the aorist (as well as the imperfect).⁴

One may ask, then: what is it about this verb type that triggers the $\Theta \rightarrow$ melody? One thing all the verbs of Type 1 have in common is that, while the stem structure did not matter, nor the quality of the first vowel slot, the

4. This case was already made by Kossmann (2013, 68) for Ghadames, and footnote 54 clearly indicates the possible necessity to reconstruct this as a separate apophonic class, although he comes to a different, tentative, conclusion from mine.

second vowel slot was *always* a central vowel slot \check{v} . It is tempting to consider that what makes the verbs with $\Theta \rightarrow$ melody stand out is that they are distinguished by having a plain vowel slot \bar{v} in the second vowel slot position instead. Such an analysis becomes more attractive because verbs can be reconstructed that have the $\Theta \rightarrow$ melody which otherwise behave exactly like the A- Θ melody verbs, with the exception of having a plain vowel in the second vowel slot. Beside $\check{v}cc\bar{v}$ verbs, there is a considerable group of $\check{v}cc\check{v}c$ verbs. While these frequently undergo analogical levelling in different dialects, there are several attestations that clearly point to similar behaviour to the $\check{v}cc\bar{v}$ verbs, with a $\Theta \rightarrow$ melody in both the aorist and the imperfect, and with the expected gemination of the second radical, e.g.

{18} Ghd. *aṭkur* P *aṭkar* I *aḍaḥkur* ‘to fill’; Tam. *tkur* P *tkʷar* I *təkkur* ‘to fill’; Tashl. *ktur* P *ktar* I *kttur*

{19} Tam. *ḍfur* P *ḍfar* I *ḍaffur* ‘to follow’

{20} Kb. *zwir* P *zwar* I *zəggʷir* ‘to precede’;⁵ AAT *zwur* P *zwar* I *zəggur* ‘to be first’; Tashl. *zwur* P *zwar* I *zggʷur*

Many other varieties have lost this gemination through analogy. Thus, Tashlhiyt simply has *ḍfur* P *ḍfar* I *ttḍfur* ‘to follow’ and *zwur* P *zwar* I *ttzwur* ‘to precede’, but the patterns found in Ghadames, Tamazight and Kabyle must be seen as genuine archaic retentions.

Considering this parallel behaviour, one may expect to find more subtypes of this verb with $\Theta \rightarrow$ melody triggered by the presence of a plain vowel in the second vowel slot, parallel to the verb types with the A- Θ melody. But besides the $\check{v}cc\bar{v}$ and $\check{v}cc\check{v}c$ verbs, there is only clear evidence for the $\check{v}c\bar{v}$ type with {27} **aḍdu* ‘to go’.

There may also be evidence for $\check{v}c\bar{v}$ and $\check{v}c\check{v}c$ verbs, which one would predict to have an initial geminate in the imperfective. The verb {26} **aru* ‘to cry’, has the right stem shape to qualify as a $\check{v}c\bar{v}$ verb, but not a single variety retains any trace of the predicted paradigm ***aru* P ***ara* I ***arru*, instead all dialects point to **aru* P **aru* I **attaru* instead. As such, this reconstruction can hardly be made confidently.

The $\check{v}c\check{v}c$ stem likewise gives us some trouble, a possible example of this stem type is {25} **agur* ‘to walk’. But this verb is only attested among Zenatic varieties, and most of those treat this verb in the aorist and perfective as if it were a *uCuC* stative verb. In the imperfective, however, we find a highly conspicuous geminated imperfective formation that would align with the verb type that we find here, but would be irregular for verbs of the *uCuC* type.

5. The *i* vowel in this verb is presumably to be attributed to a dissimilation of *u* to adjacent to *ggʷ*.

Moreover, at least Figuig (optionally) and Mzab lack the initial *u* vowel in the aorist and perfective which may be a trace of its original stem shape.

{25} Fig. *yur*; *uyur* P *yur*; *uyur* I *ggur* ‘to walk’, Mzab *ḡur* P *ḡur* I *ḡḡur* ‘id.’; Ouar. *igur* P *igur* I *əggur*; *tigur* ‘to go’; Rif. t I *ggua*

Compare this to a widespread uCuC verb in these varieties:

Mzab *zum* P *zum* I *ətsuma* ‘id.’; Ouar. *uzum* P *uzum* I *əttuzum* ‘id.’; Fig. *zum* P *zum* I *əttizum* ‘id.’

Thus the conjugation of this verb is certainly unique and irregular, and may be in some way be related to the *ṽcṽc* stem verb, but it is not entirely certain whether it can be reconstructed the way. I reconstruct it in the following table, and in either case it is only attested in a specific subset of the Berber languages.

Table 5: comparison of regular light verbs and light verbs with *ṽ* as the second vowel slot

Stem		Aor.	Perf.	Impf.	Stem		Aor.	Perf.	Impf.
		A-Θ	Θ-A	Θ-A→			Θ→	Θ-A	Θ→
				(c ² > c̄ ²)					(c ² > c̄ ²)
ṽccṽc	{1}	* <i>ǎlməd</i>	* <i>ǎlmád</i>	* <i>ǎlǎmmád</i>	ṽccṽc	{18}	* <i>ǎḍkur</i>	* <i>ǎḍkar</i>	* <i>ǎḍakkur</i>
ṽccṽ?	{2}	* <i>ǎrzə?</i>	* <i>ǎrzǎ?</i>	* <i>ǎrǎzzǎ?</i>	ṽccṽ	{21}	* <i>ǎmdu</i>	* <i>ǎmda</i>	* <i>ǎmaddu</i>
				(c ¹ > c̄ ¹ ; ṽ ^f > ṽ ⁱ)					(c ¹ > c̄ ¹)
ṽcṽc	{3}	* <i>ǎḡən</i>	* <i>ǎḡǎn</i>	* <i>ǎḡḡan</i>	ṽcṽc	{25}	* <i>ǎgur</i>	* <i>ǎgar</i>	* <i>ǎggur</i>
ṽcṽ?	{4}	* <i>ǎḡə?</i>	* <i>ǎḡǎ?</i>	* <i>ǎḡḡa?</i>	ṽcṽ	{26}	* <i>ǎru</i>	* <i>ǎra</i>	* <i>ǎrru</i>
				(ṽtt- + STEM)					(ṽtt- + STEM)
ṽcṽc	{5}	* <i>ǎḡəm</i>	* <i>uḡám</i>	* <i>ǎtt-agǎm</i>	ṽcṽc	—	—	—	—
ṽcṽ?	{7}	* <i>ǎḡə?</i>	* <i>uḡǎ?</i>	* <i>ǎtt-ǎḡǎ?</i>	ṽcṽ	{27}	* <i>ǎḍu</i>	* <i>ǎḍa</i>	* <i>ǎttuḍu</i>
ṽc̄c̄c̄	{8}	* <i>ǎffəy</i>	* <i>ǎffǎy</i>	* <i>ǎtt-ǎffǎy</i>	ṽc̄ṽc̄	—	—	—	—
ṽc̄ṽ?	{9}	* <i>ǎkkə?</i>	* <i>ǎkkǎ?</i>	* <i>ǎtt-ǎkkǎ?</i>	ṽc̄ṽ	{28}	* <i>ǎddu</i>	* <i>ǎdda</i>	* <i>ǎtt-ǎddu</i>

I have not found any verbs of the conjugational classes *ṽcṽc*. These may have existed in Proto-Berber, but would have been in competition with a fairly common stative verb classes with similar stem shapes. So the hypothetical *ǎcuc* P *ǎcac* I *ǎttǎcuc* verbs may have merged with the conjugational class of securely reconstructible verbs like **ǎffad* P **ǎffud* I **ǎttǎfad* ‘to be thirsty’, **ǎqqar* P **ǎqqur* I *ǎttǎyar* ‘to be dry’, which have the same stem shape.⁶ There might be one example of an *ṽcṽ* verb, namely {27} **ǎḍu* ‘to fall’, but this may have to be reconstructed as **ǎwḍu* instead. See the discussion in the appendix.

6. The exact evidence for the reconstruction of these paradigms must be discussed in a later publication, but they are based on comparisons such as Ghadames *ǎffad* P *ǎffud* I

Verbs that have a plain vowel both in the initial and second syllable, a parallel to the **aškəʔ*, hypothetically *uccuc* P *uccac* I *əttuccuc*, lack clear examples. Perhaps they merged with verbs of the Tuareg II.B.1 type (Prasse 1973, 153). A discussion on the reconstruction of these verb types will have to be addressed in a future publication.

CONCLUSION

In this paper I have examined the reconstruction of the light verbs of Proto-Berber. These verbs are marked by having two vowel slots in the stem, which may be either plain or central. I have shown that there is not one, but rather there are two main vocalisation types. The most common type (type 1) has aorist A- Θ perfective Θ -A and imperfective Θ -A \rightarrow , while the other type (type 2) has aorist/imperfective Θ \rightarrow and perfective Θ -A. These two types are distinguished by the quality of the vowel in the second vowel slot of the aorist. If the vowel is a central vowel, it has type 1 vocalism; when it contains a plain vowel, it has type 2 vocalism. The morphological patterns are otherwise identical between the two types of light verbs. This description and reconstruction significantly collapse many of the different verbal classes discussed in earlier descriptions of Berber (and Proto-Berber) verbal morphology in a set of several fairly straightforward morphological rules that can be written down formally as follows:

Light Verb Formation

- A light verb is a verb stem with two vowel slots which may be central (\check{v}) or plain (\bar{v}).
- The perfective melody of light verbs is Θ -A.
- If the second stem vowel slot is central (\check{v}), the aorist melody is A- Θ , and the imperfective melody is Θ -A \rightarrow . If the second stem vowel is plain (\bar{v}), the aorist and imperfective melodies are Θ \rightarrow .
- The imperfective stem is derived through gemination of the second consonant if the stem starts with $\check{v}cc$ -. $\check{v}cc$ - \rightarrow $\check{v}c\check{v}c$ -.
- If the stem starts with $\check{v}c\check{v}$ -, the imperfective stem is derived through gemination of the first consonant and making the second central vowel a plain vowel. $\check{v}c\check{v}$ - \rightarrow $\check{v}c\bar{v}$ -.
- In all other cases, the imperfective is formed by prefixing $\check{v}tt$ - to the stem.

əttāfad, Kabyle *fad* P *fud* I *ətfad*’, and Ghadames *əqqar* P *āqqur* I *əttəyar*, Kabyle *qqar*, *qqur*, *əjyar*, Figuig *qqar* P *qqur* I *ttuqqur*.

A point worth noting is the striking parallel of the ‘two vocalism’ system found in the light verbs compared to the heavy verbs. As shown by Van Putten (forthcoming), heavy verbs have a melody Θ -A \rightarrow in the Aorist and imperfective, unless there is a plain vowel in the second or third vowel position, in which case the aorist and imperfective have the melody Θ \rightarrow . Both vocalisation types (as with light verbs) share the same perfective melody A- Θ -A \rightarrow . While the situation and conditioning of the two vocalisms in the heavy verb stems is a bit more complex, the commonalities are striking, and this is unlikely to be coincidental. It appears that the presence of plain vowels (perhaps specifically **u* or **i*) is the main trigger for the simpler alternative melody Θ \rightarrow both in the heavy and light verb system.

APPENDIX

Throughout the article I have referred to several verbs with a number in between curly braces {#}. These refer to entries in the following appendix, where I give the reconstruction of the verbs reconstructed in this article. For each I have included a number of languages and their cognates. The dictionaries I have used for each of these dialects that I cite are listed below. I have only specifically cited Iwellemmeden Tuareg when Mali Tuareg showed no cognate, and Tarifit when Figuig, Ouargla and Mzab lacked a cognate. In one case I cite Siwa Berber for an important semantic development, based on data provided by Lameen Souag (pers. comm.).

Kabyle	Kb.	(Dallet 1982)
Tashlhiyt	Tashl.	(Destaing 1920)
Tamazight	Tam.	(Taifi 1992)
Ayt Atta Tamazight	AAT	(Amaniss 2012)
Tuareg (Mali)	Tu. (M)	(Heath 2006)
Tuareg (Iwellemmeden)	Tu. (W)	(Prasse, Alojaly, and Mohamed 1998)
Ghadames	Ghd.	(Lanfry 1968; 1973)
Figuig	Fig.	(Benamara 2013)
Ouargla	Ouar.	(Delheure 1987)
Mzab	Mzab	(Delheure 1985)
Tarifit	Rif.	(Serhoual 2002)
Zenaga	Zng.	(Taine-Cheikh 2008; 2010)
Awjila	Awj.	(van Putten 2014)

In some cases cognates or etymologies of these words have been previously discussed by Kossmann (1999), Catherine Taine-Cheikh (2008) or Naït-Zerrad (1998; 1999; 2002). If this is the case, I have included an abbreviation to reference to these. For Kossmann (1999) I use K followed by the number of the example. For Taine-Cheikh (2008) I used TC followed by

the footnote number with etymological information. For Naït-Zerrad (1998; 1999; 2002) I use NZ followed by the root entry in the dictionary.

Because the Type 1 verbs are by far the most common and are widely attested, I have only picked a single cognate for each verb type, except for the rarer verb types with initial *v̄*, where I have tried to reconstruct as many forms as possible that can be securely reconstructed for Proto-Berber. For the Type 2 verbs, I have tried to collect all verbs that I could find that appear to be reconstructible for Proto-Berber.

TYPE 1 VERBS

{1} **ālməd* ‘to learn’

	Aorist	Perfective	Imperfective	
Proto-Berber	* <i>ālməd</i>	* <i>əlmád</i>	* <i>əlámmăd</i>	
Kabyle	<i>əlməd</i>	<i>əlməd</i>	<i>ləmməd</i>	‘learn’
Tamazight	<i>əlməd</i>	<i>əlməd</i>	<i>ləmməd</i>	‘id.’
Ayt Atta	<i>lməd</i>	<i>lməd</i>	[<i>ʔtəlməd</i>]	‘id.’
Tashlhiyt	<i>lmd</i>	<i>lmd</i>	<i>lmmd</i>	‘id.’
Ghadames	<i>ālməd</i>	<i>əlmăd</i>	<i>əlámmăd</i>	‘be used to, learn’
Tuareg	<i>əlməd</i>	<i>əlməd</i>	<i>əlamăd</i>	‘learn, know’
Figuig	<i>lməd</i>	<i>lməd</i>	<i>ləmməd</i>	‘id.’
Ouargla	<i>əlməd</i>	<i>əlməd</i>	<i>ləmməd</i>	‘id.’
Mzab	<i>əlməd</i>	<i>əlməd</i>	<i>ləmməd</i>	‘id.’
Tarifiyt	<i>řməd</i>	<i>řməd</i>	<i>řəmməd</i>	‘id.’
Awjila	<i>əlmád</i>	—	<i>ləmməd</i>	‘id.’

{2} **ərzəʔ* ‘to break’

	Aorist	Perfective	Imperfective	
Proto-Berber	* <i>ərzəʔ</i>	* <i>ərzázʔ</i>	* <i>ərázʔzəʔ</i>	
Kabyle	<i>ərʔ</i>	<i>ərʔa</i>	[<i>əʔʔruzu/əʔʔruʔ</i>]	‘break’
Tashlhiyt	<i>rʔ</i>	<i>rʔa</i>	<i>rʔʔa</i>	‘id.’
Tamazight	<i>rəʔ</i>	<i>ərʔa</i>	<i>rəʔʔa</i>	‘id.’
Ayt Atta	<i>rəʔ</i>	<i>rʔa</i>	<i>rəʔʔa</i>	‘id.’
Ghadames	<i>āʔrʔ</i>	<i>ərʔo</i>	<i>rāʔʔ</i>	‘id.’
Tuareg	<i>āʔrʔ</i>	<i>ərʔa</i>	<i>raʔʔ</i>	‘id.’
Ouargla	<i>ərʔ</i>	<i>ərʔu</i>	<i>rəʔʔ</i>	‘id.’
Mzab	<i>ərʔ</i>	<i>ərʔu</i>	<i>rəʔʔ</i>	‘id.’
Tarifiyt	<i>aaʔ</i>	<i>aaʔa</i>	[<i>ʔaaʔʔa</i>]	‘id.’
Awjila	<i>ərʔ</i>	<i>ərʔa</i>	—	‘id.’

{3} *ǧǧan ‘to lie down, sleep’ (NZ: GN5)

	Aorist	Perfective	Imperfective	
Proto-Berber	*ǧǧan	*ǧǧǎn	*ǧǧǧan	
Kabyle	gən	gən	ǧgən	‘lie down, sleep’
Tashlhiyt	gʷn	gʷn	ggan	‘id.’
Tamazight	gən	gən	ggan	‘id.’
Ayt Atta	gən, gʷən	gən	ggan	‘id.’
Tuareg	ǧǧən	ǧǧǎn	ǧǧǧan	‘id.’
Figuig	žən	žən	žžan	‘id.’
Tarifit	žən	žna	žžan	‘id.’

{4} *ǧǧə? ‘to do, make’ (NZ: G3)

	Aorist	Perfective	Imperfective	
Proto-Berber	*ǧǧə?	*ǧǧǎ?	*ǧǧǧə?	
Kabyle	ǧ	ga	gga	‘do, make’
Tashlhiyt	g	ga	gga	‘id.’
Tamazight	g	ga	gga	‘id.’
Ayt Atta	g	ga	gga	‘id.’
Tuareg	ǧǧ	ǧǧa	ǧǧǧa	‘id.’
Ghadames	ǧǧ	ǧo	ǧǧǧa	‘id.’
Figuig	yy	yyu	[tǧǧ]	‘id.’
Ouargla	ǧ	ǧgu	[ǧttǧǧ]	‘id.’
Mzab	ǧǧ	ǧǧu	[ǧttǧǧǧ, ǧttaǧǧǧa]	‘id.’
Tarifit	[gg]	[gga]	[tǧǧ]	‘id.’
Awjila	ǧǧ (imp. ǧ)	g(g)ǎ	[tǧǧǧa]	‘id.’

{5} *ǧǧəm ‘to draw water’ (NZ: GM3; K: 409; TC: 366)

	Aorist	Perfective	Imperfective	
Proto-Berber	*ǧǧəm	*ǧǧǎm	*ǧǧǧəm	
Kabyle	ǧǧəm	ǧǧəm	ǧǧǧǧəm	‘draw water’
Tashlhiyt	ǧǧʷm	ǧǧʷm	ttǧm	‘id.’
Tamazight	ǧǧəm	ǧǧəm	ttǧǧəm	‘id.’
Ayt Atta	ǧǧəm	ǧǧəm	ttǧǧəm	‘id.’
Tuareg (M)	ǧǧəm	oǧǧm	taǧǧm	‘serve, ladle’
Ghadames	ǧǧəm	uǧǧm	ǧtaǧǧm	‘draw water’
Figuig	ayəm	uyəm	ttayəm	‘id.’
Ouargla	ǧǧəm	ǧǧəm	ǧttǧǧəm	‘id.’

	Aorist	Perfective	Imperfective	
Mzab	<i>ağəm</i>	<i>uğəm</i>	<i>əttağəm</i>	‘id.’
Tarifiyt	<i>agəm</i>	<i>ugəm</i>	<i>tagəm</i>	‘id.’
Zenaga	<i>ägum</i>	<i>ugäm</i>	<i>əttägäm</i>	‘id.’
Awjila	<i>ugóm</i>	–	<i>tägəm</i>	‘id.’

{6} *awəḍ ‘to arrive’

	Aorist	Perfective	Imperfective	
Proto-Berber	<i>*awəḍ</i>	<i>*iwăḍ</i>	<i>*əttawăḍ</i>	
Kabyle	<i>awəḍ</i>	<i>əbb^wəḍ</i>	<i>əttawəḍ</i>	‘reach’
Tashlhiyt	<i>awḍ</i>	<i>iwḍ</i>	<i>ttawḍ</i>	‘id.’
Tamazight	<i>awəḍ</i>	<i>iwəḍ</i>	<i>ttawəḍ</i>	‘id.’
Tamazight	<i>awəṭ</i>	<i>iwəṭ</i>	<i>ttawəṭ</i>	‘id.’
Tuareg (M)	<i>awəḍ</i>	<i>ewăḍ, äwwăḍ</i>	<i>tawăḍ</i>	‘id.’
Ghadames	<i>awəḍ</i>	<i>iwăḍ</i>	<i>əttawəḍ</i>	‘id.’
Figuig	<i>awəḍ</i>	<i>iwəḍ</i>	<i>tawəḍ</i>	‘id.’
Ouargla	<i>awəḍ</i>	<i>iwəḍ</i>	<i>əttawəḍ</i>	‘id.’
Mzab	<i>awəḍ</i>	<i>iwəḍ</i>	<i>əttawəḍ</i>	‘id.’
Tarifiyt	<i>awəḍ</i>	<i>iwəḍ</i>	<i>takk^wəḍ</i>	‘id.’
Awjila	<i>wəṭ</i>	<i>wəṭ</i>	<i>təwwəṭ</i>	‘id.’

The *u* high vowel of the perfective is regularly shifted to *i* due to the adjacent **w* in all Berber varieties. The Kabyle perfective reflex is perhaps somewhat surprising. It appears that the sequence **iwə* shifted to *əwwə*, which subsequently participated in the *ww* > *bb^w* shift found more generally in Kabyle Berber, compare for example Kb. *awi* P *əbb^wi* ‘to bring’, Tashl. *awi* I *iwi* ‘id.’, Kb. *tabburt* ‘gate’, Tashl. *tawwurt*, *tagg^wurt* ‘id.’, and the outcome of *n* ‘of’ + état d’annexion, e.g. *n wakal* → *bb^wakal* ‘of the earth’ (Naït-Zerrad 2001, 25).

{7} *afəʔ ‘to find’ (NZ: F10)

	Aorist	Perfective	Imperfective	
Proto-Berber	<i>*áfəʔ</i>	<i>*ufăʔ</i>	<i>*əttáfăʔ</i>	
Kabyle	<i>af</i>	<i>ufa</i>	<i>əttaf</i>	‘find’
Tashlhiyt	<i>af</i>	<i>ufa</i>	<i>ttafa</i>	‘id.’
Tamazight	<i>af</i>	<i>ufa</i>	<i>ttafa</i>	‘id.’
Ayt Atta	<i>af</i>	<i>ufa</i>	<i>ttafa</i>	‘id.’
Tuareg (M)	<i>af</i>	<i>ofa</i>	<i>[tifu]</i>	‘id.’

	Aorist	Perfective	Imperfective	
Ghadames	<i>af</i>	<i>ufo</i>	<i>ttaf</i>	‘id.’
Figuig	<i>af</i>	<i>ufu</i>	<i>taf</i>	‘id.’
Ouargla	<i>af</i>	<i>ufu</i>	<i>əttaf</i>	‘id.’
Mzab	<i>af</i>	<i>ufu</i>	<i>əttaf</i>	‘id.’
Tarifiyt	<i>af</i>	<i>ufa</i>	<i>taf</i>	‘id.’
Awjila	<i>uf</i>	<i>ufa</i>	<i>tàfa</i>	‘id.’

{8} *ǎffəy ‘to go out’ (NZ: FY 1)

	Aorist	Perfective	Imperfective	
Proto-Berber	*ǎffəy	*ǎffǎy	*əttǎffǎy	
Kabyle	<i>əffəy</i>	<i>əffəy</i>	<i>təffəy</i>	‘go out’
Tashlhiyt	<i>ffy</i>	<i>ffy</i>	<i>tffy</i>	‘id.’
Tamazight	<i>ffəy</i>	<i>ffəy</i>	<i>tffəy</i>	‘id.’
Ayt Atta	<i>ffəy</i>	<i>ffəy</i>	<i>ttəffəy</i>	‘id.’
Ghadames	<i>ǎffəε</i>	<i>ǎffǎε</i>	<i>əttǎffǎε</i>	‘id.’
Tuareg (W)	<i>əffəy</i>	<i>əffǎy</i>	<i>tafǎy</i>	‘id.’
Figuig	<i>əffəy</i>	<i>əffəy</i>	<i>təffəy</i>	‘id.’
Ouargla	<i>əffəy</i>	<i>əffəy</i>	<i>əttəffəy</i>	‘id.’
Mzab	<i>əffəy</i>	<i>əffəy</i>	<i>əttəffəy</i>	‘id.’
Tarifiyt	<i>ffəy</i>	<i>ffəy</i>	<i>təffəy</i>	‘id.’
Zenaga	<i>ǎffǐ, offǐ</i>	<i>uffǎ</i>	<i>ittǎffǎ</i>	‘grow (of a plant)’

Taine-Cheikh (2008, 147, n. 275) connects the Zenaga word with Tuareg *af* ‘to be free’, but it strikes me that this word is a better match, semantically and the sound correspondences fit perfectly.

{9} *ǎkkə? ‘to pass by’

	Aorist	Perfective	Imperfective	
Proto-Berber	*ǎkkə?	*ǎkkǎ?	*əttǎkkǎ?	
Kabyle	<i>akk</i>	<i>akka</i>	<i>takk</i>	‘pass by’
Tashlhiyt	<i>kk</i>	<i>kka</i>	<i>tkka</i>	‘id.’
Tamazight	<i>akk</i>	<i>kka</i>	<i>takka</i>	‘id.’
Ayt Atta	<i>kk</i>	<i>kka</i>	<i>ttakka</i>	‘id.’
Ghadames	<i>ǎkk</i>	<i>akko</i>	<i>əttǎkk</i>	‘id.’
Tuareg (M)	<i>ǎkk</i>	<i>akka</i>	<i>takk</i>	‘id.’
Figuig	<i>kk, kku</i>	<i>kku</i>	<i>[takk]</i>	‘id.’
Ouargla	<i>akk</i>	<i>akku</i>	<i>əttakk</i>	‘id.’

	Aorist	Perfective	Imperfective	
Tarifiyt	<i>akk</i>	<i>kka</i>	<i>takk</i>	‘id.’

{10} *ǎʔkər ‘to steal’

	Aorist	Perfective	Imperfective	
Proto-Berber	<i>*ǎʔkər</i>	<i>*ǎʔkār</i>	<i>*attǎʔkār</i>	
Kabyle	<i>akʷər</i>	[<i>ukər</i>]	[<i>takʷər</i>]	‘steal’
Tashlhiyt	<i>akʷr</i>	[<i>ukr</i>]	<i>ttakʷr</i>	‘id.’
Tamazight	<i>akər</i>	[<i>ukər</i>]	<i>ttakər</i>	‘id.’
Ayt Atta	<i>akər</i>	[<i>okār</i>]	<i>ttakər</i>	‘id.’
Ghadames	<i>okər</i>	[<i>okār</i>]	<i>əttokār</i>	‘id.’
Tuareg	<i>akər</i>	[<i>okār</i>]	<i>takār</i>	‘id.’
Figui	<i>ašər</i>	[<i>ušər</i>]	<i>əttāšər</i>	‘id.’
Mzab	<i>akər</i>	[<i>ukər</i>]	<i>əttakər</i>	‘id.’
Awjila	<i>àkər, ùkər</i>	[<i>ùkər</i>]	<i>tākər</i>	‘id.’

For a discussion on the reconstruction of *ǎʔcǎc verbs see Kossmann (2001b, 80–82).

{11} *aGdǎβ ‘to be equal’ (NZ: GDH3; TC 342)

	Aorist	Perfective	Imperfective	
Proto-Berber	<i>*aGdǎβ</i>	<i>*uGdǎβ</i>	<i>*əttaGdǎβ</i>	
Tashlhiyt	[<i>giddi</i>]	[<i>gadda</i>]	[<i>tgiddi</i>]	‘be equal’
Tuareg (M)	<i>ağdǎh</i>	<i>oğdǎh</i>	[<i>tiğdeh</i>], <i>tagdǎh</i>	‘id.’
Zenaga	–	[<i>āgdǎh</i>]	<i>əttegdǎh</i>	‘id.’

This verb is only marginally attested across the Berber varieties, but it seems widely enough attested to warrant reconstruction. Its exact formation, however, is not so easy to reconstruct. Tuareg clearly points to *aGdǎβ, which is what I reconstruct here. Other examples of ǎccǎc verbs seem rare, and it therefore also stands to reason that other varieties would shift this verb class to other types. As there are no Zenatic varieties that retain a reflex of this verb, it is not possible to determine whether the *g* that we find in these languages goes back to a **g* or **ǧ*. I have represented this ambiguity with the sign **G* (Kossmann 1999, 172).

The Zenaga form appears to be the outcome of a heavy verb P *ǎGidǎβ or *ǎGudǎβ, with syncope of the high vowel in an intervocalic position. It remains to be seen whether such a process is indeed regular in Zenaga. The Tashlhiyt form may likewise be derived from a heavy verb formation *ǎGGidǎβ,

although the expected perfective form would be *gidda* < *ǎGGidǎβ. On the reconstruction of the Proto-Berber Heavy verbs see Van Putten (forthcoming).

{12} *aškə? ‘to get lost’ (NZ: CK6)

	Aorist	Perfective	Imperfective	
Proto-Berber	*áškə?	*ušká?	*əttáškǎ?	
Tashlhiyt	<i>ašk d</i>	<i>uška d</i>	<i>ttaška d</i>	‘come’
Tamazight	<i>ašk</i>	<i>uška</i>	<i>ttaška</i>	‘get lost’
Ayt Atta	<i>aššək</i>	<i>ušška</i>	<i>ttaška</i>	‘id.’
Tuareg (M)	<i>ašk</i>	<i>uška</i>	[<i>tišk</i>]	‘id.’
Awjila	[<i>ški</i>]	[<i>əšk, əški</i>]	[<i>šəkki</i>]	‘leave, come out’

Awjila Berber appears to have reanalysed this verb as a *y-final light verb, but its root is no doubt cognate. Proto-Berber *š seems to have been a very marginal phoneme (Kossmann 1999: 225), but seems to be reconstructible for this verb.

{13} *azzəl ‘to run’

	Aorist	Perfective	Imperfective	
Proto-Berber	*azzəl	*uzzǎl	*əttazzǎl	
Kabyle	<i>azzəl</i>	<i>uzzəl</i>	[<i>ʔtazzal</i>]	‘run’
Tashlhiyt	<i>azzəl</i>	<i>uzzəl</i>	[<i>ttazzal</i>]	‘id.’
Tamazight	<i>azzəl</i>	<i>uzzəl</i>	<i>ttazəl</i> , [<i>ttazzla</i>]	‘id.’
Ayt Atta	<i>azzəl</i>	[<i>uzzla</i>]	[<i>ttazzla</i>]	‘id.’
Ghadames	[<i>ǎzzəl</i>]	[<i>əzzǎl</i>]	[<i>əttǎzzǎl</i>]	‘id.’
Tuareg (M)	[<i>ašəl</i>]	[<i>ošǎl</i>]	[<i>ətašǎl</i>]	‘id.’
Figui	<i>azzəl</i>	<i>uzzəl</i>	<i>ttazzəl</i>	‘id.’
Ouargla	<i>azzəl</i>	<i>uzzəl</i>	<i>əttazzəl</i>	‘id.’
Awjila	<i>əzzəl</i> (imp.əzzəl)	–	<i>təzzəl</i>	‘id.’

Tuareg has degeminated the *zz* to *z*. This is a typical adaptation of verbs of this type in Tuareg, and it has also happened to {14} *assəs and {15} *awwəg.

{14} *assəs ‘to tie to’

	Aorist	Perfective	Imperfective	
Proto-Berber	*assəs	*ussās	*əttassās	
Tashlhiyt	<i>ass</i>	<i>uss</i>	<i>ttass</i>	‘tie to’
Tamazight	<i>ass</i>	[<i>ussa</i>]	[<i>ttassa</i>]	‘id.’
Ayt Atta	<i>ass</i>	[<i>ussa</i>]	[<i>ttassa</i>]	‘id.’

	Aorist	Perfective	Imperfective	
Tuareg (M)	[asəs]	[usās]	[əttasās]	‘id.’
Figuig	assəs, ass	ussəs, uss	ttassəs, ttass	‘id.’
Zenaga	äššiš	əššäs	əttäššäs	‘id.’

As with {13} *azzəl and {15} *awwəǵ, Tuareg has degeminated the first stem consonant

{15} *awwəǵ ‘to be far’ (NZ: G2; K 345; TC: 122)

	Aorist	Perfective	Imperfective	
Proto-Berber	*awwəǵ	*uwwəǵ	*əttawwəǵ	
Tashlhiyt	aggug	[aggug]	[ttaggug]	‘be far’
Tuareg (M)	aǵəǵ	uǵəǵ	tiǵəǵ	‘id.’
Tarifit ⁷	agg ^w əž	ugg ^w əž	tagg ^w əž	‘id.’
Zenaga	aḥḥug	uḥḥəg	[ittuḥḥug]	‘id.’

The form aggug ‘to be far’ in Tashlhiyt is likely the outcome of a vocalisation of labialized Schwa *agg^wəg > aggug. As a result it has been generalized to the non-apophonic ačuc class. Once again Tuareg has degeminated the first stem consonant, as with {13} *azzəl and {14} *assəs.

{16} *ayyə? ‘to let, leave’ (NZ: G41; TC: 230)

	Aorist	Perfective	Imperfective	
Proto-Berber	*ayyə?	*uyyā?	*əttayyā?	
Kabyle	[əǵǵ]	[əǵǵa]	əǵǵaǵa, ətṭaǵa, əṭṭaǵa, [itəǵǵ]	‘let’
Tashlhiyt	ažž	užža	ttažža	‘let, leave’
Tamazight	aǵǵ	uǵǵa	ttaǵǵa	‘id.’
Ayt Atta	aǵǵ	uǵǵa	ttaǵǵa	‘id.’
Tuareg (M)	äyy	uyya	tayya	‘id.’
Ghadames	[əǵǵ]	[əǵǵo]	[ttəǵǵ]	‘id.’
Figuig	[dəž]	[džu]	ttadža	‘id.’
Ouargla	[əžž]	[əžžu]	əttažža	‘id.’
Mzab	[əžž]	[əžžu]	əttažža	‘id.’
Tarifiyt	[əžž]	[əžža]	[təžža]	‘id.’
Zenaga	äD ^v i	əD ^v ä	əttäD ^v ä	‘id.’
Awjila	[ədž]	[ədža]	[dəžža]	‘let go of’

7. The Tarifit form has been taken from Naït-Zerrad (2002, 693).

The Ghadames cognate has merged with the $\check{v}\check{c}\check{v}?$ verbs. This is may be the result of a more widespread pattern of vowel centralization in Ghadames, which can also be observed in verbs such as in the imperfects of the heavy verbs which lack the characteristic plain vowel of the second syllable in the imperfect, e.g. $\text{\textit{\text{attafənzər}}$ ‘to have a nosebleed’, cf. Tuareg (M) $\text{\textit{tihanšur}}$ ‘id.’ It is also found in the stative verbs, e.g. $\text{\textit{\text{əmləl P mälləl}}$ ‘to be white’, cf. Kabyle $\text{\textit{imlil P məllul}}$ ‘id.’. This centralization is not yet well understood. The Figuig, Mzab and Ouargla aorist and perfective have merged with $\check{v}\check{c}\check{v}?$ as well, but the imperfective still shows the signs of the original verb class.

{17} $\text{\textit{aǧǧə?}}$ ‘to look down’ (NZ: G7; K: 445)

	Aorist	Perfective	Imperfective	
Proto-Berber	$\text{\textit{*aǧǧə?}}$	$\text{\textit{*uǧǧǎ?}}$	$\text{\textit{*əttaǧǧǎ?}}$	
Tashlhiyt	$\text{\textit{agg}^w}$	$\text{\textit{ugga}}$	$\text{\textit{tagga}}$	‘look down’
Tamazight	$\text{\textit{agg}}$	$\text{\textit{ugga}}$	$\text{\textit{tagg}}$	‘id.’
Ayt Atta	$\text{\textit{agg}^w}$	$\text{\textit{ugga}}$	$\text{\textit{taga}}$	‘id.’
Tuareg (M)	$\text{\textit{aǧǧ}}$	$\text{\textit{oǧǧa}}$	$\text{\textit{taǧǧ}}$	‘id.’
Mzab	$\text{\textit{[užžu]}}$	$\text{\textit{užžu}}$	$\text{\textit{[ətužžu]}}$	‘id.’

The Mzab cognate has generalized the perfective stem to the aorist, and formed the imperfective from this new aorist.

TYPE 2 VERBS

{18} $\text{\textit{*əḍkur}}$ ‘to be full, fill’ (NZ: CR4; ḌKR2)

	Aorist	Perfective	Imperfective	
Proto-Berber	$\text{\textit{*əḍkur}}$	$\text{\textit{*əḍkar}}$	$\text{\textit{*əḍakkur}}$	
Kabyle	$\text{\textit{[ččar]}}$	$\text{\textit{[ččur]}}$	$\text{\textit{[yəḥṭašar, yəṭṭačar, yəččašar, yəččašar]}}$	‘id.’
Tashlhiyt	$\text{\textit{ktur}}$	$\text{\textit{k}^wtar}$	$\text{\textit{kttur}}$	‘id.’
Tamazight	$\text{\textit{tkur}}$	$\text{\textit{tkar}}$	$\text{\textit{təkkur}}$	‘be filled, fill’
Ayt Atta	$\text{\textit{tkur}}$	$\text{\textit{tk}^war}$	$\text{\textit{[ttətkur]}}$	‘fill, be filled’
Ghadames	$\text{\textit{əṭkur}}$	$\text{\textit{əṭkar}}$	$\text{\textit{əḍakkur}}$	‘id.’
Tuareg (M)	$\text{\textit{[əḍkər]}}$	$\text{\textit{[əḍkǎr]}}$	$\text{\textit{[əḍakkǎr]}}$	‘id.’
Figuig	$\text{\textit{[ṭšar]}}$	$\text{\textit{[ṭšur]}}$	$\text{\textit{[ttuṭšur]}}$	‘id.’
Mzab	$\text{\textit{[šar]}}$	$\text{\textit{[əššur]}}$	$\text{\textit{[əṭšara]}}$	‘id.’
Ouargla	$\text{\textit{[əššar]}}$	$\text{\textit{[əššur]}}$	$\text{\textit{[əttšara]}}$	‘id.’

{19} *ɔdfur ‘to follow’ (NZ: DFR2)

	Aorist	Perfective	Imperfective	
Proto-Berber	*ɔdfur	*ɔdfar	*ɔdɔffur	
Tashlhiyt	ɔfar	ɔfar	[ɔffir]	‘id.’
Tamazight	ɔfar, tɔar	ɔfar, tɔar (ur- ɔfur)	ɔɔffur	‘follow’
Ayt Atta	tfur	tɔar	tɔffur	‘id.’
Tarifiyt	ɔfaa	ɔfaa	[ɔffaa]	‘id.’

The same root of this verb also gives to the widespread preposition *ɔɔfir*, *ɔɔfɔr*, etc. ‘behind’

{20} *ɔzwur ‘to precede’ (TC: 1115)

	Aorist	Perfective	Imperfective	
Proto-Berber	*ɔzwur	*ɔzwar	*ɔzɔwwur	
Kabyle	zwir	zwar	zɔgg ^w ir	‘precede’
Tashlhiyt	zwur	zwar	zgg ^w ur	‘id.’
Tamazight	zwur	[zwur]	[ttzwur]	‘precede’
Ayt Atta	zwur	zwar	zɔggur	‘be first’
Ghadames	[ɔzwɔr]	[ɔzwɔr]	[ɔzɔwwɔr]	‘be first’
Tuareg (M)	[ɔšwɔr, izar]	[ɔšwɔr, ɔzzar]	[šawwɔr, tizar]	‘precede’
Figuig	[zzar]	[zzar]	[ttizzar]	‘id.’
Mzab	[zar, zzar]	[zar, zzar]	[ɔtzara]	‘id.’
Zénaga	[ɔžbɔr]	ɔžbɔr	[ɔžɔbbɔr]	‘id.’

Kabyle unexpectedly has an *i* in the aorist and imperfective stem. Perhaps a sound law has operated in Kabyle that not only shifts the sequence **uw* > *iw* (as seen in {6} **awəɔ* above) but also **wu* > **wi*, at least in certain environments. I have not found compelling additional evidence that this is the case, however.

Figuig and Mzab cognates have lost the medial *w* and as a result have shifted to a different verb class. The loss (or assimilation to the preceding *z*?) of the *w* is not well understood. Mali Tuareg retains both a form with an unassimilated *w* and with an assimilated *w*. The Zenaga and Ghadames forms have merged with the common *ɔccɔc* class, as has one of the forms of Mali Tuareg.

{21} *əmdu ‘to finish, to use up’ (TC: 679)

	Aorist	Perfective	Imperfective	
Proto-Berber	*əmdu	*əmda	*əməddu	
Tashlhiyt	<i>mdu</i>	<i>mda</i>	<i>[ttəmdu]</i>	‘finish’
Tamazight	<i>mdu</i>	<i>mda</i>	<i>[ttəmdu]</i>	‘filled with water’
Ayt Atta	<i>mdu</i>	<i>mda</i>	<i>[ttəmdu]</i>	‘use up’
Ghadames	<i>əmdu</i>	<i>əmda</i>	<i>əməddu</i>	‘finish’
Tuareg (M)	<i>əmdu</i>	<i>əmda</i>	<i>əmiddu</i>	‘be complete’
Ouargla	<i>[əmda]</i>	<i>əmda</i>	<i>[imədda]</i>	‘be finished’
Mzab	<i>[əmda]</i>	<i>əmda</i>	<i>[imədda]</i>	‘(be) finish(ed)’
Zenaga	<i>uṃdih</i>	<i>uṃdah</i>	<i>[ittuṃdih]</i>	‘be used, old’

As with {22} *ərnu, the Zenatic varieties have merged the aorist with the perfective stem. Figuig, Ouargla and Mzab have all generalized the perfective form to the aorist. This is a morphological innovation of the $\check{v}cc\bar{v}$ verbs typical of the Zenatic languages (Kossmann 1999, 31). This *a* vowel is also maintained in the imperfect.

{22} *ərnu ‘to defeat’ (TC: 816)

	Aorist	Perfective	Imperfective	
Proto-Berber	*ərnu	*ərnu	*ərənnu	
Kabyle	<i>ərnu</i>	<i>ərna</i>	<i>rənnu</i>	‘add, continue, defeat’
Tashlhiyt	<i>nru</i>	<i>nra</i>	<i>ttnru</i>	‘defeat’
Tamazight	<i>rru</i>	<i>rra</i>	<i>tərru</i>	‘id.’
Ayt Atta	<i>rnu</i>	<i>rna</i>	<i>ttərnu</i>	‘id.’
Ghadames	<i>ərnu</i>	<i>ərna</i>	<i>ərənnu</i>	‘id.’
Tuareg (M)	<i>ərnu</i>	<i>ərna</i>	<i>rinnu</i>	‘id.’
Figuig	<i>[rna]</i>	<i>rna</i>	<i>[rənna]</i>	‘id.’
Ouargla	<i>[ənṇa]</i>	<i>ənṇa</i>	<i>[əttənṇa]</i>	‘id.’
Mzab	<i>[ərna]</i>	<i>ərna</i>	<i>[rənna]</i>	‘id.’
Zenaga	<i>aṛīh</i>	<i>uṛāh</i>	<i>[əttaṛāh]</i>	‘id.’

Both Tamazight and Zenaga appear to have undergone an assimilation of the *rn* cluster to *rr*. Zenaga simplifies intervocalic *rr* to *r* regularly. This can be seen through the lack of gemination of *r* in triradical light verbs such as *āḍrəg* P *āḍrəg* I *iḍārəg* ‘to reach’ (< Hassaniyyah Arabic *drək* ‘id.’), *aḍruṛ* P *uḍṛaṛ* I *iḍaṛaṛ* ‘to be with milk’.

Ouargla has, instead assimilated *rn* > *nn*. As with {21} **amdu*, Figuig, Ouargla and Mzab have all generalized the perfective form to the aorist.

{23} **əβsu* ‘to undo, to card’ (NZ: FS4)

	Aorist	Perfective	Imperfective	
Proto-Berber	<i>*əβsu</i>	<i>*əβsa</i>	<i>*əβəssu</i>	
Kabyle	<i>fsu</i>	<i>fsa</i>	<i>fəʃʃu, fəssu</i>	‘pull apart’
Tashlhiyt	<i>fsu</i>	<i>fsa</i>	<i>fssu, assu</i>	‘card; flower’
Tamazight	<i>fsu</i>	<i>fsa</i>	<i>[ufəssu]</i>	‘card’
Ayt Atta	<i>fsu</i>	<i>fsa</i>	<i>fssu</i>	‘card’
Figuig	<i>[fsa]</i>	<i>fsa</i>	<i>[fəttsa]</i>	‘card’
Ouargla	<i>əfsu</i>	<i>əfsu</i>	<i>fəssu</i>	‘undo’
Mzab	<i>əfsu</i>	<i>əfsu</i>	<i>fəssu</i>	‘undo’
Tarifit	<i>fsu</i>	<i>fsu</i>	<i>fəssu</i>	‘flower’

For reasons not entirely clear, Ouargla and Mzab lack the typical analogical generalization of the perfective in this *ṽccv̄* verb, and instead have generalized the aorist, cf. {21} **amdu*, {22} **ərnu*, {24} **əβdu* and {27} **əwdu~*udu*. The imperfective forms *assu* in Tashlhiyt is presumably the regular outcome of the vocalisation of **β*. On this topic See the discussion by Kossmann (1999, 120–25).

{24} **əβdu* ‘to divide; to be divided’ (NZ: BD7; TC: 969)

	Aorist	Perfective	Imperfective	
Proto-Berber	<i>*əβdu</i>	<i>*əβda</i>	<i>*əβəttu</i>	
Kabyle	<i>bdu</i>	<i>bda</i>	<i>bəttu</i>	‘divide’
Tashlhiyt	<i>bdu</i>	<i>bda</i>	<i>aṭta</i>	‘id.’
Tamazight	<i>bdu</i>	<i>bda</i>	<i>uṭtu, [bəttu, ubttu]</i>	‘id.’
Ayt Atta	<i>bṭu</i>	<i>bṭa</i>	<i>bəttu</i>	‘id.’
Tuareg (M)	<i>əbdu</i>	<i>əbda</i>	<i>biḍdu</i>	‘be separated’
Figuig	<i>[bda]</i>	<i>bda</i>	<i>[bətta]</i>	‘divide’
Tarifit	<i>[bda]</i>	<i>bda</i>	<i>[bətta]</i>	‘id.’
Ouargla	<i>[əbda]</i>	<i>əbda</i>	<i>[bətta, bədda]</i>	‘(be) divorce(d)’
Mzab	<i>[əbda]</i>	<i>əbda</i>	<i>[bədda, bətta]</i>	‘(be) divorce(d)’
Zenaga	<i>ūḍih</i>	<i>ūḍah</i>	<i>[əttūḍih]</i>	‘be divorced’

The imperfective forms *uṭtu* in Tamazight and *aṭta* in Tashlhiyt are presumably the regular outcome of the vocalisation of **β*. On this topic See the discussion by Kossmann (1999, 120–25). On the topic of the Zénaga reflex of **β*, see Kossmann (2001a).

{25} ?əgur ‘to walk’ (NZ: GR37)

	Aorist	Perfective	Imperfective	
Proto-Berber	?əgur	?əgar	*əggur	
Figuig	yur, [uyur]	[yur, uyur]	ggur	‘walk’
Ouargla	[igur]	[igur]	əggur, [tigur]	‘go’
Mzab	ğur	[ğur]	ğğur	‘walk’

{26} ?əru ‘to cry’

	Aorist	Perfective	Imperfective	
Proto-Berber	*əru	?əra	?ərru	‘to cry’
Kabyle	ru	[ru]	[tru]	‘to cry’
Tashlhiyt	ru	[ru]	[tru]	‘id.’
Tamazight	ru	[ru]	[tru]	‘id.’
Ouargla	ru	[ru]	[əttɾu]	‘id.’

While logically this verb is the type 2 light verb parallel to the type 1 $\check{v}\check{c}\check{v}\check{c}$ verbs, one would expect the initial radical to be geminated as the mark of the imperfective. But there is no comparative evidence for this, instead the Berber dialects with cognates of this verb simply prefix the **tt*-prefix. Likewise we would predict an *a* in the second syllable of the perfective. There is likewise no evidence for this in the known cognates. So other than the purely formal correspondence of this verb to the class that we predict, there is little reason to believe the verb belonged to this class.

{27} *əwɖu~uɖu ‘to fall down’ (NZ: ɖ 15)

	Aorist	Perfective	Imperfective	
Proto-Berber	*əwɖu/*uɖu	*əwɖa/*uɖa	*wəɖtu/*əttuɖu	
Tamazight	[wɖa, uɖa]	uɖa	uɖtu, [wuɖtu]	‘to fall, tumble’
Ayt Atta	uɖu	[aɖu]	ttuɖu	‘id.’
Ghadames	uɖu	uɖa	əttuɖu	‘id.’
Tuareg (M)	uɖu, iɖu	oɖa	tuɖu, tiɖu	‘to fall down’
Figuig	[wɖa, uɖa]	wɖa, uɖa	[wəɖta]	‘id.’
Ouargla	[uɖa]	uɖa	[əttuɖta]	‘id.’
Mzab	[uɖa]	uɖa	[əttuɖta]	‘id.’

Tamazight and Figuig seem to point to an initial **w*. This is surprising as typically it is thought that initial **w* geminate the following consonants in verbs of this type. Thus, Prasse assumes $\check{v}\check{c}\check{v}\check{c}$ roots originally come from \sqrt{wcc} roots (Prasse 1973, 92f.). Occasionally in morphological patterns we

see *u* or *w* resurface. Thus {28} **əddu* ‘to go’ has a verbal noun *tawada* and a causative *ssudu* in Tamazight. For this reason it may be the case that the form *uḍu* is actually original. If this is correct, it is a rare example of a *ṽcṽ* verb in this conjugational class.

{28} **əddu* ‘to go’

	Aorist	Perfective	Imperfective	
Proto-Berber	* <i>əddu</i>	* <i>ədda</i>	* <i>əttəddu</i>	‘to go’
Kabyle	<i>ddu</i>	<i>dda</i>	<i>təddu</i>	‘to go, walk’
Tashlhiyt	<i>ddu</i>	<i>dda</i>	<i>ttəddu</i>	‘to go’
Tamazight	<i>ddu</i>	<i>dda</i>	<i>ttəddu</i>	‘id.’
Ayt Atta	<i>ddu</i>	<i>dda</i>	<i>ttəddu</i>	‘id.’
Zenaga	[<i>äddīh</i>]	<i>əddāh</i>	[<i>əttəddāh</i>]	‘to get lost’

{29} **əqqu* ‘to finish, have sex’

	Aorist	Perfective	Imperfective	
Proto-Berber	* <i>əqqu</i>	* <i>əqqa</i>	<i>əttəqqu</i>	
Kabyle	<i>əqqu</i>	<i>əqqa</i>	<i>əttəqqu</i>	‘have sex’
Tashlhiyt	<i>qqu</i>	<i>qqa</i>	<i>ttqqu</i>	‘id.’
Tamazight	<i>qqu</i>	<i>qqa</i>	<i>təqqu</i>	‘id.’
Ayt Atta	<i>qqu</i>	<i>qq^wa</i>	<i>ttəqqu</i>	‘id.’
Siwi	[<i>qq^w</i>]	<i>qq^wa</i>	[<i>ttəqq^w</i>]	‘finish’
Ghadames	<i>əqqu</i>	<i>əqqa</i>	<i>əttəqqu</i>	‘finish’

While the meaning ‘to have sex’ is very widespread, the semantic development from ‘to be done’ to ‘to have sex’ (cf. Dutch *klaarkomen*, literally: to get done, finish → to have an orgasm) is much more obvious than the other way around. As such, Ghadames and Siwi must retain the original meaning of the verb.

{30} **əzzu* ‘to plant’

	Aorist	Perfective	Imperfective	
Proto-Berber	* <i>əzzu</i>	* <i>əzzā</i>	* <i>əttəzzu</i>	
Kabyle	<i>əzzu</i>	<i>əzzā</i>	<i>təzzu</i>	‘plant’
Tashlhiyt	<i>zzu</i>	<i>zza</i>	<i>ttzzu</i>	‘id.’
Tamazight	<i>zzu</i>	<i>zza</i>	<i>təzzu</i>	‘id.’
Ayt Atta	<i>zzu</i>	<i>zza</i>	<i>ttəzzu</i>	‘id.’
Figui	<i>zza</i>	<i>zza</i>	<i>ttəzza</i>	‘id.’
Ghadames	[<i>äzz</i>]	[<i>əzzō</i>]	[<i>əttəzz</i>]	‘id.’

Ghadames, for unclear reasons treats this verb as *ǣzzəʔ.

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Abstract: The reconstruction of the Proto-Berber light verbs (i.e. CCC, **ālməd* 'to learn', VCC, **agəm* 'to draw water', CC **āgən* 'to lie down' and ĀC: **āffəy* 'to go out'), has received considerable attention in Berber historical linguistics. But, verbs that have *u* in the second syllable such as Ghadamsi *əmdu* 'to finish' and *ətkur* 'to fill' require further study. These verbs share several formal similarities with the regular light verb of the type **ālməd* 'to learn', but they have not yet been integrated into a model of the Proto-Berber verbal system. This paper will propose a reconstruction of the Proto-Berber light verb, incorporating these verbs as a subclass of the light verb, whose difference in vocalisation is triggered by the presence of a plain vowel in the second syllable of the stem.

Keywords: Proto-Berber; verbal morphology; historical linguistics; reconstruction.