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ON THE RECONSTRUCTION OF ‘ONE’ IN BERBER

by

Maarten Kossmann

I. A SHORT OVERVIEW OF THE ATTESTED FORMS

Berber languages¹ show important variation when it comes to the numeral ‘one’ (Basset 1952: 28; Zavadovskij 1974; Blažek 1999: 58-62; Taine-Cheikh 2005; Lafkioui 2007: 65; Garaoun 2019: 19-20). In this article, this variation will be studied, and proposals for a reconstruction of the numeral into proto-Berber will be formulated and argued for.

The numeral ‘one’ is the only numeral that has a Berber origin in all Berber languages (Souag 2007). In all varieties it takes two forms: one form for the masculine and one form for the feminine.

In the following, the forms are presented largely following the block-like division of Berber varieties in Kossmann (1999: 26-32; 2020b).² In some varieties, the numeral “one” has a different form when preceding a noun than when used independently. As the pre-nominal forms seem to be reductions of the independent forms, I mostly only cite the independent form. Where relevant, the other forms are also mentioned. Moreover, it is not always clear from the sources which form is cited; in such cases I depend on the choice of the source.

1. I am deeply indebted to Evgenia Gutova and Massinissa Garaoun for providing me with their unpublished materials on Senhaja and Tasahlit, respectively. I should also like to thank a number of respondents on Twitter for extra information on Kabyle forms. I greatly profited from feedback by Marijn van Putten, Lameen Souag and Massinissa Garaoun on earlier drafts of this paper. I am very grateful to Malek Boudjellal for giving me access to his unpublished PhD Thesis. Of course all responsibility for errors and flaws in the argument lies with the author.

2. The transcriptions have been homogenized. I do not write spirantization except where it has led to a merger with another consonant. Only for Zenaga no homogenization has been undertaken and the transcription in Taine-Cheikh (2008) is used.

	masculine	feminine	Source
TUAREG			
Niger Tuareg	əyyān, iyān ³	əyyāt, iyāt	Prasse et al. 2003: 865
Mali Tuareg	iyān	iyāt	Heath 2006: 792
Ahaggar Tuareg	əyyān, iyān	əyyāt, iyāt	Prasse 2010: 185
ZENAGA/TETSERRET			
Zenaga	yuʔn	ʔuʔwād	Taine-Cheikh 2008: 571
Tetserrret	iwwan	iwwat	Lux 2013 (in texts: 558, 560)
LIBYAN ISOLATES			
Awjila	iwin	iwat	van Putten 2014: 137
Ghadames	yon	yot	Lanfry 1973: 403
Djebel Nefusa (Jado)	uḡun, uḡḡun	uḡut, uḡḡut	Beguinet ² 1942: 127; Di Tolla & Shinnib 2020, section 5.3.2
ZENATIC: EAST			
Siwa	əḡḡən	əḡḡət	Souag 2013: 109
El Foqaha	iggən	iggət	Paradisi 1964: 124
Sokna	iḡḡən	iḡḡət	Sarnelli 1924: 27
Djebel Nefusa (Yefren)	iḡḡən	iḡḡət	Souag p.c. ⁴
Tamezret	ižən	išt	Ben Mamou 2004-2005: 11, 29
Sened	iḡən	iḡnət, iḡət	Provotelle 1911: 81
ZENATIC: W. OASES			
Ouargla	iggən	iggət	Delheure 1987: 99
Mzab	iggən	iggət	Delheure 1984: 61
Figuig (kçar Zenaga)	iḡḡən	yišš (< yišt)	Kossmann 1997: 207
Figuig (kçar Elmaiz)	yiḡḡən ⁵	yišt	Kossmann 1997: 207
Iche	iḡḡən	išt	Kossmann 2010
Tiout (Sud oranais)	iḡən	yišt	Basset ms <i>in</i> Kossmann 2010

3. The **iyān/iyāt** forms in Niger nd Ahaggar Tuareg are used in unstressed position.

4. Based on online consultation with a native speaker.

5. Ben Abbas (2003: 110) gives Zenaga **idž** Upper Figuig **ydž** (no doubt for **yḡḡ**). Obviously he has interpreted the final **n** as the genitival preposition.

	masculine	feminine	Source
Asla (Sud oranais)	yižžən	yišt	Basset ms <i>in</i> Kossmann 2010 ⁶
Bousemghoun (Sud oranais)	iğğən	yišt	Basset ms <i>in</i> Kossmann 2010
Igli (Sud oranais)	iggən	iggət	Basset ms <i>in</i> Kossmann 2010
Gourara	iggən	ikkət	Bellil 2000 (III): 88 (text)
ZENATIC: CHAOUIA			
Chaouia S-C (T'kout, Oued Taga)	yiğ	išt	Boudjellal 2015: 283ff
Chaouia S-C	yiğ	tišt, hišt ⁷	Boudjellal 2015: 283ff
Chaouia Ait Frah	yəğğ, yəğğən	tišt	Basset 1952: 28
Chaouia N	yiğ ~ yiṭ/yiṭən	tišt ~ tiṭ/hiṭən	Boudjellal 2015: 283ff
Chaouia N	wit (1), wiṭ (2)	?	(1) Garaoun 2019: 19-20 (2) Chaira 2020: 86)
Chaouia (other)	išt	tišt, hišt	Boudjellal 2015: 283ff
Chaouia (Ouled Relache, prov. of Khenchela)	išt	išt ⁸	Boudjellal 2015: 283ff
ZENATIC: W. ALGERIA			
Chenoua = Beni Salah	iğğ	išt	Laoust 1912: 58
Djebel Bissa	yiğ	hyišt	Genevois & Reesink 1973: 66
Beni Messaoud	yiğğ, iğğ	yišt, išt	Destaing 1914: 357
Senfita	iğğ, yiğğ	išt, yišt	Destaing 1914: 357
Beni Snous	iğğən	tišt	Destaing 1914: 357
ZENATIC: MOROCCO (excl. OASES)			
Ayt Iznasen	iğğən	ištən	Kossmann 2000: 160
Rif (Iqerčeyen)	ižžən	išt	Mourigh & Kossmann 2020: 98
Rif Ibdarsen	iğğən	iğğət/išt	Lafkioui 2007: 66; Kossmann n.p.

6. Basset's transcription **yižən** has been corrected to **yižžən** on the basis of Facebook posts by the Asla linguist Mostapha Bouzid.

7. The **h**-initial forms in Chaouia and Djebel Bissa go back to forms with initial **t**- through regular lenition processes.

8. In some parts of Chaouia, initial **h** < **t** is lost; while this does not seem to be regular in Oulad Relache, this may still be behind the feminine form **išt** there, as all neighboring dialects have **hišt** or **tišt**.

	masculine	feminine	Source
Rif Driouch	izzən	ištənt, ištət	Kossmann n.p.
Ayt Warayn	iğğ	išt	Nakano 1976 (texts: 125, 127, 132)
Bni Bou Zert (southern Ayt Warayn)	iğ	išt	Peyron 2018 (texts: 22; 46 etc.)
Ayt Seghrushen	iğ, iğğ	išt	Pellat 1955: 151; Bentolila 1981: 61-62
<i>NON-ZENATIC EASTERN ALGERIA</i>			
Blida Atlas: Ayt Saleh	iğ, yiğ, yiwən, yižən	išt, yišt, yiwət	El Arifi 2016: 605
Blida Atlas: Ayt Mescud	iğ, yiğ	išt, yišt	El Arifi 2016: 605
Blida Atlas: Ayt Ğæd	yiwən	yiwət	El Arifi 2016: 605
Blida Atlas: Ayt Musa	yiwən, iwən	yiwət	El Arifi 2016: 605
Kabyle	yiwən	yiwət	Dallet 1982: 924 ⁹
Kabyle	yuwen	yuwət	p.n. based on online consultation
Tasahlit: Aït Mhend, Aokas	yiwən	yiwət	Garaoun 2019: 19-20, p.c.; Berkai 2013
Tasahlit: Aït Segoual	iwət ~ iğğən ~ yiwən	yiwət ~ tiwət ~ tiğt ~ tiğğət	Garaoun 2019: 19-20, p.c.
Tasahlit: Aït Mâad	iğğ ~ ijj	tižžət ~ tiğt	Garaoun 2019: 19-20, p.c.
Tasahlit: Aït Bouyousef	yiğğ ~ yiwən	yiwət ~ tišt	Garaoun 2019: 19-20, p.c.
Tasahlit: Aït Smaïl	yiğğ ~ yiwən	yiwət ~ tižt	Garaoun 2019: 19-20, p.c.
Tasahlit: Aït Laâlam	yiğğən ~ yiwən	yiwət ~ tiğğət	Garaoun 2019: 19-20, p.c.
Tasahlit: Kherrata	wiğğ ~ yiwən		Garaoun 2019: 19-20
Tasahlit: Aït Salah	wižž	tišt	Garaoun 2019: 19-20, p.c.
Tasahlit: Aït Hsayen	iš, ič (archaic)		Garaoun 2019: 19-20, p.c.

9. The form **yiwən** is the form most attested in the literature, among others At Abbas (Allain 1976); Irjen (Basset and Picard 1948: 51); At Manguellat (Dallet 1982: 924); Aït Iraten (Chaker 1983: 104); At Yanni (Genevois 1971); Aït Fraoussen (Genevois 1958); Sidi Ali Bounab (Kireche 2010: 99). The forms with **yuwən** / **yuwət** were confirmed via Twitter by a number of speakers for western Kabylia (Boumerdès/Bouira) and for Amizour (Bejaia). I wish to thank Lameen Souag for pointing me to the latter form.

	masculine	feminine	Source
<i>CENTRAL & SOUTHERN MOROCCAN BERBER</i> ¹⁰			
CMB: Zemmour	iġġ, uġġ, yuġġ	išt, ušt, tišt	Laoust 1939: 38
CMB: Zayan, Ishqirn	iġġ	išt	Loubignac 1924: 251, Laoust 1939: 38
CMB: Ayt Nahir; Ayt Ayache; Ayt Sadden; Ayt Youssi	yun	yut	Laoust 1939: 38; Bisson 1940: 166; Ait Lemkadem 1986: 111; Bououd 2014: 64; Penchoen 1973: 24
CMB: Ayt Mguild	yun, yuk, yukk	yun, yukt	Laoust 1939: 38; Taïfi 1981: 783
CMB: Ayt Hdiddu	yuwn	yuwt	Azdoud 2011: 537 ¹¹
CMB: Ayt Merghad	yiwn, yan	yiwt ¹²	Peyron 2018 (texts: 158; 164; 160)
CMB: Ayt Wirra	yan, yiwn, yukk^w	yat, yiwt, yukk^wt	Oussikoum 2011: 909-910
CMB: Ayt Atta	yan	yat	Mauri 2015: 119
Tashelhiyt	yan	yat	Destaing 1938: 287
<i>NW MOROCCO</i>			
Ghomara	yan	yat	Mourigh 2016: 210
Ketama; Taghzout	yan	yat	Gutova 2021 ¹³
Ayt Seddat; Ayt Bunsar	ig^wən	ig^wət	Gutova 2021
Ayt Hmed; Zerqet and others	iwwən	iwwət	Gutova 2021

II. MASCULINE VERSUS FEMININE FORMS

In most Berber varieties, the difference between masculine and feminine is marked by final **-n** as opposed to final **-t**. This is found all over the Berber-speaking territory, as shown by the following excerpts from the table above:

10. CMB stands for Central Moroccan Berber. I use this term instead of the ambiguous “Tamazight” used in older literature and the partly incorrect Middle Atlas Berber. Some of the varieties traditionally subsumed under this label are spoken in the High Atlas and in the Jebel Saghro.

11. For a more detailed overview of the dialectal distribution of **yuwn** and **yan** in southwestern Morocco, see Willms (1972: 173).

12. The form **yat** does not appear in the Ayt Merghad texts edited by Peyron (2018), which may be because of corpus restrictions.

13. For similar data concerning the masculine form, see Lafkioui (2007: 66). This source also notes **iwən**, **yiwən** and **iġ^wən** as variants in Senhaja.

	Masculine	Feminine
Tuareg:	əyy-ǎn	əyy-ǎt
Tetserret	iwwa-n	iwwa-t
Ghadames	yo-n	yo-t
Jado (Nefusa)	uǧu-n	uǧu-t
Siwa	əǧǧ-ən	əǧǧ-ət
Ouargla	igg-ən	igg-ət
Kabyle	yiw-ən	yiw-ət
CMB (partly)	yu-n	yu-t
Tashelhiyt	ya-n	ya-t

In Berber, gender marking by adding **-n/-t** is only found in a small number of constructions, most notably in the subject-relative form (“Participle”) in those languages that have maintained a gender opposition in these forms (see also Kossmann 2003, with reff.), e.g. Ghadames:

M:SG	i-fal-ǎn	‘(the M entity) that has left’	
F:SG	t-əfal-ǎt	‘(the F entity) that has left’	(Lanfry 1968: 332)

Thus, in spite of its restricted distribution, the **-n/-t** paradigm seems to be old in Berber; its preservation in this numeral is therefore no doubt an archaic feature. This has led some researchers to consider the numeral an ancient participle of a verb ‘to be unique’ (Prasse 1972-1974: V, 403-404, cf. Basset 1952: 29). While this is certainly a serious possibility, one could also imagine an early system of gender marking present in several different types of determiners. At least since Greenberg (1960), the paradigm has been identified with similar forms in Chadic, which would make it a plausible candidate for a Proto-Afroasiatic heritage. Therefore, a reconstruction of the numeral ‘one’ as consisting of a stem followed by a gender suffix seems to be assured.

In a number of languages, the relationship between the masculine and the feminine form is different from the general **-n / -t** pattern. This seems to be the effect of various analogical processes. For stem-alternations between the masculine and the feminine, see section (6) below.

1. There are a number of languages where the feminine form has a prefix **t-** in addition to the suffix, among others:

	Masculine	Feminine
Zenaga	yuʔn	tʔuʔwäd
Chaouia Aït Frah	yəǧǧ	tīšt

Djebel Bissa	yǐǧ	hyiǧt
Beni Snous	iǧǧən	tišt
Zemmour	iǧǧ	tišt ¹⁴

Feminine forms with a similar structure are common in Tasahlit (Garaoun 2019: 19): **tišt**, **tiǧt**, **tiǧǧət**, **tiǧt**, **tiwət**, **tiǧǧət**.

This formation can be understood as an adaptation of the Feminine form into nominal gender patterns, which have a prefix starting in **t-** and a suffix ending in **-t**. In the case of Zenaga **tʰuʔwäd**, the palatalization in **tʰ** probably reflects a derivation **t-yuʔw-äd**. It is noticeable that the same varieties that show complications in the **-n / -t** paradigm also (synchronically) alternate between different stem forms for ‘one’ in the masculine and in the feminine. It is very well conceivable that these stem alternations made the interpretation of **-n / -t** as a gender paradigm less obvious, leading to reformations that strengthen the feminine interpretation.

2. In the second place, in most of Tarifiyt and in the adjacent Ayt Iznasen variety, the Feminine ends in **-ən** in the Feminine, following the gender marker **-t**, e.g.:

Iznasen	iǧǧ-ən	iš-t-ən	(Kossmann 2000: 160)
Iqereiye	iǧǧ-ən	iš-t-ən	(Mourigh & Kossmann 2020: 98)

This form is best understood as the effect of a specific constructional ambiguity in the numeral ‘one’ when used as a determiner. In these varieties, other numerals used as determiners are constructed using the genitival preposition **n** ‘of’, e.g.

Iqereiye	aṛbʕa n tfunasin	‘four [of] cows’	(Mourigh & Kossmann 2020: 99)
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The numeral ‘one’ is therefore ambiguous: **iǧǧən waryaz** ‘one man’ could be analyzed as **iǧǧən waryaz**, that is, as a numeral construction without **n** (a well-attested construction elsewhere in Berber, Galand 2002 [1967]). It could also be analyzed as **iǧǧ n waryaz**, that is, a truncated form of the numeral followed by the preposition **n** as expected from other numerals.

The numeral remains **iǧǧən** when used independently, so, in the second analysis there would be a variation between **iǧǧ** and **iǧǧən**, e.g.

Iqereiye	iǧǧən aməšnaw šəkk	‘(some)one like you’	(Mourigh & Kossmann 2020: 94)
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14. A rare form according to Laoust (1939: 38).

With feminine nouns starting in **t-**, the determiner construction lacks the **n**:¹⁵
 Iqereiyen **išt təmyart** ‘one woman’ (Mourigh & Kossmann 2020: 98)

Formally this **išt** does not look that different from the masculine truncated form **ižž**. As a result, the independent form **ištən** added the extra **-ən** by analogy.

In some Tarifiyt dialects around Driouch, still other forms emerged. In the first place, one finds **ištət** as the independent form – that is, the old **-n / -t** paradigm was repeated in the elongated form. In the second place, a form **ištənt** is attested which is based on the elongated form **ištən**, but features the adjunction of an extra **-t** to mark the feminine (forms from the text collection in Kossmann 2003). Something similar is behind the form **iğğənət** (~ **iğğət**) in Sened (Tunisia).

The ambiguity of the final segment in **iğğən** (etc.) in pre-nominal position is no doubt the reason for the existence of shortened forms in a number of varieties. That is, in these varieties **-ən** was interpreted as the genitival preposition and the reanalyzed truncated form was generalized to independent position, e.g.

	M	F
Chaouia S-C	yığ	tišt
Djebel Bissa	yığ	hyižt ¹⁶
Zayane (CMB)	iğğ	išt

Similar forms are attested in varieties spoken in the periphery of Kabyle, Blida Atlas (El Arifi 2016) and Tasahlit (Garaoun 2019).

As is clear from the examples provided above, there are also cases where the stem of the numeral is different in the masculine and in the feminine. This will be commented upon in section (6).

3. In a large number of Chaouia varieties, feminine forms have spread to the masculine (analysis based on the data in Bendjelloul 2015). All stages in this development are attested:

	M	F	
T'kout	yığ	išt	(original situation)
Theniet el Abed	yığ	tišt	(adjunction of an extra t- in the F form)
Ngaous Ain Yagout	išt išt	tišt hišt	(reinterpretation of išt as the basis and extension to the masculine form)

15. Note that with **t-** initial nouns **ižžən** is also possible, while with feminine nouns that do not start in **t-** only **ižžən** can be used, and not **išt** (Mourigh & Kossmann 2020: 97-98).

16. This form shows the regular lenition of initial **t** to **h** in the variety.

Something similar happened in Aït Segoual Tasahlit, where **iwət** also appears as a masculine numeral. Possibly the northern Chaouia form **wit** recorded by Garaoun (2019) is a metathesis of the same form; alternatively, it could be a depharyngealized form of Chaouia **wiṭ**, described below.

4. In a number of Chaouia varieties, forms including the element **-iṭ** ‘other’ can be used alternatively as the numeral, for example Gosbat M: **yiḡ ~ yiṭ** and F **tišt ~ hiṭən** (Boudjellal 2015). In addition to this there is a form **wiṭ**, provided by Chaira (2020: 86), which shows the same **-iṭ**-derived use. The exact syntactic distribution of these forms has not been described in the literature as far as I know.

5. In a number of CMB dialects from the Middle Atlas a form **yukk^w** (F: **yukk^wt**) has been attested. This is probably a composite form. From a formal point, the most logical derivation would be one of **yu(n) + akk^w** ‘all’, even though the way this acquired the meaning ‘one’ is not entirely clear.¹⁷

III. STATE

While State is relevant with nouns in most Berber languages, only very few varieties have a State distinction in numerals. The only cases that I am aware of are in eastern Morocco.¹⁸

	Free State	Annexed State
Figuig (kçar Zenaga)	iḡḡən	yiḡḡən
Iznasen	iḡḡ(ən)	yiḡḡ(ən)
Iqereiyeen	iẓẓ(ən)	yiẓẓ(ən)

In Iqereiyeen, the Annexed State is used with ‘one’ after prepositions both when used as a determiner and when used independently. In the other main context where the Annexed State is found with nouns, post-verbal subjects, the Annexed State is found in the independent use, but not when it functions as a determiner (Mourigh & Kossmann 2020: 98). Similar restrictions seem to be in place in the nearby varieties that have a State opposition with ‘one’.¹⁹ The presence of a State opposition in the numeral seems to be a regional innovation, and there is no reason to assume it is very old in Berber.

17. One may think of English **alone** (< all one, Philippa et al. 2003-2009 sub *alleen*) as a parallel, but a semantic path from ‘alone’ to ‘one’ is not entirely unproblematic. I wish to thank Marijn van Putten for pointing out this parallel.

18. In view of Nakano’s **išt lmərṛt** ‘one time’ (1976: 125) vs. **ša y yišt** (1976: 127), this situation may also obtain in Ayt Warayn (northeastern Middle Atlas).

19. This has not been described in Kossmann (1997) and Kossmann (2000), but was concluded from further study of the texts I have at my disposal in these varieties.

IV. THE RECONSTRUCTION OF THE STEM

The numeral ‘one’ shows a large degree of variation in its stem forms. In the following, I will try to reduce these forms based on sound laws that were established on the basis of other forms, esp. from verbal morphology. I assume that these sound laws are correct. Of course, the argumentation that follows can only be accepted if one also accepts the earlier proposed sound laws. Any skepticism to these laws automatically implies skepticism towards the proposal here.

I cannot think of any basis for assuming large-scale analogical formations with the numeral ‘one’, except for M-F pairs. Therefore analogy – of immense importance in understanding, for instance, verb morphology (Kossmann 1994) – will only play a minor role in the present analysis.

While generalizing approximations have been made on multiple occasions (e.g. Zavadovskiy 1974) the only methodic reconstruction of the numeral that I am aware of was proposed by Karl-G. Prasse. Even though I will provide my own argumentation in the following, it is worthwhile to give the citation, were it only because my conclusion will be very similar to Prasse’s:

Pour “un” le B[erbère du]N[ord] semble conserver une forme plus ancienne: yiwən, yiwət [...]. Elle confirme l’impression que la finale -ān, -āt est une désinence participiale. [...]. Nous pouvons reconstruire: *yīwan, yīwāt. Le sens primitif de ce prétendu participe peut être: „étant seul, unique” [...]. *yīwan est aussi à la base de la forme zénaga [...] et, avec assim[ilation] w > y, tam [azight]: iğğən (< iyvən [...] < yivən < yiwən).

À côté de *yīwan il faut poser une 2^e forme protoberbère *yīwān, f. yīwāt, qui est à la base de Awǧila: iwīn [...] et, avec assim[ilation] tash[elhiyt] yan (< yīyan < yīwan); avec a > u(o), nefousi: uğun [...] (< əyūn < əyyan < (y)īyan [...]. ghad[amès]: yōn (< yan). (Prasse 1972-1974: V, 403-404).

In a later summary of this analysis, Prasse gives his second reconstructed form *yīwān as *yīwāhān:

kab[yle] yiwən, yiwət, tash[əlḥəyt] yan, yāt, ghad[amsi] yon, yot < *yīyān, *yīyān < protob[errière] *yīwān, *yīwāhān | semble d’origine verbale, car il a les désinences participiales; étant donné qu’il n’existe pas de désinence verbale *-ān, le -ā- long doit cacher une radicale perdue: *yīwāhān [...]; le y- initial est probablement une radicale et non pas le préfixe du participe [...] (Prasse *et al.* 2003 : 865)

The final part of the stem

On the basis of the Zenaga form, there is good reason to consider the possibility that the ancient numeral stem ended in a glottal stop. Assuming that this glottal stop was preceded by the short vowel *ă, this provides us with a

phonetic environment well attested in Berber, as it is also present in 3M:PL forms of the Perfective of final *ʔ verbs. Based on these verbs, Kossmann (2001a) concluded that the following sound changes have applied in the different varieties. As an illustration, I provide the 3PL:M form of the Perfective *ənyǎʔǎn of the verb *Nyʔ ‘to kill’, except for Zenaga, where the example verb is from the verb ‘to give’. The rules only cover situations where the first *ǎ carries the accent.

Zenaga:	*ǎʔǎ > aʔ	ukfaʔn
Ghadames:	*ǎʔǎ > o	ənyon
Jado (Nefusa):	*ǎʔǎ > u	ənyun
Tuareg:	*ǎʔǎ > ǎ	ənyǎn
Zenatic:	*ǎʔǎ > ə	nyən (Figuig) ²⁰

The situation is less clear in the other varieties, like Tashelhiyt and Kabyle, which have **nyan**. In these varieties, the /a/ could be analogical to forms in another verbal class (the **bɖu/bɖa** verbs).

others:	*ǎʔǎ > a	nyan (Tashelhiyt) (?)
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In most Berber languages, the final part of the stem of ‘one’ has the same reflexes as those found with the *ǎʔǎ sequences. Therefore, one can safely reconstruct this sequence to earlier forms of the numeral. This allows us to make a partial reconstruction along the following lines:²¹

Ghadames:	*ǎʔǎ > o	yon	y ǎʔ-ǎn
Jado (Nefusa):	*ǎʔǎ > u	uɣun	uɣ ǎʔ-ǎn
Tuareg:	*ǎʔǎ > ǎ	iyǎn	iy ǎʔ-ǎn
Zenatic:	*ǎʔǎ > ə	iɣgən	iɣg ǎʔ-ǎn
others:	*ǎʔǎ > a	yan (Tashelhiyt)	y ǎʔ-ǎn

Awjila **iwin** probably goes back to earlier **iwan**, according to the slightly irregular development **a** > **i** in this variety (van Putten 2013).

Kabyle and Middle Atlas (Ayt Wirra) **yiwən** have a different vocalization from the verbal forms on basis of which the sound law was formulated; if *ǎʔǎ > **a**, one would rather expect **yiwan** or something similar. As already

20. In most Zenatic varieties, the verb form is **nyin**. The vowel **i** is probably due to analogical extension of the vowel **i** found in the 1SG and 2SG forms of the verb. By this extension, a more regular paradigm was created where suffixed forms have **i** and non-suffixed forms have **a** or **u** depending on the dialect (Kossmann 1994).

21. The | in the forms marks the border between reconstructed and non-reconstructed parts of the form.

mentioned, in these varieties the rule $*\check{a}\check{?}\check{a} > \mathbf{a}$ is less secure for the relevant verb forms, and one could reasonably assume that the regular outcome of $*\check{a}\check{?}\check{a}$ was ə rather than \mathbf{a} , and that the vowel \mathbf{a} in the verb forms is due to analogy.

These unexplained forms all have a basis including \mathbf{w} , and thus other solutions would be possible. One might, for example, posit a metathesis $\mathbf{w}\check{a}\check{?} > \check{?}\mathbf{w}$ as attested in the Zenaga Feminine form $\text{t}\check{y}\mathbf{w}\check{a}\check{d}$. Other solutions are conceivable, but as they would all involve totally *ad hoc* changes, I rather refrain from them. It should be noted that the alternation between forms with full final vowels like \mathbf{yan} and those without like $\mathbf{yiw}\check{a}\mathbf{n}$ led Prasse to reconstruct a variation between proto-forms with and without $*\mathbf{h}$ (corresponding to our $*\check{?}$ in this case). As long as this variation has not been explained, this constitutes just one more possible *ad hoc* solution.

Forms with $\check{g}\check{g}$

In a large number of Berber varieties, the numeral ‘one’ has the long affricate $\check{g}\check{g}$ or its regular reflex $\check{z}\check{z}$ in varieties that have undergone deaffrication (for the distribution of deaffrication in Tarifiyt, see Lafkioui 2007: 66, 68). There are two possible historical backgrounds to $\check{g}\check{g}$ in Berber.

1. In most varieties $\check{g}\check{g}$ seems to be an ancient (and no longer productive) reflex of long \mathbf{yy} . This can be shown from alternations in roots that involve a second radical \mathbf{y} (Kossmann 1999: 232; 2020a: 30-32, cf. also Prasse 1972-1974: I, 65). One of these is the verb $*\mathbf{ZYD}$ ‘to have scabies’. In most varieties this verb has $\check{z}\check{z}$ (e.g. Iznasen $\check{z}\check{z}\check{a}\check{d}$), but the Ahaggar Tuareg form $\text{ə}\mathbf{hy}\check{a}\check{d}$ (with $\mathbf{z} > \mathbf{h}$) shows that the verbal form originally contained \mathbf{y} , and that $\check{z}\check{z}$ elsewhere is the result of an assimilation $*\mathbf{zy} > \check{z}\check{z}$. Nominal forms of this root sometimes have $\check{g}\check{g}$ rather than expected \mathbf{yy} : Kabyle $\text{a}\check{z}\check{a}\check{g}\check{g}\check{a}\check{d}$, Iznasen $\text{a}\check{z}\check{a}\check{g}\check{g}\check{a}\check{d}$ ‘scabies’.²² This strongly suggests that $*\mathbf{yy}$ has become $\check{g}\check{g}$ in these varieties.

This consonant $*\check{g}\check{g}$ ($< *yy$) is not found in many words, but it is well-attested in the verb $*\mathbf{YY}\check{?}$ ‘to leave, to let’. Almost all Berber varieties have $\check{g}\check{g}$ ($> \check{z}\check{z}$) in this verb; only Tuareg preserves the original \mathbf{yy} , as in $\check{a}\mathbf{yy}$ ‘to leave’ (Mali).

2. The other possible background is only relevant for Zenatic. In comparison with other varieties, Zenatic has two sets of correspondences of \mathbf{gg} : either \mathbf{gg} or $\check{g}\check{g}$ ($> \check{z}\check{z}$) (Kossmann 1999). According to Kossmann (1999), this would point to a proto-Berber opposition between two velar series, one velar ($*\mathbf{gg}$) and one palatalized velar ($*\check{g}\check{g}$). While this interpretation is open to discussion (e.g.

22. Other varieties have $\check{z}\check{z}$ in the noun too, e.g. Tashelhiyt $\text{a}\check{z}\check{z}\check{a}\check{d}$. This can be understood in two ways. It could be analogy with the verb $\check{z}\check{z}\check{a}\check{d}$. Alternatively, as in many varieties $\check{g}\check{g} > \check{z}\check{z}$, it could represent an assimilation $*\text{a}\check{z}\check{a}\check{z}\check{a}\check{d} > \text{a}\check{z}\check{z}\check{a}\check{d}$. Of course, only the forms of the type $\text{a}\check{z}\check{a}\check{g}\check{g}\check{a}\check{d}$ provide evidence for the proposed sound law.

Kossmann 2020a), the existence of the correspondence in a specific set of cognates is undeniable.

Thus, **ǧǧ** in ‘one’ could in principle go back to ***yy** or ***ǧǧ**, and just on the basis of the forms it is difficult to choose one or the other solution. It seems that ***ǧǧ** is slightly more problematic from the point of view of the dialectal distribution of the **igǧ-** forms. **ǧǧ** (> **ǰǰ**) correspondences of ***ǧǧ** are strictly Zenatic, while forms of the numeral with **igǧ-** are also found in the non-Zenatic varieties of Blida Atlas (west of Kabyle proper), Tasahlit (east of Kabylia proper) and the western Djebel Nefusa (Jado). In all these cases, one cannot rule out influence from adjacent Zenatic varieties (cf. Souag 2017 for Blida and Djebel Nefusa, and Garaoun 2019 for Tasahlit), even though their normal reflex of ***ǧǧ** is **gg**.

A reconstruction as ***yy** would fit the Tuareg form **əyyǎn** well. A proto-form ***iyyǎʔǎn** would regularly lead to **igǧǎn** in Zenatic and to **əyyǎn** in Tuareg (cf. Prasse 1972-1974 I: 98).

Moreover, when looking at other varieties, there is strong evidence for the presence of a palatal semivowel, while there is little evidence for a velar stop. Therefore, I propose to consider the **igǧǎn** type of forms to represent ***yy**.

An unsolved problem: varieties with **gg**

In a number of Algerian sedentary oasis dialects belonging to the Zenatic group, one finds forms with a non-affricate **gg**:

	M	F
Ouargla	iggǎn	iggət
Mzab	iggǎn	iggət
Igli (Sud oranais)	iggǎn	iggət
Gourara	iggǎn	ikkət

The **kk** in Gourara **ikkət** may be interpreted as a voice assimilation to the following **-t**.

These forms are problematic for a number of reasons. Except for Igli, in the varieties involved the normal reflex of both ***yy** and ***ǧǧ** is **ǰǰ**. So, whatever reconstruction one proposes for forms like Figuig **igǧǎn**, the **gg** forms are unexpected. In Igli, ***ǧǧ** seems to be reflected regularly as **gg** (Kossmann 2010); the reflex of ***yy** is unknown in this dialect, and it is conceivable that the dialect underwent a general rule ***ǧǧ** > **gg**. If so, the **iggǎn** form in Igli would be unproblematic.

The Mzab form **iggǎn** is unexpected for other reasons. In a sound change that post-dates ***ǧǧ** > **ǰǰ** in Mzab most velars have become affricated, e.g. **aggay** > **aǧǧay** ‘cheek’. Most cases with **g** or **gg** are either loans from dialectal

Arabic (with **g** < ***q**, e.g. **gaŋ** ‘all’), expressive formations (e.g. **gugu** ‘to coo’), or cases where ***g** is followed by **z** (e.g. **əgzəl** ‘to be short’). Thus, even if the earlier form was **iggən** like in Ouargla, the expected Mzab form would be **iğğən** rather than **iggən**.

In all varieties (except Igli) **gg** would be an irregular correspondence both if it represents ***yy** and if it represents ***ğğ**. Moreover, as labialization in **gg^w** is maintained in these varieties, there is no reason to assume ***gg^w** (< ***ww**) in this case either.

Therefore, I have no explanation for the forms with **iggən**.

Zenaga *yuʔn*

The Zenaga form **yuʔn** demands for some explanation. In Zenaga, glottal stops can only occur in pre-consonantal position (Taine-Cheikh 1999). The Zenaga glottal stop goes back to two different consonants, ***ʔ** and ***ʔ̣**. It can be shown that ***ǎʔ̣C** becomes **aʔC**,²³ and it makes sense to assume that similar developments took place with ***ǎʔ̣C**.

In the numeral ‘one’, however, we find **uʔ**. In most cases, **u** is an allophone of the non-low vowel of Zenaga in the vicinity of labial or velar consonants (cf. Cohen & Taine-Cheikh 2000; Taine-Cheikh 2008: lxxiv). It is not a regular allophone in the vicinity of **ʔ** or **n**. In this context, **u** mostly appears where **ʔ** represents ***ʔ̣** (Kossmann 2020a: 35-36). As there is no other variant of Berber that has **ʔ̣** in the numeral ‘one’, a reconstruction involving ***ʔ̣** would create more complications than it would solve.

A less well-assured but still plausible derivation is from a more ancient form ***yūʔn**. It seems that sequences of long vowels followed by a glottal stop are exceedingly rare or absent in Zenaga. Thus, one may posit that earlier long vowels were simplified when followed by a glottal stop. The long vowels have several etymological backgrounds (Kossmann 2001b), one of which is ***əw**. Thus, one finds variations like:

Aorist	yäwdəð	‘stand’ (Taine-Cheikh 2008: 530)
Perfective	yūdäd	< * yəwdäd

Therefore, Zenaga **yuʔn** < ***yūʔn** might very well go back to ***yəwʔn** or maybe ***yəwaʔn** (< ***yəwaʔan**). I would neither know of a parallel nor of a counter-example to a rule ***əwaʔ** > **ūʔ**, and forms like **aʔšūn** ‘tongues’ (< **alsiwǎn**; Taine-Cheikh 2008: 522) show that **ū** may go back to intervocalic **w**. Therefore, a reconstruction as ***yəwaʔan** seems to be feasible. In Zenaga **a** is the reflex of Proto-Berber ***a** and ***ǎ**, while **ə** is the regular reflex of all other vowels. Thus, **yəwaʔan** could very well go back to ***yiwǎʔǎn**.

23. Cf. **əllaʔn** < ***əllǎʔǎn** ‘they were licked’ (Taine-Cheikh 2008: 331).

The story is complicated by the feminine form **tʷwäd**. This form seems to attest to a metathesis of **w** and glottal stop at an early moment in the derivation: ***yiwǎʔāt** or ***yiwǎʔt** > > ***yǎʔwat**. I have no idea what triggered this metathesis, as Zenaga has many words ending in ***ʔt** (> **ʔd**). Apart from this, the developments are unproblematic, with **u**-coloring of the initial vowel probably under influence of the following **w** and the adjunction of initial **t**- by analogy with feminine noun patterns.

Conclusions on the basis of the sound laws

On the basis of this we can proceed with our partial reconstruction:

Tuareg	əyyǎn	< əyyǎʔ-ǎn
Awjila	iwin	< iwǎʔ-ǎn
Ghadames	yon	< yǎʔ-ǎn
Siwa	əǧǧən	< iyǎʔ-ǎn ²⁴
Figuig	iǧǧən	< iyǎʔ-ǎn
Kabyle, CMB	yiwən	< yiwǎʔ-ǎn (?)
Zenaga	yuʔn	< yiwǎʔǎn (?)
Tashelhiyt	yan	< yǎʔ-ǎn

I assume that the Jado Nefusa form **uǧun** ~ **uǧǧun** represents a kind of vowel harmony by which the initial **i** was changed to **u** under influence of the following **u**:

Jado (Nefusa) **uǧun** ~ **uǧǧun** < **iyǎʔ-ǎn**

Central Moroccan Berber forms like **yun**, **yuwn** can be interpreted as cases of vowel assimilation from ***yiwn**.

V. RECONSTRUCTING ‘ONE’

From the preceding paragraphs we have reduced the variation within Berber to the following basic stems:

24. Following Souag (2013: 23) I assume that initial ***iǧǧ** became **əǧǧ** in Siwa. I have found no exact parallels or counterexamples to this development. There are some cases where initial ***ičč** has become ***(ə)čč**, however, such as SG **aččaw** PL **ččawən** (no doubt from **iččawən**) ‘horn’ and SG **aččer** PL **ččerən** (from **iččerən**) ‘nails’ (Naumann 2013 (ms.): 1). This may be part of a more general pattern of reduction of the vowel **i** in closed syllables (Souag, p.c.).

- *iyyǎʔ-ǎn** (Tuareg, Zenatic, Tasahlit, Jado)
- *yǎʔ-ǎn** (Ghadames, Tashelhiyt, southern CMB, parts of Senhaja, Ghomara)
- *yiwǎʔ-ǎn** (Kabyle, parts of Central Moroccan Berber, parts of Senhaja, Zenaga)
- *iwǎʔ-ǎn** (Awjila)
- *iggǎʔ-ǎn** (Mzab, Ouargla, Gourara)

I will leave the forms with **gg** aside, for which I have no explanation.

This reconstruction thus leaves us with forms with an original geminate ***yy** and forms that have a simple ***y** or just a palatal vowel. Some forms have **w**, while others do not.

This is the point where our back-reconstruction using more or less regular sound laws stops. It is, however, possible to understand the variation in a more unified account using some non-systematic – but well-attested – changes, viz. aphaeresis (vowel loss) and metathesis.

In order to show this, we will posit that the original form was ***wiyǎʔ-ǎn** or ***yiwǎʔ-ǎn**. Presumably, one was original to the other, and either ***wiyǎʔ-ǎn** metathesized at a very early moment to ***yiwǎʔ-ǎn**, or the other way around.

a) The fate of the **yiwǎʔ-* forms

1. ***yiwǎʔ-ǎn** forms evolved into Kabyle and CMB **yiwən**
2. Through (irregular?) loss of the initial semivowel, and more or less regular palatalization of ***a**, we get Awjila **iwin** < ***(y)iwān** < ***yiwǎʔǎn**
3. A vowel assimilation ***yiw** > **yuw** changed an earlier Kabyle-like form to dialectal Kabyle and CMB forms like **yuwñ**, which were further simplified into **yun**.
4. As argued above, Zenaga **yuʔn** can also go back to ***yiwǎʔ-ǎn**, positing semi-regular sound shifts

b) The fate of the **wiyǎʔ-* forms

The ***wiyǎʔ-** forms are a bit more speculative. The reconstruction depends on a further phonetic development, which is less well secured, but still quite plausible: the assimilation of ***w** to a following ***i**. This is well-known from Annexed State forms of **i**-initial noun stems. Thus, while in most Berber languages that have the State opposition the regular masculine singular form has **w-**, it takes the form **y-** with nouns whose stem starts in **i**, e.g. Figuig:

	Free State	Annexed State
‘well’	anu	w-anu
‘skin’	iləm	y-iləm

It is commonly assumed (e.g. Galand 2010: 136) that **yi-** in the Annexed State form goes back to earlier ***wi-**. If we assume that the same happened in the numeral, one could assume that forms starting in ***yi** go back to earlier forms starting in ***wi**. Thus, we would get through a regular development:

***wiyǎʔ-ǎn > *yiyǎʔ-ǎn**

The sequence **yiy** is not very easy to maintain, and we may assume two irregular, but plausible developments:

1. In a large number of varieties, ***yiy-** was simplified to ***iy-** and after this simplification, the initial **i-** was lost in most varieties, leading to forms such as Ghadames **yon** and Tashelhiyt/Ghomara **yan**.

2. In other varieties, a strengthening process occurred in order to fortify the ***yiy** sequence. Thus, ***yiy** was changed to ***yiyy**. Through a further, but now regular, strengthening process, ***yiyy** became **yiġġ**, as attested in many Zenatic varieties and in Tasahlit.

In a similar development as under (1), later on initial **yi-** was simplified to **i-**, resulting in forms like Figuig **iġġən**, and with loss of the final **n**, Zayan/Zemmour **iġġ**. At least for Figuig, Iznasen and Tarifiyt, this may have been (partly) due to an analogical process. As shown above, these varieties have a State opposition in the numeral. It seems that this developed through a reinterpretation of ancient **yiġġən** as an Annexed State, and that **iġġən** was formed analogically as a corresponding Free State form.

In Tuareg ***yy** remained **yy**, and ***yiyy-** was simplified to **əyy-** (cf. Prasse 1972-1974 I: 98).

All forms belonging to the ***wiyǎʔ-ǎn** reconstruction are supposed to have gone through a stage ***yiyǎʔ-ǎn**. Therefore, other explanations of this forms are also possible. Thus, one could consider an irregular assimilatory change of ***yiw** into ***yiy** leading to ***yiwǎʔǎn > yiyǎʔǎn** without invoking metathesis, as proposed by Prasse (Prasse 1974/V: 403).

There are a number of forms that cannot readily be understood using the two major reconstructions above. In the first place the forms with **u** (**uġġ**, **yuġġ**, **ušt**) given by Laoust as variants within Zemmour (CMB) cannot be explained this way. In this case, influence from neighboring dialects which have **yun** should probably be invoked.

Another issue occurs with the forms **wiġġ** and **wiżż** in the Tasahlit dialects of Kherrata and Aït Salah. These could also be understood as blends from

neighboring dialects, but maybe another type of reformation is behind these. In these varieties, feminine forms have been extended by the prefix **t-** coined on nominal feminine formations, leading to forms like **tiġt** and **tižžət**. However, there is a common pronominal form **ti-** which is always followed by a determination, and it is very well conceivable that forms like **t-iġ-t** were later reinterpreted as **ti-ġ-t**. As the masculine correspondent of **ti-** is **wi-**, the **wi-** of the pronominal form was extended to the numeral, leading to **wi-ġ** and **wi-žž**.

Finally, Senhaja de Sraïr forms such as **ig^wən** and **iġ^wən** are remarkable. In view of nearby varieties which have **yiwən**, this seem to be strengthened variants of **w**. The exact process behind this is far from clear however (Lafkioui 2007: 65).

VI. BACK TO FEMININE FORMS

As shown above, in most varieties the feminine forms are identical to the masculine forms, except that they end in **-(ǎ)t** rather than **-(ǎ)n**. The problems related to the irregular form **t^uwäd** in Zenaga were treated above.

There are, however, quite a number of varieties that have an irregular feminine form based on **yižt** or **yišt**. While **yišt** is far more common than **yižt**, the latter is attested in Djebel Bissa in western Algeria and in Tasahlit (Aït Smaïl) in eastern Algeria. Except for some Chaouia dialects which generalized the feminine form, all varieties with **yišt** or **yižt** have a masculine form with **ġġ** (or its regular development **žž**). It is therefore logical to assume that **š** and **ž** in these forms go back to **ġġ** which would have undergone shortening and in most cases devoicing before the feminine marker **t** (cf., among others, Pellat 1955: 151).

On a closer look this is far from obvious if the suffix was **-āt**, as one would expect forms like **iġġət** rather than forms with assimilation and shortening. Phonetically a more likely scenario would be one with a suffix **-t** rather than **-āt**: ***yiġġt** > **yižt** > **yišt**. It does not seem likely that this is a very old form of the suffix: even if one would reconstruct the proto-form of the feminine as ***wiyǎ?-t** rather than ***wiyǎ?-āt**, it is unclear why ***ǎ?t** would have resulted in **-t**. It is therefore preferable to consider the vowelless form **-t** as an innovation, probably by analogy to the vowelless feminine singular suffix of the noun. It may not be coincidental that it is the group of **ġġ**-dialects where the **n/t** opposition often gets blurred, either by losing the final **-n** of the masculine form or by generalizing the **-n** to the feminine form.

VII. CONCLUSION

Using a number of known sound changes and a number of less well attested but plausible processes of vowel reduction and semivowel metathesis, the forms of the numeral ‘one’ in Berber can be reconstructed in one of the following two ways:

	M	F
1.	* wiyăʔ-ăn	* wiyăʔ-ăt
2.	* yiwăʔ-ăn	* yiwăʔ-ăt

There is little evidence that would show which one of the two forms was original. One should however keep in mind that in the Annexed State the sound change ***wi** > **yi** applies in all relevant varieties. It could very well have preceded the proto-Berber stage, and therefore should have affected a putative ***wiyăʔ-** form before the presumably homogenous proto-Berber language started to develop dialectal variation. Thus, there would not have been any input at that time for a metathesis leading to ***yiwăʔ-**. This problem does not occur if we assume ***yiwăʔ-** was the original form, so the latter seems to have a slightly better standing as the proto-form.

This reconstruction is remarkably close to ***yiwăhăn** as proposed by Prasse, regarding that his ***h** can stand for our ***ʔ** (Prasse 2011). Still, I think that it is important to show that this slightly intuitive reconstruction – Prasse never endeavored a full survey of the reflexes of his reconstructed forms in other varieties than Tuareg – can be corroborated by a full-scale comparative effort, and is able to explain the large majority of the attested forms.

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Summary: This article provides an overview of the various forms of the numeral 'one' in Berber. It proposes a reconstruction of the original form based on sound changes also attested in other words. Moreover, the many analogical reformations that took place in the different dialects are described and, where possible, explained.

Key words: Proto-Berber; Numerals; Linguistic reconstruction.