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Berber numerals

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BERBER NUMERALS

§1. Classification

In recent years the most detailed classifications of Berber languages have been presented by Ajxenal'd (1987), using a structural-typological approach, and by Militarev (see Ajxenal'd & Militarev 1991: 157–59) working with lexicostatistics. Their results are as follows:

1. East Berber branch

Siwa (oasis Siwa in West Egypt), Zurg (oasis Kufra in East Libya), Fezzan (oases Tmessa and El Fodjaha in South Libya), Augila (oasis Djalo in North-East Libya), Sokna (North Libya), Ghadames (oasis Ghadames in West Libya).

2. South Berber (= Tuareg) branch

North group: Tuareg of the oasis Kufra, Tuareg of the oasis Ghadames, Imanghassaten, Uraghen, Ghat, Ahnet (Plateau Muydir); "Tamahaq": Emmidir, Taitoq, Ažžer (Plateau Tassili), Ahaggar; Ayr (Plateau Ayr, Kel Ui, Kel Feruan, Kel Tafidet, Ibabidayan etc.), Tuareg of Borku (Chad), Tuareg of Zinder (Niger), East Tawllemmet (= Iulimidden or Awlemidden; Niger-Mali-Burkina bordeland).

South group: Kel Arokas; "Tamašeq": Heyawa, West Tawllemmet, Takarangat, Tagdhaq (= Ifoghas; Plateau Adrar), Taneslemt; "Tamažeq": Ida u Sak (= Dausak), Ighaillen, Imažoghen (= Iguhadaren).

3. West Berber group

Zenaga (= Taddungiyah; Mauretania — Senegal).

4. North Berber group

4.1 Atlas group:

a) Tašelhait (= Šilha): Tinduft, Ait Umbrided (basin of Dra and Djebel Bani); Izemdaln, Imežžad, Ida u Zikri, Ait Isaffen, Amanus, Ait Mzal, Igliwa, Ait Wazgit etc. (Antiatlas); Tazerwalt, Ait Baamrani, Hawwara, Ida u Semlal, Aštuken, Masst, Tiguga, Seksawa, Ait Wadjes, Ida u Izimmer, Demsira, Ida u Geriun, Demsira (basin of the river Sus); Tuggana, Igedmiun, Ait Immur, Ihan, Imeghran, Ida u Tanan, Ida u Zikki, Ida u Zal, Ntifa (High Atlas);

b) Tamazight (= Beraber): Ait Messad (region of Demnat); Ait Izdeg, Ait Yahya, Ait Sliman, Ait Khebbas, etc. (upper river Dades, High Atlas); Ait Sadden, Ait Yusi, Izayan, Ait Sgugu, Ait Mgild, etc. (Middle Atlas); Ait Ndir, Ait Naaman (region of Meknes);

4.2. Zenatiya group:

a) "compact": Ait Seghrusen; Ghmara, Žbala (region of Tanger-Tetuan); Rif: Ait Uriaghel, Ibokkoyen, Ait Tuzin, Temsaman, Ikrayan, Ait Said, Ait

Ittift etc.; Bettiwa; Senhaža; Ait Warain; Beni Iznasen; Beni Snus, Beni bu Said (region of Tlemsen); Matmata, Harawa, Ašaša, Halima, Beni Rašed, Beni Ferah, Gheraba etc. (region Frenda-Warsenis); Beni Menaser; Šenua; Beni Salah, Beni Messaud, Beni Misra (region of the mountain Blida); Šawiya (= Tašawit); East Zenatiyan: Sened, Tmagurt (region Gafsa in Tunis), Djerba (island Djerba); Zrawa, Taužžut, Tamezret, Šnini, Dwiret (South-East Tunis), Zwara;

b) "of oases": Nefusa (Djebel Nefusa, North-West Libya); Righ (Tuggurt), Wargla Mzab (all in East Algeria); Figig (South-East Morocco); Tamentit, Tittaf (Twat); Tit (Tidikelt); Ksurs (Gurara — all the oases are in Central Algeria);

4.3. Kabyle (= Taqbaylit) group: At-Halfun, At-Yiratena, "Zuawa", Iržen, At-Hišema, At-Mangellat etc. (North Algeria).

§2. Data

Table 1: Proto-Berber and South Berber

	Proto-Berber Prasse 1974 m. (f.)	Tawillemmet Alojaly 1980 m. / f.	Tahaggart Prasse 1974 m. / f.	Taitoq Masqueray 1893 m. / f.	Kel-Ui RB 1883 m.	Ghat RB 1883 m.
1	* <i>iywān</i>	<i>əyyān / əyyāt</i>	<i>iyān / iyāt</i>	<i>yen / yet</i>	<i>ian</i>	<i>ian</i>
2	* <i>sin</i> / * <i>sināt</i> * <i>hissin</i>	f. <i>sāpatāt</i> m. <i>əshin</i>	f. <i>sānāt(āt)</i> m. <i>əssin</i>	<i>sen / senatet</i>	<i>issin</i>	<i>sin</i>
3	* <i>karad</i>	<i>kārad / -āt</i>	<i>kārad / kāradāt</i>	<i>keradh</i>	<i>karadh</i>	<i>karadh</i>
4	* <i>hakkūz</i>	<i>əkkoz / -āt</i>	<i>ōkkoz / ōkkōzāt</i>	<i>okkoz</i>	<i>okkoz</i>	<i>sekkuz !</i>
5	* <i>sammūs</i>	<i>səmmūs / -āt</i>	<i>səmmus / səmmūsāt</i>	<i>semmus / -et</i>	<i>sammus</i>	<i>sommus</i>
6	* <i>sadīs</i>	<i>sədis / -āt</i>	<i>sədis / sədisāt</i>	<i>sadhīs / -et</i>	<i>sadis</i>	<i>sadis</i>
7	* <i>sāh</i> * <i>hissāh</i>	(<i>sah / -at</i> RB) <i>əṣṣa / -yāt</i>	<i>əssa / əssāhāt</i>	<i>essa / essahet</i>	<i>essā</i>	<i>sa</i>
8	* <i>tām</i> * <i>hittām</i>	(<i>taman / -et</i> RB) <i>əttam / -āt</i>	<i>əttām / əttāmāt</i>	<i>ettam / -et</i>	<i>ettam</i>	<i>tam</i>
9	* <i>tiɣzɣāh</i>	<i>tāza / -yāt</i>	<i>təzza / təzzāhāt</i>	<i>tezza / tezzahet</i>	<i>tezza</i>	<i>teza</i>
10	* <i>marāw</i>	<i>māraw / -āt</i>	<i>māraw / mārawāt</i>	<i>maraw / merawet</i>	<i>maraw</i>	<i>meraw</i>
20		<i>sāpat(āt)</i> <i>təmərwən</i>	<i>sānāt</i> <i>təmərwīn</i>	<i>senatet</i> <i>temerawin</i>	<i>essin</i> <i>maraw</i>	<i>senat</i> <i>merawin</i>
100 (pl.)	* <i>tē-mihḍay</i> * <i>tī-muhād</i>	<i>temeḍ</i> <i>timaḍ</i>	<i>temeḍe</i> <i>timaḍ</i>	<i>timidhi</i> <i>timadh</i>	<i>timadhi</i>	<i>timedi</i>
1000	* <i>ā-gihīm</i>		<i>āgim</i>	<i>adjim</i>		<i>ajim</i>

RB = René Basset

Table 2: East Berber

West Berber

	Ghadames Lanfry 1973 m. / f.	Ghadames Motylinski 1904 m. / f.	Zenaga Basset 1909 m. / f.	Zenaga Nicolas 1953 m. / f.
1	yūn / yūn	iun / iut	iun & né-iun / čuāč	m. (əy)yu'n ^h , nəyu'n ^h f. č-uwət
2	sən / sənət	sen / sinnet	šinan / šenaneth	šənən ^h / ča-šənən ^h
3	kaaređ / kerđet	kaređh / kaređ	karāđ / karāđeth	kāřāđ ^h / karāđəł
4	aqquz / aqquzet	ačkiz / ačkizet	akoz	akkuř ^h / akkūđəł
5	səmməs / səmməsət	semnis	šommuš / šomušeth	šəmmuš / šəmmūšəł
6	šuž / šuđset	čož / čořset	šodeš / šodešet	šuduš / šodešəł
7	saa / saat	sa / sat	išša / iššadet	əššəh / eššā đəł
8	taam / taamet	tam	ittem	ittəm ^h / ittāməł
9	təşuų / təşuųt	teču / tečut	tuza	tuřāh / tudāəł
10	maraw / marawet	meraw / merawt	mêrêg / meregeth	məwəg ^h , pl. tməwīn ^h
20			tešinde	teššəndəh
30			tukarđa	tukarđa
100			timađi, pl. temađan	təməđih, pl. tmuđa'n ^h

Table 3: North Berber

	Tašelhait of Tazerwalt Stumme 1899 m. / f.	Tašelhait Aspinion 1953 after Penchoen m. / f.	Tašelhait of Semlal Woelfel 1954 m. / f.	Tašelhait of Sus ('Amlin) Klingenheben m.	Tamazight of Demnat Woelfel 1954 m. / f.	Beni Mzab Hanoteau 1860 m. / f.
1	yān / yāt	yan / yat	yan / yāt	yēn	yan / yat	iggen/igget
2	sin / snāt	sin / snat	sin / snat	sīn	sin / senat	sen / senet
3	krāđ / krāđt	krāđ / krađt	krāđ / krađt	karāt	kradh	šared/šaret
4	kūz / -t	kkuz / kkušt	qquz / qqušt	kōs	akkoz / -t	okkoz / -t
5	summus / -t	səmmus / -t	səmmūs / -t	šimmūs	s(em)mus / semmust	semmes / -t
6	sddis / -t	sdis / -t	sdis / -t	šgdīš	s(ad)dis / saddist	sez / sasset
7	ssā / -t	sa / -t	sa / sāt	sa?	sā / -t	saa / -t
8	tam / -t	ttam / -t	tt(ə)am / tamt	sām !	tam, tem / tamt, temunt	tam / -et
9	tza / -t	ttza / -t	tza / -t	čāwuz	dza / -t	tes / tessel
10	mērdū / -t	mraw / -t	mraw / -t	mērdū	mraw / merawt	meraw / -t
20	mērdūwin					
100						twinest

Table 4: Non-decimal (quinary, ternary, trigesimal) numeral systems

all m.	Mozabi Hanoteau	Ued Ghir Letourner	Djerba R. Basset	Djebel Nefusa Klingenheben		
1	igguen	ighem !	ižžen	udžun	15	šaret n ifessen 3 hands
2	sen	tzem !	thin !	sen	20	okkoz n ifessen 4 hands
3	šaredh	šaret	šaredh	šaret	25	zegni n uyer d' 1/2 30 +
4	okkoz	occas	šaredh d' ižžen 3 + 1	okkoz	30	sen n ifessen 2 hands uwer month

all m.	Mozabi Hanoteau	Ued Ghir Letourmer	Djerba R. Basset	Djebel Nefusa Klingengenheben		
5	<i>fus hand</i>	<i>fus</i>	<i>afus</i>	<i>ufes</i>	50	<i>zegni n temiṭi</i> 1/2 100
6	<i>fus-iguen</i>	<i>fus-ighem</i>	<i>afus d' iẓẓen hand + 1</i>	<i>ufes d' udžun</i>	60	<i>sen n yaren</i> 2 x 30
7	<i>fus-sen</i>	<i>fus-izem</i>	(<i>sebɣath</i> < Arabic)	<i>ufes d' sen</i>	80	<i>zegni n temiṭi</i> 1/2 100 <i>d uyer</i> + 30
8	<i>fus-šaredh</i>	<i>fus-šaret</i>	<i>attam</i>	<i>ufes d' šaret</i>	90	<i>šaret n yaren</i> 3 x 30
9	<i>fus-okkoz</i>	<i>fus-occas</i>	<i>attam d' iẓẓen 8 + 1</i>	<i>ufes d' okkoz</i>	100	<i>temiṭi</i>
10	<i>meraw</i>	<i>merawn</i>	<i>akardaš</i>	<i>sen n ifessen</i>	2 hands	

Klingengenheben 1926–27: 44 found traces of the vigesimal system in the dialect of the tribe of Āmiln (region of Sus) based on the Arabic borrowing *āšṣerīn* “20”: *ʔāšṣerīn ẓe merāw* “30” = “20 + 10”, *sīn iẓe ʔāšṣerīn* “40” = “2 x 20”, *sīn iẓe ʔāšṣerīn ẓe merāw* “50” = “2 x 20 + 10” etc.

There were at least two or three ancient epigraphic “Libyan” languages related to the Berber language family: East Numidian, West Numidian and Fezzan-Tripolitanian. The best known East Numidian (= “Massilian”) language was used in old Numidia (North-East Algeria and North Tunis). Unfortunately, in the known texts from the 2nd cent. BC no numerals are identified.

Besides the “continental” Berber-Libyan languages there are their insular relatives — the languages of the Guanches, aborigines of Canary Islands, definitively assimilated in the 18th cent. The exhaustive information concerning numerals of Guanches was collected by Woelfel 1954:

Table 5: Guanche

Gran Canaria ?		T e n e r i f e ?					
	Niccoloso da Recco		Cedeño de Chil	Marín y Cubas	Berthelot	Pseudo-Sosa	Pseudo-Sosa after Rixo
1	<i>nait</i>	1	<i>ben</i>	<i>been</i>	<i>been</i>	<i>ben</i>	<i>ben</i>
2	<i>smetti</i> = * <i>sin-</i>	2	<i>lini</i>	<i>liin</i> or <i>lini</i>	<i>lini</i>	<i>lini</i>	<i>sijn</i> or <i>lini</i>
3	<i>amelotti</i>	3	<i>amiet</i>	<i>amiat</i>	<i>amiat</i>	<i>amiat</i>	<i>amiet</i> or <i>-at</i>
4	<i>acodetti</i>	4	<i>arba</i>	<i>arba</i>	<i>arba</i>	<i>arba</i>	<i>arba</i>
5	<i>simusetti</i>	5	<i>cansa</i>	<i>canza</i>	<i>cansa</i>	<i>cansa</i>	<i>cansa</i>
6	<i>sesetti</i>	6	<i>sumus</i>	<i>sumus</i>	<i>sumus</i>	<i>sumus</i>	<i>sumus</i>
7	<i>satti</i>	7	<i>sat</i>	<i>sat</i>	<i>sat</i>	<i>sát</i>	<i>sa</i> or <i>sát</i>
8	<i>tamatti</i>	8	<i>set</i>	<i>set</i>	<i>set</i>	<i>set</i>	<i>set</i>
9	<i>alda-morana</i>	9	<i>acot</i>	<i>acot</i>	<i>acot</i>	<i>acot</i>	<i>acot</i>
10	<i>marava</i>	10	<i>marago</i>	<i>marago</i>	<i>marago</i>	<i>marago</i>	<i>marago</i>
11	<i>nait-marava</i>	11	<i>ben y marago</i>	<i>benir marago</i>	<i>beni marago</i>	<i>benir marago</i>	<i>benir marago</i>
12	<i>smatta-m.</i>	12	<i>lini marago</i>	<i>sinir marago</i>	<i>lini marago</i>		
13	<i>amierat-m.</i>	20	<i>limago</i>	<i>linago</i>	<i>linago</i>		
14	<i>acodat-m.</i>	30	<i>amiago</i>	<i>amiago</i>	<i>amiago</i>		
15	<i>simusat-m.</i>	40	<i>arbag</i>	<i>arbag</i>	<i>arbiago</i>		
16	<i>sesatti-m.</i>	50	<i>camago</i>	<i>cansago</i>	<i>cansago</i>		
		60	<i>sumago</i>				

Gran Canaria ?		Tenerife ?					
Niccoloso da Recco		Cedeño de Chil	Marín y Cubas	Berthelot	Pseudo-Sosa	Pseudo-Sosa after Rixo	
	70	<i>satago</i>					
	80	<i>setago</i>					
	90	<i>acotago</i>					
	100	<i>bemaraguin</i>	<i>bemaraguin</i>	<i>beemaragoin</i>			

Berber-Libyan-Guanche (shortly Berber) languages represent one of the six branches of Afroasiatic macro-family together with Semitic, Egyptian, Cushitic, Omotic and Chadic. Only the Semitic and naturally the Egyptian numerals can be projected on the proto-language level, cf. table 6:

	Proto-Semitic (Dolgopolsky 1995, p.c.)	Proto-Egyptian (Vycichl // Loprieno)
1	*ʔaḥ(h)ád-u(m) m.	*wiʕyaw // *wúʕʕuw m.
2	nom. *tín-ā(-ni) acc.-gen. *tín-ay(-ni)	*siny-ū-āy // *sini.t-āy
3	*š/ǧalāḫ-t-u(m) f.	*ḫamtaw
4	*ʔarbaʕ-t-u(m)	*iʕdaw
5	*ḫamiš-t-u(m)	*dīwey // *dīyaw
6	*šid[ʕ]t-t-u(m)	*si[r]saw // *sáʔsaw
7	*sabb-t-u(m)	*saffḫaw
8	*tamānāy-t-u(m)	*ḫanāš/ūnaw
9	*tišš-t-u(m)	*piššdaw
10	*ʕášar-t-u(m)	*mūdaw
20	*ʕášar-ā = dual of *ʕášar- "10"	*ḫawāštay < *mūdawatay = dual of "10" f.
30	*š/ǧalāḫ-t-ū-š-ma = plural of *š/ǧalāḫ-t- "3"	*mašbVrʕ
40	etc.	*ḫVméw
50		*diw-ty-ū = plural of "5" // *dīyyaw etc.
100	*miʔat-t-u(m) f.	*š[inyu]t, cf. dual *šinyūtay "200"

§3. Comparative — etymological analysis

1. Berber m./f. *yīw-ān/-āṭ (Prasse) or *iyyaw-an/-at (Militarev) and Guanche of Tenerife *be(e)n* < *wayn (Militarev) represent a participle "being alone, sole, unique" (Prasse 1974: 404) from the root *y-y-w comparable with Eg wʕy "to be alone", wʕjw/wʕjt m./f. "1", wʕʕw "Alleinsein, solitude, privacy" (Edel 1955/64: 167; Wb. I: 277) and Semitic *w-ʕ-y > Ar *wafā* "rassembler, réunir sur un seul point, être guéri (se dit d'un os fracturé dont les éclats se réunissent); to collect, gather", He *yāfāh* "ramasser, balayer; to sweep together and carry away" (Klein 1987: 261). The correspondence of Be *y vs. Eg & Se *ʕ is regular (Vycichl 1991: 383–86). On the other hand, in spite of Zyhlarz (1931: 135), Zavadovskij (1974: 105) and recently Schenkel (1990: 55), Se *w-ḥ-d (Ak *wēdu* "only, alone, single", Ug *yḥd* "person without kin, an only son", Syrian *iḥīdā* "only one, unique", He *yāḥīd* "only one", Sabaic *k-wḥd* "in unison, together", Ar *wahīd* "alone, unique", Šheri *šēḥad* = √w-ḥ-d, Geez *wāḥəd* "unique, only, one" — see Leslau 1987: 609–10) do not be-

long here. The same root appears probably in Se **ʔaḥ(h)ad-* “1” < **ʔa-wḥad-* (cf. Dombrowski 1991: 344). The most hopeful cognate can be found in Berber: Ghd m./f. *iden,-et*, pl. *əḍn-in* “other”, *wīden* “another” vs. m./f. *wa-/ta-yiḍ*, pl. *wi-/ti-yyiḍ* “some, any”, Ahg m./f. *hăḍăn,-ăt*, pl. *hăḍnîn* “other” vs. m./f. *wi-/ti-yoḍ* “some, any” etc. (Prasse 1969: 20, 45 reconstructs $\sqrt{h_2-h_1-d}$; cf. further Prasse 1972: 211–15).

The parallelism of Guanche (f.) *nait* (Gran Canaria ?) and Zenaga m. *néiun* is remarkable.

The origin of this “prefix” could be in the genitive construction known e.g. from Ahg *wa n-iyăn* “the first”, lit. “that who is the first” (Prasse 1974: 407).

The seemingly different forms, like Ued Righ and Šenua f. *išt*, Snus *išts*, *yīšts* etc. (e.g. Zavadovskij 1974: 105 compares these forms with Se **šaštiy-(ān-)* “1”) are regularly derivable as follows: **yīwăt* > **yīwwăt* > **yīggăt* (Mzab, Wargla *igget*, Siwa *iget*) > **yižžət* (Izdeg *ižt*) > *išt* etc. (Woelfel 1954: 22).

Concerning Guanche (Tenerife ?) *be(e)n* “1” Woelfel 1954: 22 quotes very suggestive parallels from various West African languages: West Atlantic: Wolof *bene*, *wīan*, Temne *p’in*, cf. *tr’ofat win* “11”; Mande: Soninke *bani* etc.; South-Central Niger-Congo: Nupe *wēni*. Is it an accidental similarity or any areal influence ?

2. Be (m.) **sīn* (& **hissīn*) and Guanche **siyn-/*syin-* (> **šin-* > *lin-* ?) “2” correspond perfectly to their counterparts in Se (m.) **tin-ā/ay-* and Eg (m.) **siny-ū-āy*, reflecting AA **čīn(y)-* “2”. The final extension in *-an/-ən* in Zenaga corresponds to the collective of other Berber languages, cf. Ahg m. *əssənən*, Kabyle m. *isnin*, f. *tisnin* “both of them” (Prasse 1974: 408). Projecting the Zenaga “2” in pBe **šinānā / *šinānatā*, Rössler 1952: 142 interprets the (unattested) termination as dual and compares it with Ak *šanānu(m)* “gleichen, gleichkommen mit” (AHw 1161; Leslau 1987: 504–05 has collected the other cognates as Syrian *šayyen* “to pacify”, Geez *sən?* “peace, agreement”, Tigre (*tə*)*sana* “to be friends”, indicating pSe **š* and not **t* as in the case of the numeral “2”). On the other hand, Zavadovskij 1980: 143 tries to prove the relationship of the numeral “2” in Berber, Egyptian & Semitic and the AA word “brother”: Eg *sn* “brother, companion, boy-friend” (**sāniyaw* — see Vycichl 1983: 190) // Beja *san*; Awngi *sén* (but Bilin *dan*, pl. *šan* etc.) // ECh: Kera *seenə*, Mubi *sin*, Migama *sín*, Jegu *šin* etc. “brother” (cf. Rössler 1979: 24). But this common AA isogloss “brother” agrees semantically better with the Se root *š-n-y/?* “to be equal, be in agreement” than with the numeral “2”.

Further attempts to find relatives in other branches are no more convincing: Dolgopolsky 1973: 111 followed by Diakonoff 1988: 67 seek parallels also in Central Cushitic (=Agaw) and South Cushitic. But it was already Reisch 1887: 306 who recognized an Ethio-Semitic borrowing in Bilin, Qwara & Dembea *səna* “Gleichniss, Ebenbild, Art; (gleich)wie”, cf. Geez *sən?(ā)*

“peace, agreement, harmony; like-minded”, *sənfəw* “equal, agreeing” etc. (Leslau 1987: 504–05). Iraqw *dangi* “twins” together with related Alagwa *irangayo* “twin”, reflects SCu **ʔidaŋ*- (cf. Ehret 1980: 166), a form undoubtedly incompatible with AA **čín(y)*- “2”. A more hopeful cognate for SCu can be found in WCh **ʒanV* “twins” > Angas & Ankwe *ʒan*; Ša (Ron group) *ʒān* ‘suppletive plural to **awüllāwūl* “twin” (Stolbova 1987: 195, # 465).

3.1. The only attempt to etymologize the Berber numeral **karād* “3” on the basis of the Berber data was proposed by Zyhlarz 1950: 407–08. He interpreted it as “der Kratzer”, cf. Tuareg *əkrəḍ*, Tašelhait *kəḥḍ* etc. “to scratch”, assuming that the original semantic development was “scratch-finger” > “middle-finger” > “third”. Let us add that e.g. Fay 1910: 416 admitted the same semantic motivation for the Indo-European numeral **tri*- “3”, namely “rubbing/scratching [finger]” > “middle finger” > “third”, cf. Latin *tritus* “rubbed”, although he preferred the primary semantic motivation to have been “protruding [finger]”.

Jungraithmayr seeks external parallels in West & Central Chadic: Hausa *úkù*, Sura *kún*, Bolewa *kunum*, Jimbin *kəndí*, Geji *me-kan*, Ngizim *kwán*; Tera *kúnú*, Bata *mwa-kan*, Lamang *xkóná*, Glavda *xkərda*, Sukur *máá-kʼən*, Gisiga *maa-kar*, Daba *má-kaad*, Gidar *hóo-kuu*, Yedina *kaa-kénne*, Musgu *hu*, Zima-Batna *híndzilʔi* and within East Chadic isolated Mokilko cardinal *ʔáǰó* & ordinal *kádüwé* (Jungraithmayr & Ibriszimow 1994/I: 168 and II: 326; Lukas 1977: 211). But with the exception of Mokilko, this numeral has to be reconstructed only with medial **-n-*, regularly giving *-r-* in some Central Chadic languages (Newman 1977: 17, 18; Jungraithmayr & Ibriszimow 1994/I: XXIII), probably **kanu(-di)* > **kunu(-di)* or **kwan(-di)* > **kwardi* > **kwad̥i* or sim. The facultative extension in **-di* perhaps represents a numerative, cf. Kotoko **di* “thing” > Yedina, Logone *di*, Ngala *ndi* id., Affade *di-pal* “the first” vs. *pal* “one”. It is apparently also added to the Chadic numeral “4”, reconstructible in the form **faru-di* or sim. (> **fuardi* > **fwad̥i* etc. ?). Among the Chadic forms of the numeral “3”, only one hypothetical cognate to the Berber counterpart remains, namely Mokilko *ʔáǰó* “3” & *kádüwé* “3rd”, derivable from **kard̥-*. In Mokilko and generally East Chadic the change **-n-* > *-r-* does not operate. In principle, the unique Mokilko form could be of Central Chadic origin, cf. Glavda *xkərda* or Daba *má-kaad*. But these languages are not neighbors — today their distance is around 500 km — and in the area between them, the various different languages are spoken, incl. non-Chadic ones. The distance of the closest Berbers — Tuaregs of Borku in North Chad representing the second potential source — is still greater.

The attempt of Zavadovskij (1974: 107) to compare Berber “3” (**hṛt* in his “reconstruction”) with Se “**t̥ l̥*”, Eg “*hṛt*” and Chadic “*kw(t)*”, does not respect any known phonetic law and must be rejected.

3.2. Among the Guanche forms for “3”, esp. those from Tenerife (*amiat*, *amiet*) resemble the Egyptian counterpart **ḥamt-*. Eg *ḥ* corresponds regularly

to Be * γ (Zyhlarz 1934: 113), cf. e.g. Kbl $\gamma u\dot{r}$ “chez” and/or $\gamma e\dot{r}$ “vers”, Tamazight (Ait Ndhir) $\gamma \dot{e}r$, (before pronoun) $\gamma u\dot{r}$ “to, toward”, Ahg $\gamma u\dot{r}$, Ghd $\varepsilon \dot{u}r$ “chez” (Prasse 1972: 229) vs. Eg $\dot{h}r$ “bei, von, zu” (Wb. 3: 315–16; Edel 1955/64: 2). Another correspondent can be Berber * \dot{h} (sometimes an allophone of * γ), cf. Tuareg $\acute{e}h\acute{e}lbes$ “papillon” vs. Eg $\dot{h}nms$ & $\dot{h}nws$ “moustique” (Wb. 3: 295, 290; Vycichl 1983: 260–61). Militarev (Ajxenal’d & Militarev 1991: 167–68) demonstrated that Be * γ / * \dot{h} corresponds to Guanche j [= x], x , ch , h , g (probably only orthographic variants of the same sound of the type \dot{h}) and also \emptyset . Earlier Meinhof (1912: 233) and (Zyhlarz 1931: 136) had compared the Egyptian numeral “3” with Beja (North Cushitic) $mah\acute{a}y$ (Halenga), $emhay$ (Bišarin). It is possible only if metathesis from * $hamay$ is acceptable, perhaps caused by alliteration with the preceding numeral $mhaloo$ - “2” (Hudson).

Later Zyhlarz (1950: 407) changed his adroit etymology and presented a new proto-Guanche reconstruction * $amet\dot{h}q\acute{d}$ based on the forms with medial liquid $amelotti$ “3”, $amierat\ marava$ “13” (Gran Canaria ?). He interpreted this compound as * “der anderer Zeiger” = “Mittelfinger”, cf. Ahg $amel$ “indiquer”, Kbl $m\acute{a}l$ “montrer” and Ahg $h\acute{a}d\acute{a}n, -\acute{a}t$ “other” (see above). Let us mention that Stumme 1899: 207 derived the North Berber name of the index (Šlh of Tazerwalt $m\acute{a}llay$, Ait Ahmet $mulle\dot{y}$, Tlit $mella\dot{h}$ etc.) just from the verb “to show, point” (Tazerwalt habitative $m(m)\acute{a}l$). Laoust 1920: 118, fn. 5 asked how to explain the final radical γ and suggested a more convincing solution based on the verb “to lick” (Tazerwalt $lluy$, Ahg, Siwa $\acute{a}ll\acute{e}y$), hence “index” = “lick-finger”, cf. Greek $\lambda\iota\chi\acute{\alpha}\nu\acute{o}\varsigma$ or Lithuanian $li\acute{z}ius$ id.

4. Zyhlarz 1950: 408 proposed an archetype * $a\dot{g}\dot{u}ko\dot{z}$ “4”, deriving it from a hypothetical * $awu-k\acute{u}sur$ “son of ring”, hence “ring-finger”. The first component is postulated on the basis of Libyan w ; Ahg $\acute{a}w$, $\acute{a}gg$, Šlh yu , $yiwi$, Ghd $\acute{u}gg$, u , awa etc. “son” (Prasse 1972: 158 and 1974: 270 * $\acute{a}-wihih$, a derivative of the verb “to give birth”, e.g. in Ahg iwi < \sqrt{whh} , Ayr $\acute{e}h\acute{e}w$ < \sqrt{hhw}). But Zyhlarz did not quote any evidence for his “ring” and that is why his etymology remains very problematic.

Zavadovskij 1974: 110 saw the source of the numeral “4” in the word “finger” attested in Djebel Nefusa $tuko\dot{d}$, pl. $ituko\dot{d}$ (Laoust 1920: 118), cf. Nefusi of Fassato $tuqq\acute{a}d$ & $tukk\acute{a}d$ (Beguinet 1942: 230). The root of the type * $-kV\acute{d}$ - is really compatible with *(ha -) $kk\acute{u}z$ “4”, cf. Prasse (1972: 111), quoting the Ahg doublet $t\acute{a}d\acute{e}ft$ // $t\acute{a}z\acute{e}ft$ “hache” or Militarev (in Militarev & Stolbova 1990: 48 and Ajxenal’d & Militarev 1991: 239, 242), who concluded that both * \acute{d} and * \acute{z} can represent continuants of both AA * \acute{c} and * $\acute{\hat{c}}$. But other cognates demonstrate that the original protoform was more complex: Ghadames $a\acute{d}\acute{e}kk\acute{e}d$, pl. $\acute{d}u\acute{d}\acute{a}n$ (Lanfry 1973: 81), Augila $t\acute{a}qt$, pl. $taqq\acute{a}d(\acute{e}n)$ (Paradisi 1960: 165), Zenaga $a\acute{d}\acute{a}y\acute{d}i$, pl. $\acute{d}u\acute{y}\acute{d}\acute{a}n$ (Basset 1909: 105, 221) = $\acute{e}d\acute{a}y\acute{d}i$ (Nicolas 1953: 96). In the other forms, the difference between sg. and pl. was eliminated, e.g. Šlh of Tazerwalt $a\acute{d}\acute{a}d$, pl. $i\acute{d}u\acute{d}\acute{a}n$ (Stumme 1899: 157), Siwa $t\acute{a}d$, pl. $i\acute{t}\acute{u}d\acute{a}n$ (Laoust 1932: 227), Ahg $a\acute{d}\acute{a}d$, pl. $i\acute{d}\acute{e}d\acute{w}\acute{a}n$ < * $\acute{a}-dih\acute{a}d$ /

**ṭ-ḏuḏwān* (Prasse 1974: 185; Laoust (1920: 118) recorded the plural form *iḏūbdān* in Zemmur (Morocco), where **-ḏw-* > *-bd-*). It is evident that any direct derivation of the numeral “4” from the “finger(s)” is not convincing, although semantically fully acceptable.

Another purely Berber etymology can be based on Zayan *akezziz* “une poignée de, un peu de” (Loubignac 1924: 553). In this case the primary meaning of the Berber numeral “4” would be “rather small quantity” or sim. So the semantic motivation is comparable e.g. with Anatolian **meyu-* “4”, a derivative of Indo-European **mey-* “small, little”, cf. Tocharian B *maiwe* “small, young” (Heubeck, Sprache 9[1963]: 201f).

Blažek 1990: 39 proposed a comparison of Be *(*ha-*)*kkūz* “4” and West Chadic **kučV* “9” (Stolbova 1987: 208), reconstructed on the basis of North Bauči **kučiwa* (Siri *bu-kəḏuwi*, Warji, Kariya *kuciya*, Miya *kučiya*, Mburku *kuča* — see Skinner 1977: 33) and Ngizim *kúdkúvdá* (Schuh 1981: 97). Esp. the latter form indicates an old compound with the second component identical with *vàad* “5” < West Chadic *(*bV-*)*bačū* “5” (Stolbova 1987: 151). If we accept this idea, it is natural to identify the meaning “4” in the first component *kúđ*...

The attempts to connect Berber “4” with its counterparts in other AA branches (Egyptian **ifdaw/at*; Chadic **faru(-di)*; Cushitic: Beja **fa[rđ]ig*, East Cushitic **ʔaf(f)ar-* // **ʔaf(f)ur-*) based on erroneous Berber reconstructions, such as **wuḏ* < **fwuḏ/d* (Zavadovskij 1974: 110) or **ʔfḏ* (Jungraitmayr & Ibriszimow 1994/I: 73) are not acceptable.

On the other hand, there are remarkably similar forms in some Nilo-Saharan languages, esp. in the Tama group (Chad-Sudan borderland): Tama, Sungor *kús*, Erenga *kús* / *kuz*, Miisiiri *kus* / *kuz* etc. (Edgar), Nyima (Nuba mountains in Central Sudan) *kudu* “4” (Meinhof). If these resemblances are not only accidental (and their genetic relationship across families is absurd), it remains to admit a direct contact, perhaps anywhere in North Sudan. This conclusion could support the well-known evidence of the presence of Berber-Libyan borrowings in Nile-Nubian.

5. Berber-Guanche **sammūs(-t)* “5” was compared with Semitic **ḥamīš-* / **ḥamīš-át-* id. (Zavadovskij 1974: 108; Prasse 1974: 405 mentions Geez *ḥamus* “five days” with a similar internal structure; formally still closer is *ḥəmmus* “fivefold”). The only hopeful reason for the difference Be **s* vs. Se **ḥ* seems to be an alliteration to the following numerals “6” and “7” in Berber with initial **s-*, a phenomenon so typical for numerals (Diakonoff 1988: 67). This irregularity could indicate rather a borrowing than a genetic unity. On the other hand, the etymology of the Semitic numeral “5” is also unclear. Diakonoff 1988: 67 tries to etymologize the Semitic numeral “5” on the basis of Arabic *ḥamīs-* “troop, group” (Steingass 1988: 341 translates it more correctly as “army consisting of five parts”, hence the derivative of “five”) and Ak *ḥamāšu* “to flex, crook hand or foot” (in AHW 315 it is translated “abknicken” and compared with Ar *ḥamaša*

“to scratch, wound with the claws or nails” indicating the Se root **ḥ-m-š* with the third radical different from *-š-* in the numeral “5”).

Let us add that the Semitic numeral “5” penetrated at least in a part of Berber language territory. Vycichl (1951: 201–02) mentions Kbl (after Huyghe) *ahēnšim* “fist”, comparing it with his record *ahušim* id. On the basis of final *-im*, he concludes that the word can represent a Punic borrowing. Vycichl is probably right concerning the Canaanean Semitic provenance of the hypothetical source. But in Phoenician / Punic, in the same way as in Hebrew, the proto-Semitic **ḥ* and **ḥ* have merged in *ḥ*. It means we have to seek the source in Semitic language preserving **ḥ*. A good candidate could be a language of the type Ugaritic, where *ḥmš* is attested, while Punic knows *ḥmš* and later even *ḥmš* “5”.

Zyhlarz (1931: 137) admits that the etymology of the Berber numeral is unclear. Later he reconstructs a Punic source in the (unattested and rather artificial) form **sūʔumus* “Aufhebung des Fünftels (des Hand)”, representing a compound of Punic *nšʔ* “to carry; lift” and *ḥmš*, *ḥmš* “5” (Tomback 1978: 107, 221).

So far nobody tried to etymologize the Berber “5” on the basis of purely Berber data, although it is fully legitimate. So Prasse 1974: 406 thought that the parallelism to the Semitic counterparts and their derivatives indicates their verbal origin and saw in them participles or verbal adjectives (cf. *ibid.* 210f). A possible verbal candidate could be the *s*-causative of the root $\sqrt{m-s}$ attested in Ghadames *məssu* “toucher” (Lanfry 1973: 218). Another solution might be based on a compound of the preposition known from Ahg *əs* “with, after, beyond, through, by, to”, Šlh (of Tazerwalt) *s* “after, to, by, through” etc. & pBe **hammās* “centre, middle, interior” (Prasse 1972: 234) > Ghd, Šlh *ammas*, Ahg *âmmas* etc. id., cf. Sened *gemmes* “in the middle, between; half” with a frozen preposition *g* “in” (Provotelle 1911: 109, 113, 123). The semantic motivation can be illustrated on examples of a couple of Papuan languages of Huon family: Kinalakna *holi nembat*, Kumukio *suli nembat*, Selepet *bot nombot* “5”, literally “hand(s)-half”, Nabak *bet nambet delang*, lit. “hand-half-finished” (Smith 1988: 81–83). Could the Papuan typological parallels indicate a hypothetical syntagm (in Ahg) **əs-âmmas ən-ifassän* “to the half of hands”?

Alternative external parallels can be found in Central Chadic (Blažek 1990: 40): Gidar *še*, Glavda *šəm* (Kraft *thləm*), Paduko *zama* (Lukas), Mafa *zlam* (Kraft), Gisiga *dlom* (Lukas), Musgu *šem* (Decorse) = *sim* (Müller), Munjuk *slīm* (Seignobos & Tourneaux) etc., Kotoko **šansi* > Yedina *sinjī* (Lukas), Kuri *šinži* (Decorse), Logone *šešī* (Lukas), Affade & Gulfei *šensi* (Lebeuf), Ngala *ki-šenši* (Migeod), Makeri *šyensi* (Lebeuf), Kuseri *sasi* (Decorse) etc. (cf. Jungraithmayr & Shimizu 1994/II: 143). The initial lateral sibilant corresponds regularly to *s*- in the West & East Chadic plus Masa group of Central Chadic (Jungraithmayr & Ibrizimow 1994/I: XXVI–XXVII use the symbol **s*; Newman 1977: 10, 16 reconstructs **š*).

6. North & South Berber **saḍīs* besides North Berber **saddīs* and East & West Berber **sūḍas* or **sūḍus* (Prasse 1974: 405) resemble Semitic **šid[u]ḷ-*, Egyptian **sirsáw* (Vycichl) or **sársaw* (Loprieno) and some Chadic counterparts: (W) Hausa *shíd(d)à*, Gwandara *šida*; Tsagu (North Bauči) *šɛɔ*; Ngizim *sedu* (Koelle) = *zi dù* (Schuh), Bade *əzdù* (Kraft) (Stolbova 1987: 176 reconstructs WCh **šidu*); (E) Kwang *sidee*, Mokilko *zót* (both Lukas) = *zoo(t)* (Jungraithmayr). Greenberg 1963: 62, #66 adds CCh cognates: Gidar *serré* (Strümpell) = *širre* (Mouchet), Musgu *saara* (Decorse) = *šaara* (Krause), Munjuk *sláarà* (Seignobos & Tourneux), Mbara *šírà* (Tourneux) etc. The initial lateral sibilant represents a regular Central Chadic innovation corresponding to pCh **s* (see §3.5). The medial *-r-* is derivable from **-d-*, cf. Gidar *biryà*, Mbara *fré* “monkey” < pCh **bədi* (Newman 1977: 29, #85; Jungraithmayr & Ibriszimow 1994/II: 236–37) // Ahg *abiddaw*, Ghd *biddu* id.

The correspondence of Be **-ḍ-* (~ **-dd-*) // Ch **-d(d)-* // Eg **-r-* // Se **-d-* is not regular. The Be emphatic **-ḍ-* can be perhaps derived from the geminate **-dd-* preserved in some North Berber languages. The form **saddīs* is really compatible with the Semitic counterpart in a genetic plan. The eventual borrowing opens a question of determination of the hypothetical Semitic source. Its West Semitic provenance is perhaps excluded, cf. Phoenician m.f. *šš / šíšt*, He *šəš / šiššā*, Ugaritic *š š* (*t*), ord. *šdš*. The closest parallels appear in Ar ord. *sādis* and in Ethio-Semitic: Geez *səds* “6” (genus communis), *səddus* “sixfold”, Harari *siddisti* “6”. The most natural solution may be that it is a borrowing from Arabic introduced during the expansion of Islam in North Africa in the end of 7th and the beginning of 8th cent. It implies the same origin for the Guanche forms (Tenerife *set* “8”, orig. perhaps “6” vs. Ar *sitt/-at* “6”; but Gran Canaria *sesseti* resembles rather Berber forms, e.g. Mzab f. *səssət*).

In contrast to Berber, the Semitic numeral is etymologizable within Semitic. There are two alternative reconstructions: (i) **šidš-*; (ii) **šidḷ-*. (i) The form **šidš-* (the variant **šidḷ-* can be a consequence of dissimilation) allows to assume an apocopy from a fully reduplicated stem **šidšid-*. Did it mean the sum “3 + 3”? Cf. Ug *šlṭt w šlṭt* “6” = “3 + 3”. (ii) If the final **-ḷ-* was apocopated from the numeral **tin-* “2”, the hypothetical original form **šid-tin-* could reflect the multiplication “3x2”. Cf. Ngala (Kotoko group of Central Chadic) *kingi ti kisang* “6” = “3” (*kingi*) x “2” (*kisang*). Both solutions identify the meaning “3” in the root **šid-*. Is there any support for this premise? Yes. A hopeful evidence can be found in the Akkadian length measure *šizum*, *šizū* “Drittel-Elle”, *šizāt* = $\frac{1}{3}$, *uṭṭat* (*uṭṭat* = “wheat”) (AHw 1254). But Ak *z* reflects Se **z* or **ḍ*. The latter possibility is probably compatible with both (i) and (ii), i.e. (i) **šidšid-* > **šidš[id]-*, and (ii) **šid-tin-* > **šidḷ-* > **šidḷ-* (incompatibility of **ḍ* and **ḷ*). The Akkadian word can be projected in pSe **šidC-u(m)*, where *C* = *w, y, ṛ, h, ḥ, š, ḡ*. Only for the combination **šidḥ-* there is an external evidence, concretely in East Cushitic **šizḥ-/*šazḥ-/*sazih-* “3” > Afar *sidoḥ*, gen. *sidiḥa*, Saho *ṣadoḥ* (< **asVḥ*), Somali (Isaq) *saddeḥ*, (Benadir) *siddāḥ*, Jiddu

seye, Rendille *séyyah*, Bayso *seedi*, Oromo (Wellega) *sadii*, Konso *sessaa*, Arbore *seezzé*, Elmolo *sépe* (-*p*- < **w*- < **y*- < **z*-), Dasenech *seddi*, Dobase *siséḥ*, Tsamakko *zeeḥ*, Sidamo *sase*, Burji *fadiya* (*f*- after *foola* “4”) (Sasse 1976: 138; Zaborski 1987: 331–42). Let us add that the hypothetical Semitic root **šid*/**šid*- “3” is also comparable with Elamite (eastern neighbor of Akkadian) *zi-ti* “3” (Hinz & Koch 1987: 1305).

Rössler (1966: 221) has demonstrated that Egyptian **r* substitutes Semitic **d* in Egyptian transcriptions of Semitic proper names. It could also indicate a Semitic origin of the Egyptian numeral “6”. There is an alternative solution consisting in a comparison of Eg **sirs*- (or **sars*- after Loprieno) with Se **ṣalāt*- “3”. Phonetically it is fully acceptable and the semantic difference “6” vs. “3” is not invincible either.

The Chadic forms can also be explained independently. In Bade (WCh) Kraft quotes *əzdù* “6”. But Koelle has recorded *badṣ ódi* “6” = *bádu* “5” + *g-áde* “1”. Similarly in Karekare (WCh, Bole group) *bəcodi* “6” = *bədi*-**si-wədi* “5 + 1”, *bəcibèlu* = “5 + 2”, cf. *bèlu* “2” (Kraft). The hypothetical conjunction **sV* appears e.g. in Hausa (*goma*) *sha d'aya* “11”, (*goma*) *sha biyu* “12”, lit. “(10) plus 1”, “(10) plus 2” resp. The same pattern is recognizable in East Chadic: Migama *bizgidi* “6” = *béed'ya* “5” + *kád'yi* “1” (Jungraithmayr) or Dangla *bidígéd'yi* “6” = *bééd'yi* “5” + *kèed'yi* “1” (Lukas).

7. For the Berber numeral “7”, Prasse 1969: 89 reconstructs a skeleton $\sqrt{h_1sh_2}$. Later he presents the protoform **sāh*/-*at* (and the longer variant **hissāh*/-*at*) compatible also with Guanche *satti* (Gran Canaria ?) & *sa(t)* (Tenerife ?). Comparing it with Se **sabf*-(*at*-) “7”, Rössler 1952: 142 explains the loss of **b* through assimilation **-sb*- > **-ss*-, postulating a primary form **asbaʔu*. Perhaps a more probable solution consists in a specific development of the cluster **-bf*-. In certain conditions AA **b* is changed into *h/∅* in Berber, cf. e.g. the word “heart” reconstructed as $\sqrt{h_1lh_3}$ / $\sqrt{wlh_3}$ (Prasse 1969: 27, 76–77) = **huluh* or **wilih* (Prasse 1974: 72) > Taneslemt *ulh*, pl. *ulhawen*, Tawlimidden *ul*, *əwəl*, Augila *ul*, Siwa *uli*, Ntifa *ull*, Zenaga *už*, pl. *ellun* etc. Rössler 1952: 134–35 assumed the following development: **ulh* < **luh* < **lub* < **lubb*, cf. Eg *ib* // Se **libb*- (Fronzarolli) = **libw*- (Vycichl) // ECu **lubb*- etc. On the other hand, AA **f* gives regularly *y/∅* in the Berber languages (Vycichl 1991: 383–86). These phonetic laws can probably explain the vacillation *h/y* between Ahg f. *əssahāt* vs. Ayr f. *əṣṣayāt* (cf. Prasse 1969: 19).

In Semitic the numeral “7” cannot be reconstructed without problems. Ak m./f. *sebe*, *seba* / *sebet(tu)* “7”, *sebiat*, *se/abat*, *sebītum* “Siebentel” reflect pSe **sibf*- (but OAs *šabe* !), He *šēba* / *šibfā*, Aramaic *šəbaʔ* / *šibfā* reflect pSe **šibf*- and finally OAs *šabe*, Ar *sabf*- / *sabʔat*-, Geez *sabʔ(u)* / *sabʔattu* reflect pSe **šabf*-. The Akkadian *s*-form is probably primary; only old **s*- in the numeral “7” can explain the surprising *s* in Ak *samāne* “8” instead of expected *š* attested in As *šamāne* < **ʔ*. The difference among initial syllables **si*-/**ši*-/**ša*- could consist in the mutual influence of the numerals **šid(V)š/ʔ*- “6”,

**sabʃ-* “7”, **ṭamānay-* “8” (> Canaanese **ṣ-*). In spite of this uncertainty in reconstruction there is a hopeful properly Semitic etymology based on the word for “index(-finger)” attested in Ar *sabābat*, *sibbat*, *sabbāḥat* (Steingass 1988: 476–77). Perhaps the same biradical nucleus *s-b* appears in the verb *sabaʔa* “to take by hand”. Outside Semitic a promising cognate appears in Somali *safab* “palm of hand with fingers” (< **sabʃ-* as *gaʃan* “hand” < **ganʃ-*, see Sasse 1982: 77). The semantic motivation “index” > “seven” is not isolated, cf. Zulu *isikhombisa* “7” and “index” (Hoffmann 1952–53: 72) or Malay *tuduh* “7”, a derivative of Austronesian **tuZuq* “index”, orig. “to point” (Dahl 1981: 50).

Eg **safḥ-* corresponds unambiguously to its Semitic counterpart. In the final position we would expect ʃ. This irregular change could be caused by sandhi **sabʃ-* **ḥamVn-* > **sabḥ-* **ḥamVn-*. It remains to explain why there is *f* instead of **b*. One would expect spirantization **bḥ-* > **fḥ-*, but the sequence *-b(-)ḥ-* exists e.g. in *ʃbh* “to mix” or in *sbḥ.t* “a kind of amulet” (Vycichl 1983: 249, 185). Some combinatorial change connected with the presence of *s* has perhaps operated here, cf. the pair *ḥsf* vs. *ḥsb* “to succeed in protecting” (Edel 1955–64: 51). Vycichl 1983: 240 mentions an analogical development in Eg *wšḥ* “to be wide” vs. Ar *wasifa* id.

Hypothetical cognates can also be found in the Matakam group of Central Chadic: Gwendele & Hurzo *cibā* “7” (de Colombel) = Hurzo *cibā* (Rossing 1978: 322, #621).

8. Be **tām* (& **hittām*) and Guanche *tamatti* (Gran Canaria ?) “8” resemble suggestively Se **ṭamānay(-at-)* id. But in spite of Rössler (1952: 143) and Militarev (Militarev & Stolbova 1990: 48; Ajxenal’d & Militarev 1991: 242), the regular correspondence of AA **č* > Se **ṭ* is Be **s*. The only example supporting also Be **t* as a continuant of AA **č* is just the “eight”-etymology. On the other hand, there is at least one form with expected *s-*, namely *sām*, recorded by Klingenhoben (1926–27: 44) in the area of the tribe ’Ámiln of Sus, which agrees with the phonetic law quoted above. It is possible to imagine the origin of the *t*-forms thanks to an alliteration to the following numeral **tizāh* // **tūzah* “9”. But there is an easier explanation of the unique *s-* appearing only in one idiom, namely an alliteration to the preceding numerals “5”, “6”, “7”, all with initial **s-*.

It means that it is necessary to look for another solution. Most natural is to presume a Semitic origin. There are evident Arabic loans preserving the third radical *-n-*, e.g. Tawlimidden m. *taman* (Basset) or Demnat f. *təmund* “8”. The other only biradical forms are probably older. The eventual borrowing should be realized from such a Semitic source, where the continuant of Se **ṭ* was either an interdental spirant **ṭ* (Ugaritic, Arabic, Epigraphic South Arabian, Modern South Arabian) or *t* (Aramaic), but not *ṣ* (Akkadian, Hebrew, Phoenician/Punic, Ethio-Semitic). Besides Arabic appearing in North Africa from the end of the 7th cent. AD, only Epigraphic South Arabian or Ugaritic can probably be taken in account. In the latter case for its possible presence in the Delta

thanks to the movement of “Hyksoses” from the 18th cent. BC. In the first case there were rich commercial connections between Arabia and North Africa for a long time before the Muslim expansion. It can be documented by the evident influence of South and North Arabian scripts on the Libyan and modern Tifinagh scripts and on the system of figures preserved in Ghadames (Littman 1904 — see Ajxenal'd & Militarev 1991: 160; Vycichl 1952: 81–83).

If **karād* “3” is an innovation limited only to Berber (the Mokilko parallel can be a Central Chadic or even Berber borrowing) and the Guanche counterparts (*amiat* etc.) represent an original form, there is a natural solution analyzing the numeral **tām* < **tā-Ham(-āh)* “8” = “three above” with augmentative confixes **tā- ...-āh*. The same internal structure can also be recognized in the following numeral **tūzāh* & **tizāh* “9” < **tā-kūz-āh* & **tī-kūz-āh* resp. “four above” (see below). Accepting the Egyptian cognate **ḥamt-*, one expects **ḥ* or **γ* in Berber. Perhaps the vacillation *ḥ ~ h/∅* has operated here (Prasse 1972: 111 quotes the example *ḥārnān* “montrer les dents” vs. *ḥārnān* “grincer des dents”). It is important to emphasize that also in some Afroasiatic branches just the numeral “8” is formed according to the quinary pattern: East Cushitic **š/sizheet-* / **š/sizhent-* / **š/sazhent-* “8” > Hadiya *sadento*, Sidamo *sette*, Kambatta *hezzetto*, Burji *hiditta* (**ḥizzeet-* < **ḥiszeet-* < **sizheet-*); Somali *siddeed*, Oromo *saddeet*; Gollango *sette*, Tsamakko *sezzen*; Yaaku *siite* (Sasse 1982: 95), analyzable as a compound of ECu **s/šizḥ-* “3” and the numeral “5” preserved yet in HECu **omut-* > Burji *umūtta*, Sidamo *onto* etc. (Sasse 1982: 184; Haberland & Lamberti 1988: 136–37) and Eg **ḥamṽn-* “8” vs. **ḥamt-* “3” (Holmer 1966: 35).

The possibility of an external comparison within Afroasiatic cannot be excluded either. So Ehret 1980: 290 reconstructs SCu **?itām-* “3” > Iraqw, Burunge, Alagwa *tam*, Qwadza *tami*; ? Dahalo *?ittāantóóni* “third day after tomorrow”. It is plausible to connect it with the Berber **tām* (~ **hittām*) “8” again on the basis of the additive pattern “[5 +] 3”. In spite of its semantic and phonetic acceptance, this etymology remains questionable for the isolation of the South Cushitic examples within Afroasiatic.

On the other hand, the Semitic numeral “8” probably represents a derivative of the numeral “2”, as the confrontation of the skeletons: *t-n-y* “2” vs. *t-m-n-y* “8” can indicate. The primary shape might be reconstructed as **tāniy-mā* or **tanīy-mā* “the second not” (cf. Ar *mā* “not” — so Blažek 1990: 1990: 31) or **tāniy-/*tanīy-* + **min-* [**fašar-*] “the second from [ten]” — cf. Se **min* “from” (Gray 1934: 71, 74) and Be **mīn* “without” (Prasse 1972: 230), naturally with the following metathesis.

Bomhard (1984: 152) compares the Berber and Semitic numerals “8” with ECu **tom(m)an-* “10”, reconstructing AA **t'am(a)n-* “8”. The difference “8” vs. “10” remains unexplained.

9. Reconstructing pBe **taššaʔu* “9”, Rössler (1952: 143) proposes a cognate in Se **tišš-* id. In spite of his categorical affirmation “Entlehnung aus-

geschlossen", the Semitic origin is quite possible, esp. when Guanche cognates are missing. After all, the rather devious form *cáwuz* "9" recorded by Klingenberg by 'Amiln in the Sus area is evidently influenced by Moroccan-Arabic *cšūd* "9".

Two forms for "9" are known from Canary Islands: (i) *aldamorana* (Gran Canaria ?), (ii) *acot* (Tenerife ?). The form (i) consists of *marava* "10" (with emendation $n = u$?), while *alda-* can be identified with Šawiya *ald(a)* "jusque, jusqu'à", hence "9" = "up to ten" (Woelfel 1954: 11). The form (ii) corresponds evidently to *acodetti* "4". It implies an original ellipse from **sumus akod/t..* "5 + 4" or sim.

This second pattern opens a possibility to analyze the properly Berber numeral "9" in a similar way. Vycichl 1961: 253 described a specific Berber grammatical category **augmentative** formed by pBe confixes **tā...āh* (cf. Šlh *abrid* "Weg" vs. *tabrida* "breiter Karawanenweg"). If we apply this pattern for the numeral "4", we get **tā-kūz-āh* "four more" or "four above"; further perhaps **tāūkzāh* > **tūz(z)āh* > Zenaga *tuḏa* (so Prasse 1974: 406 who reconstructs **tūzāh*, seeing in the vowel *u* an influence of the numeral *šudəš* "6"). The *ū*-vowel is also attested in Ghadames *təšū(t)*, with *ū* in the second syllable probably appearing thanks to metathesis. The North & South Berber variant **tūz(z)āh* can represent a plural of the same formation (**tī-kūz-āh* ?).

Let us add that the Semitic numeral "9" probably also continues in the subtractive pattern (cf. §3.8.). It is very remarkable that Se **tišf(-at-)* "9" and one of the Semitic numerals for "one", namely **faštiy(-ān-)* (Ak m./f. *ištē/in(um)*, *ištiānum* / *ištiat*, *ištē/it(um)* "1", *ištēnšeret*, poet. *ištēnešret*, Ug *ššt ššr* / *ššt ššrh*, He *faštēfāšār* "11", Epigraphic South Arabian *šs,tn* "1") differ only in the order of consonants. This fact can represent a key to the etymology. If metathesis could really serve as a way of expression of the semantic polarity (cf. examples collected by Majzel' 1983: 246 as Ar *ḡamīl* "fair, excellent" vs. *lamīḡ* "disfigured", etc.), it is possible to understand the opposite order of radicals forming the numeral "9" just as the expression of an "absence of one". An alternative solution can consist in a radical simplification (haplology ?) of a hypothetical syntagm **faštiy- *fašti/u *fašar-* "one from ten", cf. Ak *išt(um)*, *e/uštu* "from, of" (AHw 401) and Eblaite *ĀŠ-DU* "out from", *ĀŠ-TI* "from" (Diakonoff 1988: 68 and 1990: 28).

10. It was already Meinhof (1912: 240) who connected Be **marāw(-at)* "10" with Eg **mūd-aw, -at* id. This comparison was accepted by Zyhlarz (1931: 137 and 1934: 104, 106), assuming a regular correspondence between Be **r* & Eg *ḏ*. Rejecting this comparison just for the incompatibility of these consonants in Berber vs. Egyptian, Vycichl (1983: 124) also mentions that *-w* represents an integral part of the root of the Berber numeral, while it serves only as a masculine marker in Egyptian. Rössler (1966: 227) modified the comparison, postulating a primary form **m3ḏ.w* for Egyptian and **m-r-ʔ-w* for Berber. The loss of medial *ʃ* is not unusual in Egyptian. So Edel 1955-64: 58 quotes e.g. *zb* vs. 'standard' *z3b* "jackal". Rössler assumed a regular corre-

spondence between Eg *ǧ* and unattested Be *ʔ, which has to reflect AA *ʃ. But AA *ʃ has been preserved in Egyptian (Ember 1930: 32–33; Cohen 1947: 85–90). There are really a couple of examples which should demonstrate the regularity of the correspondence between Eg *ǧ* and Se *ʃ: *sǧm* // **s-m-ʃ* “to hear”, *ndǧm* // **n-ʃ-m* “sweet”, *ndʃs* “to be small” // **n-ʃ-ʃ* “to be weak” (Albright 1918: 92, fn. 4; Ember 1930: 111–12), although they are not unambiguous. Perhaps an easier solution could consist in the modification of the Berber reconstruction in **marāgw* giving **marāw(w)* in most of languages, and **marāg(g)* in Zenaga and Guanche of Tenerife. It is generally accepted that Eg *g* before **u* has been palatalized in *ǧ*. Let us mention that the vacillation *w ~ g* has been usually interpreted as a result of development of the original **ww* (Prasse 1972: 64–65).

So far there has probably been no attempt to find the etymology within Berber. Analyzing the Berber numerals 3–10, Prasse (1974: 406) formulated a tempting hypothesis that they can be interpreted as the 3rd person of perfect of the conjugation IV (verbs of permanent quality with the same vocalic patterns **ǎ-ǎ*, **ǎ-ī*, **ǎ-ū* as the numerals 3–10 and with zero ending in masculine and **-at* in feminine). If we accept this ‘verbal’ hypothesis, in the form **marāw* “10” the reflexive prefix **m-* may be identified (cf. Prasse 1973: 61). This identification leads to the root √(*H*)-*r-w*, which can be found in Zayan *uŭu*, pl. *uŭawen* “content of two joined hands” (Loubignac 1924: 422).

Not regarding the preceding etymology and with respect to the problematic cognate in Egyptian, the question of external origin should also be admitted. There are suggestive Nilo-Saharan parallels: pNubian **muri* “10” > Hill Nubian **bure* // Taman *mar-tɔk* “10” = “10 x 1” // Bari (East Nilotic) *mere geŋeŋ* “10” = “10 x 1” // Tubu (Saharan) *múro* “10” etc. (Blažek 1997: 167) etymologizable within Nilo-Saharan, cf. Nilotic **mɔr* “finger” (Dimmendaal) > South Nilotic **mɔrɪn* id., East Nilotic: Bari pl. *mɔrɪn* or West Nilotic: Jumjum *mɔreen* “all” (Bender).

11. Stumme 1899: 34 opined that Šlh of Tazerwalt *měráwin* “20” represents a relic of an old dual from *měráw* “10”. Diakonoff 1988: 64 analyzed the ending *-in* < **-ay-* & **-n*, hence the marker of dual in oblique cases plus nunnation. The same principle is also used in Semitic (**ʃáʃar-ā* “20” = dual of **ʃáʃar-u(m)* “10”) and in Egyptian (**ǧwty* “20” < **ǧawāt-ay* < **mūǧawāt-ay* = dual f. of **mūǧaw* “10”).

Zenaga *tešinde* (RB) = *tašəndəh* (Nicolas) “20” is derived from the numeral “2” probably by the same augmentative prefix forming the numerals “8”, “9”. In the suffix *-eləh* the original dual **-ay* can be recognized.

12. Zenaga (RB) *tukarǧa* “30” is probably also formed by the same augmentative confixes **tV- ...-āh* as “8”, “9”; hence “30” = “super-three” ?

13. Klingenheben 1926–27: 42–43 assumed an Arabic origin for the common Berber numeral “100”, which is reconstructed as **tē-mihḍay*, pl. **tī-muhād* by Prasse 1974: 406. But there are more apparent borrowings of the Arabic *miʔa(t)* “100” in Berber: Ghadames *mia*, Šlh of Tazerwalt *miá & mīt* etc. This indicates that Arabic *miʔa(t)* “100”, as the source of the form **tē-mihḍay* / **tī-muhād*, need not be unambiguous. Besides the Arabic form, Ph *mʔt*, Ug sg./pl. *mít/mát* = **miʔt-/ *miʔāt-* (Segert 1984: 191) and Sabaic *mʔt* should also be taken into account (in this case we must assume the development **-ʔt- > *-t > -ḍ-).*

An alternative Semitic source can be seen in Se **maʔād-* “many, plenty” > Ak *mādu*, Ug *mād*, He *məʔōd* etc. (Klein 1987: 308).

Semantically fully legitimate is also the comparison with the numeral “10”. So Eg **mūd-* “10” agrees phonetically, because both Be **ḍ* and Eg *ḍ* can be derived from AA **ḥ* or **ĉ*. Similarly some East Chadic forms for “10” can be related: Sumrai *mwāj* (Jungraithmayr & Ibrizimow 1994/II: 321) = *moj* (Nachtigal) = *moid* (Adolf Friedrich) = *moet* (Decorse), Gabri, Dormo *moid*, Tchiri *mōdo* “10” (Lukas 1937: 74, 87). It is tempting to interpret the Berber numeral “100” as an augmentative of an unattested form for “10”, corresponding to Egyptian and East Chadic counterparts, hence “100” = “super-ten”.

Let us add that the Berber numeral “100” was borrowed into Fula in the forms *teemedere* ~ *teemerre*, pl. *teemedḍe* ~ *teemedde* “100” (Koval’ & Zubko 1986: 118).

14. Hanoteau 1860: 260 quoted isolated Mzab (“Beni-Mozab”) *twīnest*, pl. *twīnas* “100”. Klingenheben (1926–27: 43, fn. 1) sees in it the primary Berber denotation of this numeral. Etymologically it could be connected with the word “ring, circle”, known e.g. from Ayr *tawəynəst*, Ahg *tāwīnəst*, pl. *tiwīnās* < **tā-wīynist* / **tī-wuynās* or **tā-wīhnist* / **tī-wīhnās* (Prasse 1974: 53, 133). The semantic motivation can be the same as in Eg **š(n)t*, Coptic ^{sb}ϣϥ, ϣϣ “100”, derived probably from *šnj* “to be round” (Wb IV: 489; Loprieno 1986: 1309). In the system of figures described for Ghadames the sign ‘circle’ means “ten” (Hanoteau 1860: 267–68; Vycichl 1952: 81–82; Lanfry 1973: 275). In Tifinagh and its predecessor Libyan script, the ‘circle’ designates *r*, perhaps a modification of North Arabian (Ṭamudic or Liḥyan) ‘semicircle’ designating also *r*. The meaning “10” of the ‘circle’ is probably borrowed from some South Arabian source, where the ‘circle’ designates both *f* (‘circle’ = “eye” = Se **fayn-*) and “10” = *f_{s,r}* (Vycichl 1952: 83). The sign for *m* is also used for the numeral *mʔt* “100” in Epigraphic South Arabian. In the New Ṭamudic script from North Arabia, one of the signes for *m* is represented by two concentric circles (Jensen 1969: 329). The borrowing could have been realized either thanks to commercial contacts or after the invasion of various Arabian (not only Arabic !) tribes in North Africa in the second half of the 7th cent. (Ghadames, i.e. classical Cydamus, was conquered in 667 AD). In the present Ghadames system of figures the sign *b* “100” is used, probably representing

the modern Arabic letter *ʔ* (could it reflect the anlaut of one of the forms: Ahg etc. *temede* or Mzab *twinst* “100” ?).

15. SBe **ā-gihīm*, pl. **ī-gihmān* “1000” (Prasse 1974: 407) has no safe etymology within Berber, perhaps with the exception the comparison with Ghd *egm* “to grow” (Lanfry 1973: 112).

There are also at least hypothetical parallels outside Berber: WCh **(n-)gʷam-* “to fill, be full” > Montol *gum*; Bolewa *gom* etc. (Stolbova 1987: 217–18) or **gam* “to finish, complete” > Hausa *gámá*; Sura *gam*; Saya *gəmə* etc. (Stolbova 1987: 218) and Se: Ar *ǧamm* “plenty, abundance; numerous” besides *ǧamaʔa* “to gather, assemble”, *ǧimāʔ* “whole, entire, all; sum, total, the whole, plenty” etc. (Steingass 1988: 243–45). The semantic motivation can be illustrated by ECu **kum-* “1000” > Somali *kun*, pl. *kuman*, Oromo *kuma*, Sidamo *kume* etc. (Sasse 1982: 120), maybe a borrowing from Omotic, cf. Wolaita *kum-* “to be full, fill” (Cerulli).

§4. Conclusion

1) The most archaic Berber numerals are “1” and “2” with convincing cognates in Egyptian and Semitic (AA roots **w-ʕ-y* and **čn(y)-* resp.).

2) The numerals “3” and “4” are etymologizable on the Berber level (“3” < “scratch[-finger]”, “4” < “handful of”), although there are more or less hopeful Chadic parallels.

3) The different Guanche **ami(r/l)at* “3” is perhaps related to Eg **hamt-*, and maybe also to Beja *maháy*, if it is derivable from **hamáy*.

4) The Berber numerals 5–9 resemble suspiciously their Semitic counterparts. At present, at least for the numerals “5”, “8” and “9” there are independent Berber etymologies possible. The situation can be demonstrated as follows:

	Semitic	etymology	Berber	etymology
5	<i>*hamiš-</i>	?	<i>*sammīs</i>	? <i>*yis-hammās</i> [<i>ən-ʔfahāsən</i>] “to the half [of hands]”
6	<i>*šidš-</i> or <i>*šidʔ-</i>	<i>*šid-šid-</i> “3 + 3” or <i>*šid-ʔin-</i> “3 x 2”	<i>*saddīs</i>	?
7	<i>*sabʕ-</i>	“index (finger)”	<i>*sāh</i>	?
8	<i>*ʔamānay-</i>	<i>*ʔāniy-mā-</i> “2nd not” or <i>*ʔāniy-min-</i> “2nd from”	<i>*iām</i>	<i>*iā-Ham-(āh)</i> “super-three” = “three above”
9	<i>*tišʕ-</i>	<i>*ʔaštiy-</i> <i>*ʔašti/u-</i> [<i>*ʔašar-</i>] “one from [ten]”	<i>*iūzāh</i>	<i>*iā-kūz-āh</i> “super-four” = “four above”

If the proposed etymologies are correct, the Semitic numerals “8” and “9” represent the subtractive pattern of formation, while in the Berber counterparts the quinary structure is recognizable. The traces of the quinary system also appear in Guanche (Tenerife) *acot* “9” = “[5] + 4” and in some modern languages (see Table 4) as an innovation copying perhaps the old pattern. It

seems that in the history of the Berber numerals 5–9, a contamination of native forms with the quinary structure and Semitic borrowings (probably preceding the Arabic influence) has taken place. A more precise determination of the Semitic source is difficult. The phonetic features ($*\underline{\ell} > \underline{\ell}$) and the historical circumstances indicate two candidates: Ugaritic and pre-Arabic languages of the Arabian peninsula, on the other hand Phoenician / Punic is excluded ($*\underline{\ell} > \text{š}$). The process of borrowing (or better accommodation) of Semitic numerals into Berber could be connected with the borrowing of script and figures.

Still more complicated is the situation of the Guanche numerals 5–8, which reveal the same Semitic influence as their Berber counterparts. It is difficult to imagine that the first migrants from the continent brought already “contaminated” numerals. The typological analysis of the archeological material allows to date the first settlement of the Canary Islands already to the 3rd mill. BC (Bol’šakov 1980: 45). But there were more migration waves (Bol’šakov 1980: 50). So Militarev 1988: 101–07 tried to demonstrate the presence of the speakers of Tamahaq (Tahaggart etc.) on the Canary Islands, putting it between the 7th and 10th cent. AD, hence to the time, when the contamination of the Berber and Semitic numerals was certainly started. The forms *arba* “4” and *cansa* “5” (Tenerife ?) represent late Arabic borrowings.

5. For the numeral “10” there are (i) an internal Berber etymology, (ii) an Egyptian parallel, (iii) Nilo-Saharan parallels. The case (ii) seems to be least convincing, esp. for the phonetic incompatibility.

6. The numeral “100” can be of Semitic origin; alternatively it is compatible with the numeral “10” in Egyptian and some East Chadic languages. The isolated Mزاب *twinešt* “100” = “circle”.

7. In spite of some possible parallels within Berber and other Afroasiatic branches the origin of the numeral “1000” remains obscure.

8. Besides the AA archaisms “1” and “2”, there are hypothetical isoglosses connecting the Berber & Chadic numerals “3”, “4”, “5” and perhaps “100”/“10”, and/or Berber & Nilo-Saharan numerals “4”, “10”. Regardless of the other possible interpretations, they can represent early contacts perhaps in the Saharan-savannah borderland somewhere in northern Sudan.

Abbreviations

AA Afroasiatic, Ahg Tahaggart, Ak Akkadian, Ar Arabic, As Assyrian, Be Berber, Ch Chadic, Cu Cushitic, E East, Eg Egyptian, Ghd Ghadames, H Highland, He Hebrew, Kbl Kabyle, N North, O Old, p proto-, Ph Phoenician, S South, Se Semitic, Šlh Tašelhait, Ug Ugaritic, W West.

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