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## Egyptian numerals

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# EGYPTIAN NUMERALS

§1. Basic data concerning Egyptian cardinals including the most recent attempts of their vocalization are concentrated in the Table 1:

	Egyptian (Wb.)	Coptic	Vycichl (DELC)	Loprieno 1995: 71	Schenkel 1990: 54
1 m f	wšjw (1: 273–276) wšjt	Σ ογα. AF ογε Σ ογεκε)	*wifjəw (229, 518) *wifj.i.t	*'wuffuw	*wúfšuw *wuffšúw˘t
2 m f	snwj (4: 148) sntj	Σ cnaγ Σ c̄nre B cnoy†	*siny-ū-šy (192) *s̄ni.t-šy *sinya.t-šy	*s̄i'nuwwaj	*šinéw˘j *š̄ni˘t˘i, *š̄niát˘i
3 m f	hmt(w) (3: 283) hmtt	Σ w̄om̄nt. A zamt Σ w̄om̄te. A zamte	*hamtaw (264) *hamta.t	*'hamtaw	*hámt˘w *hámt˘t
4 m f	fdw (1: 582) fdt	Σ q̄rooy. A q̄raγ Σ q̄ro(e). A q̄roe	*ifdaw (281, 518) *ifda .t	*jif'daw	*i˘'fšáw *i˘'fšát
5 m f	djw (5: 420) djt	Σ †oy Σ †e	*diwey (223, 519, 424) *diwi.t	*'di:jaw	*ʔi˘i˘'w *ʔi˘i˘'t
6 m f	sjsw (4: 200) sjst	Σ cooy. AF caγ SA coe. A cwe. Σ ca	*siśáw (200)	*'saʔsaw	*s˘'rsáw > *s˘' iśáw *s˘'rsát > *s˘'iśát
7 m f	sfhw (4: 115) sfht	Σ caγq. A caγq Σ caγqe. A caγqe	*safhaw (203) *safha.t	*'safhaw	*sáfhw˘w *sáfhw˘t
8 m f	hmnw (3: 264) hmnt	Σ w̄moyn. A zmoyn B w̄mn Σ w̄moyn(e). B w̄mn	(264)	*ħa'ma:naw ou:naw (1986: 1308)	*hamán˘w *hamán˘tt
9 m f	psdw (1: 588) psdt	SB ψtt. S ψic S ψtte & ψice	(248)	*pi'si:jaw	*pišic˘w *pišic˘t
10 m f	mdw (2: 184) mdt	SB m̄tt S m̄tte. B m̄tt†	*mōdaw (124) *mōda.t	*'mu:jaw	*mūic˘w *mūic˘t
20 m f	*dwtj (5: 552)	Σ xoywt. B xwt Σ xoyoywte	(333)	*ja'wa:taj	
30	mšb3 (2: 47)	Σ maab. B map	(108)	*mafʔVR	
40		SB zme	(299)	*hV'mew	
50		Σ ta(ε)oy. B° teb̄i	*-fy-ū (223)	*'dijjaw	
60		SB ce	*si3s̄i.t (182)	*saʔ'sew	
70		w̄qe		*saf'zew	
80		Σ z̄mene. B zamne	*hamāniya.tu (301)	*ħam'new	
90		Σ p̄taioy B p̄ict̄eoy	(248)	*pis'j ijjaw	
10 <sup>2</sup>	*š(n)t (4: 398, 497)	SB we. F w̄n	(254)	*š̄i(nju)t	

	Egyptian (Wb.)	Coptic	Vycichl (DELC)	Loprieno 1995: 71	Schenkel 1990: 54
	*š(n).tj "200"	SB ⲩⲏⲧⲧ		*šinju:taj	
10 <sup>3</sup>	ḥ3 (3: 219–20)	SB ⲩⲟ, A Ⲓⲟ, F ⲩⲁ	*ḥa3 (255)	*ḥaR	
10 <sup>4</sup>	ḏbš (5: 565–66)	S ⲧⲃⲁ, F ⲑⲁⲗ	(210)	*š v'baš	
10 <sup>5</sup>	ḥfn (3: 74)				
10 <sup>6</sup>	ḥh (3: 152–53)	S ⲒⲁⲒ "multitude"	(320)	*ḥah	

§2. Any correct comparative-etymological analysis is unthinkable without knowledge of regular phonetic correspondences. The traditional system of the most hopeful responses among consonants of (some) Afroasiatic branches or languages is compiled in the Table 2:

Afroasiatic *	Semitic *	Egyptian	Berber *	Beja	Agaw *	East Cushitic *	Dahalo
b	b	b	b/h	b / -w-	b (-f)	b	ḃ- / -b-
p	p	p	f	f	f	f	f
p?	p / b	p or f?	f			b or p?	
f?	p	f	f	f	f	f	
d	d	d	d	d (-t?)	d	d	d' / -d-
t	t	t	t	t	t	t	t
t	t	d / t	d / -ff	d	d	d	t
ḏ	d	z / d	z / d	d / -y-	ḏ	z	ḏ
ḏ'	t	s	s	s	s	s	ts?
ḏ	f	d	z / d	d	c	ḏ	f
ḏ	z	z	z	d / -y-	z	z	d
c	s	s	z or s-?	s	s	s	
ḏ	ḏ	d	z	d	c	ḏ	ḏ
ḏ	ḏ	ḏ	z	ḏ	s	ḏ	
ḏ	ḏ	d	z / d	d	c	ḏ	
s	ḏ	s	s (-ḏ)	s	s	ḏ	s
ḏ?	ḏ?	s	s (-ḏ)	s (-h)	s	ḏ	s
ḏ	ḏ	ḏ	s (-ḏ)	ḏ		ḏ	
g	g	g / d [i/u]	g	g (-k?)	g (-k)	g	g
k	k	k / t [i/u]	k	k	k (-x)	k	k
k	k	k	ɣ / -qq-	k	k / q?	k	k
ɣ	ḡ	ʕ	hɣ			ʕ	
h	h	h (> h)		h		h	
ʕ	ʕ	ʕ	H- / -y-	ʔ	ʔ- / -Ø	ʕ	ʕ
h	h	h (> h)	H- / -y-	h	ʔ- / -Ø	h	h
h	h	h	h <sub>1</sub> / h <sub>2</sub>	h	ʔ- / -Ø	h	h
ʔ	ʔ	ʕ / i / Ø	ʔ	Ø / y-?	ʔ- / -Ø	ʔ	ʔ
y	y	y / i	y / i /	y	y	y	j
w	w	w / y? / i	w / u /	w / -f-	w	w	w
m	m	m	m	m	m / ŋ	m	m
n	n	n	n	n	n	n	n
l	l	n / nr / r / ʕ / i	l	l	l- / -rC-	l	l
r	r	r / ʕ / i / [ʕ]	r	r	r	r	r

§3. An alternative interpretation of Afroasiatic (Egyptian — Semitic) comparative — historical phonology as proposed by Rössler (1971) on the basis of incompatibility, appears in Table 3:

Egyptian	ʒ	l	f	w	b	p	f	m	n	r	h	ḥ	ḥ	ḥ	z	s	š	ḳ	k	g	t	ṭ	d	ḏ
Semitic	r	ʔ	d	w	b	p	b	m	n	l	h	ḥ	ḡ	ḥ	ṣ	š	ḥ	q	k	g	t	k	ʔ	q
	l	y	d		p				l		ḥ	ḡ	ḥ	s	š	ḥ							ʔ	q
		l	z								ḥ	ḡ	ḥ	s	š	ḥ							ʔ	q
		g	d																				ʔ	q
		ḡ																					ʔ	q
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ster in 1996, Satzinger proposed his solution: m. *\*sināwai* > *\*snā'w* > CNAΥ, f. *sinātai* > *\*snātə* > CNOY†. The *i*-vowel is supported by a cuneiform transcription *ši-na* known from El-Amarna tablets (Albright; quoted after Dolgopolsky 1992: 68, #81).

It was already Brugsch who compared this numeral with its Semitic counterpart (cf. Erman 1892: 118), cf. Ak *šinān* m./ *šittān* f., Ugaritic *ṭnm* / *ṭm* [*ṭināmi* / *ṭittēmi*], Hb *šénáyim* / *šéttáyim*, Ar *itnāni* / *itnatāni* & *ṭintāni*, Sabaic *tny* / *tny* etc. (Brugnatelli 1982: 133–141). Dolgopolsky (p.c.) reconstructs pSe m. *\*ṭin-ā-ni*, acc.-gen. *\*ṭin-ay-ni* and f. *\*ṭin-at-ā-ni*, acc.-gen. *\*ṭin-at-ay-ni*, segmenting the numeral into the root *\*ṭin-*, a dual marker *\*-ā-* (nom.), *\*-ay-* (acc.-gen.), a feminine exponent *\*-at-* and a determiner *\*-ni-*, not appearing before nouns.

An evident cognate also appears in the Berber numeral “2”: Guanche (Gran Canaria ?) *smetti* [= *sinetti*], *smatta marava* “12”, (Tenerife ?) *sijn* “2”, *sinir marago* “12” (Woelfel 1954: 3, 22–23); (E) Siwa *sən* m. / *sənət* f., Sokna *sən* / *sənt*, Fodjaha *sən* / *snət*, Ghadamsi *sən* / *sənat*, (N) Kabyle *sin* / *snat*, Wargla *sin* / *sent*, Zayan *sin* / *sant* etc., (S) Tahaggart *əssin* / *sānāt*, (W) Zenaga *šinan* / *šenanet* etc. Prasse (1974: 403–04) reconstructs pBe *\*sīn* & *\*hissīn* m. vs. *\*sināt* f.

The numeral “2” reconstructible on the AA level as *\*činy-*, *\*čin-ay-*, is the only numeral attested safely in three AA branches. The attempts to find relatives in other branches are not convincing: Dolgopolsky (1973: 111) also seeks parallels in CCu (=Agaw) and SCu. But it was already Reinisch (1887: 306) who recognized an Ethio-Semitic borrowing in Bilin, Qwara & Dembea *səna* “Gleichniss, Ebenbild, Art; (gleich)wie”, cf. Geez *sənʔ(ā)* “peace; agreement, harmony; like-minded”, *sənʔəw* “equal, agreeing” etc. (Leslau 1987: 504–05). Iraqw *dangi* “twins” together with related Alagwa *irangayo* “twin”, reflect pSCu *\*ʔidaŋ-* (cf. Ehret 1980: 166), a form very probably incompatible with AA *\*čin(y)-* “2” for phonetic reasons. A much more convincing cognate to SCu “twin” appears in WCh *\*žanV* “twins” > Angas & Ankwe *žan*; Sha (Ron group) *žân* ‘suppletive pl. to *'awüllâwûl* “twin” (Stolbova 1987: 195, #465), sometimes also derived from AA *\*činy-* “2” (so e.g. Dolgopolsky 1992: 69, #81).

3. Eg *\*ḥamt-* “3” has no evident cognates among AA numerals. The comparison with Semitic *\*ṭalāṭ-* / *\*šalāṭ-* “3” proposed by Albright is rather forced (1918: 91 *ḥmt* < *\*ḥnt* < *\*šnt* < *\*šlt* < *\*θlθ* !). A comparison with Semitic *\*ḥamīš-* “5” (so Sethe 1916: 23 and Ember 1917: 88, fn. 1) is not a better solution (Loprieno 1986: 1315–16, fn. 18 reacts: “Die Äquivalenz äg. *ḥmt* “3” ≡ semitisch *ḥmš* “5” ... vermag ich weder phonologisch noch semantisch zu verstehen”).

But it was already Zyhlarz 1931: 135–36 who discovered a hopeful cognate in Guanche (Gran Canaria ?) *amelotti* “3”, *amierat-marava* “13”, (Tenerife ?) *amiet*, *amiat* “3”, *amiago* “30” (Woelfel 1954: 4–6). It is accepted

skeptically by Woelfel l.c., but positively by Rössler (1966: 228; 1971: 284) and Schenkel (1990: 56). In the case of semantic identity the validity of the etymology depends only on phonetic correspondences. Concerning Berber(-Guanche) correspondences to Egyptian \**ḥ*, there is not common opinion. The best substantiated is the correspondence to Berber \**ɣ* proposed by Zyhlarz 1934: 113; cf. Eg *ḥr* “bei, von, zu” (Wb. 3: 315–16) and Berber: (S) Tahaggart *ɣur* “chez”, (N) Kabyle (Mangellat) *ɣur* “chez”, *ɣer* “vers” (Dallet), Tamazight (Ayt Ndhir) *ɣər*, (before pronoun) *ɣur* “to, toward” (Penchoen), (E) Ghadames *ēūr* “chez” (Lanfry) etc. (Edel 1955/64: 2; Prasse 1972: 229). Another correspondent can be Berber \**ḥ* (sometimes an allophone to \**ɣ*), cf. Tuareg *éḥēlbes* “papillon” vs. Eg (nK) *ḥnms* and (med, xviii) *ḥnws* “moustique” (Wb. 3: 295, 290; DELC 260–61). Militarev (1991: 167–68) demonstrated that Berber \**ɣ* / \**ḥ* corresponds to Guanche *j* [*x*], *x*, *ch*, *h*, *g* (probably only orthographic variants of the same sound) and also  $\emptyset$ . It means that the initial correspondence can be regular. The second question is the correspondence of the third radicals. There are two possibilities: (i) The most conservative are the forms *amiat*, *amiet* (Tenerife), corresponding one-to-one with Eg \**ḥamt-*. The final *-at*, *-et* in Guanche probably represents a marker of feminines or abstract nouns. On the other hand, Eg *-t-* looks as a part of the triradical root. The only possibility is also to assume a frozen marker of abstract nouns in this *-t-*, hence \**ḥamt-* < \**ḥám[ya]t-* “Dreiheit”, where the second syllable would be reduced under the influence of gender markers \**-aw* / \**-at*. (ii) If the forms from Gran Canaria preserving a liquid are more archaic, the Guanche-Egyptian isogloss is not so unambiguous. The liquid \**-l-* or \**-r-* has no counterpart in Egyptian. The *-n-* in Sahidic  $\text{ϩOMNT}$  is ‘parasitic’. It appears automatically in more Sahidic words before  $\text{T}$ , frequently between  $\text{M}$  and  $\text{T}$  (Vycichl 1990: 223–25). Let us add that later Zyhlarz (1950: 407) changed his sagacious etymology, reconstructing the Guanche numeral “3” as \**amelḥqd* “der anderer Zeiger” = “Mittelfinger”, cf. the Berber verb “zeigen”, e.g. Tahaggart *amel* “indiquer”, Kabyle *məl* “montrer” (Cohen 1947: # 9).

Meinhof 1912: 233 and Zyhlarz 1931: 136 also compared the Eg numeral “3” also with its Beja (North Cushitic) counterpart, varying in dialects: Halenga *maháy*, Arteiga *mḥáy*, Bisharin *emhay* (Hudson). It implies a syllable metathesis \**hamáy* > *maháy*, perhaps caused by alliteration with the preceding numeral *mhaloo-* “2” (Hudson). This cognate is also possible, although not safe.

4. The numeral “4” has been reconstructed with initial alif on the basis of the abstract noun *ifd.t* “Vierheit”, Middle Babylonian cuneiform transcription *ip-ṭa’-u* (Kammerzell 1994: 169 tries to demonstrate that a reading *pí* or *pé* is also possible) and CoA  $\text{-aḳṭE}$  in  $\text{MNT-aḳṭE}$  “14” and CoS  $\text{-aḳṭE}$  in  $\text{XOYT-aḳṭE}$  “24”. Vycichl (1940: 83) mentions the Coptic feminine form  $\text{ϩTOE}$ , deriving it from \**fḍ wẉ.t* and further \**fḍ3ẉ.t* < \**fdo3wet*, similarly as ME “lieben” < \**me3jet* < \**mirjet* (\**mirya.t* in DELC 106 ) or  $\text{ṖTE}$

“Tempel” < \*r3-pe3jew < \*-pirjew (\*ra3 pirya.t in DELC 176). If one accepts the preceding thoughts, could the numeral be reconstructed as \*fida3wa.t or \*ifda3wa.t < \*fidarwa.t or \*ifdarwa.t ?

Convincing cognates appear in the North and East branches of Cushitic languages, almost in all languages of the Omotic family (with the exception of Gatsama recorded by Conti Rossini, Yemsa, Dizoid and Mao groups) and Chadic family (here with the only exception of the South Bauchi group).

Beja *faDig* (Hudson; *D* is retroflexive), *fádig* (Roper, Almkvist), *fađig* (Reinisch) “4”, *fádiga* “4th” can reflect older \*fa[rd/đ]ig(a), cf. old records compiled by Almkvist 1885: v) *fađdeg* (Kremer), *faridik* (Krockow), *ferdik* (Lucas) vs. Beni Amer *farig* (Reinisch). Beja *fūda* & *fūrda* “Molo, Ankerplatz” borrowed from Arabic *furda(t)* “anchorage, sea-port” (Reinisch 1895: 82) can demonstrate that the development \*-rd > \*-đ is possible. Zyhlarz (1933: 167) recognized the plural (and dual) ending -ga (Roper 1928: 183) in final -g(a). Probably also -d(i)- does not belong to the root. It could be a numerative derived from *da* “thing” (Reinisch) or related to *d(ə)ʔi* “alone” (Roper). Other possibilities are discussed below.

With the exception of Highland East Cushitic, Dullay and Yaaku groups, related forms are attested in all East Cushitic languages (cf. Zaborski 1987 with bibliographical data): Afar *ferey*, gen. *affara* (Parker & Hayward), Saho *áfar* (Plazikowsky-Brauner); Somali: Digil *áfar*, Benadir, Darod *affár* (Moreno), Af-Garre *afar*, *afur* (Lamberti), Jiddu *afár* (Banti), Boni *áfar* (Heine), Rendille *áffar* (Galboran & Pillinger), Bayso *áfar* (Hayward); Konso *afur-[i]*, ord. *arf-atta*, D’irayta *afúr*, pl. *árf-a*, ord. *arf-tyyá* (Black), Mussiye *afurii* (Tanaba-Wedekind), Oromo: Borana *afuri*, ord. *abranu*, Maca *afur*, ord. *árfanu*, *arffe* (Leus); Arbore *ʔafúr* (Hayward), Elmolo *áfur* (Heine), Dasenech *ʔaffur* (Sasse). The difference in vowels between \*ʔaf(f)ar- vs. \*ʔaf(f)ur- resembles that of patterns of broken plurals known in Saho, e.g. *arah* “road”, pl. *áruh* (Welmers) and Afar *dánan* “donkey”, pl. *dánun* (Colizza), see Zaborski 1986: 45. The suffix -ey in Afar (-oy and -ay too) probably represents a collective, frequently followed by a singulative -tu or -ta (cf. *fereyta* “a game with four players”) — see Zaborski 1973–74: 27. On the other hand, Afar nom. *ferey* vs. gen. *affara* (*fire* vs. *affa’ra* after Bliese) allows to isolate a preformative \*ʔa- with a primarily adjectival and abstract function, known not only from the Cushitic (e.g. Rendille *abur* “big”), but also from the Semitic and Chadic languages (Zaborski 1974: 81–87). The preceding analysis indicates the primary root \*far-.

The Omotic numerals were studied by Zaborski 1983. The following overview is based on the most recent records:

Aroid: Aari *ʔoidt* (Hayward), Ubamer, Galila *oyddi*, Hamar-Banna *oydi*, Dime *uddu* (Fleming);

Gonga: Shinasha *áwddá* (Rottland), Wembara *ʔáwddà* (Alga & Wedekind), Mocha *awúddo* (Leslau), Anfillo *auddo* (Grottanelli), Kafa *awude*, *awudo* (Habte);

Gimira: Benchnon *od* (Breeze), She *od* (Conti Rossini), “Gimira” *ottu* (Toselli);

Chara: *obdá* (Aklilu Yilma), cf. *our̄tōntsā* “40” (Cerulli);

Ometo (proper): (W) Basketo, Doko *oyddi* (Fleming); (S) Male *ʔoi'do* (Siebert); (C) Wolayta *oydda*, Gofa, Gamo, Dorze, Kullo *ʔoydda* (Alemayehu), Dorze *oyDa*, Malo *oydda*, Oyda *oyddi* (Fleming), Zala *oidda* (Moreno); (E) Zayse *ʔoydd* (Hayward) = *ʔoit*, Zergulla *hoid*, Ganjule *ʔood*, Gatsama *ʔoidu*, Koyra *ʔoddε* (Siebert-Hoeft), Mezo *woydi* (Chiomio) etc.

On Proto-Omotoc level an archetype *\*ʔaʔurd-* or sim. could be expected.

The three branches (W, C, E) of the vast Chadic family can be classified into 27 groups. With the exception of South Bauchi there are related forms of the numeral “4” in all groups. The forms without any source are quoted after Jungraithmayr & Ibrizimow 1994, II: 152–53.

Western Chadic *\*firadu* (Stolbova 1987: 160, # 136)

1) Hausa: Hausa *húdú* / *fúdú*, Gwandara *puru*, *furu*, *huru* (Matsuhita);

2) Angas -Ankwe *\*fir* (Stolbova) > Sura, Chip *fěér*, Goemai (=Ankwe) *fʔeer*, Tal, Montol *fěi*, Yiwom (= Gerka) *prɔʔ*; cf. Angas *fir* (Foulkes);

3) Ron: Fyer *pítú*, Daffo *púʔ*, Kulere *fiúú*, Sha *fúđ*, ? Bokkos *ǵárás*;

4) Bole *\*fiardu* (Stolbova) > Dera *páráu*, Karekare *fedu*, cf. Bolewa *pórdo* (Koelle) = *fóđđó* Bele *fóđđó*, Ngamo *hòđò*, Kirfi *fáđáu*, Gera, Geruma *fúđú*, Galambu *páryá* (all Schuh), Tangale Biliri *fáđəu*, Pero *pedéyù* (Kraft), Maha *pađu* (Newman) etc.;

5) North Bauchi *\*(bi-)fUđV* (Stolbova) > Warji *fǵđi*, Tsagu, Mburku *fǵđə*, Kariya, Miya *fúđù*, Pa'a *fáđù*, Jimbin *fíđt*, Diri *fíđtt*, Siri *búfǵđi* (Skinner);

[6] South Bauchi: Geji *wupsí*, Buli *wústu*, Jimi *ishwo* etc.; these forms are probably unrelated;]

7) Bade-Ngizim: Ngizim *fúđú*, cf. Bade *fəđu* (Kraft), Duwai *fudu* (Koelle);

Central Chadic:

8) Tera: Tera *vat* (Newman), Pidlimdi *vəđi*, Gabin *fwəđə*, Hwona *fađá* (Kraft);

9) Bura-Margi: Margi *fòđù*, Chibak *fǵđuu*, cf. Bura *fwař*, Kilba *fòđù*, Hildi *fwəđù* etc. (Kraft);

10) Higi: Higi *fwäre*, Higi Ghye *fwad*, Fali Kiria *fwadù*' (Kraft), Bana *fáđə*, Kapsiki *ùfáđ* (Wente-Lukas) etc.;

11) Bata: Bata *fwəť*, Nzangi *fwat* (Mouchet), Bachama *fwat'* (Carnochan), Mwulyen *fwad*, Gudu *fwád*, Fali Mucela *fwəđ*, Gude *'únfwad*, Fali Jilbu *fwəy* (Kraft);

12) Lamang: Hidkala *úfáđá*, Alataghwa *úfada*, Vizik, Turu *ufat*, Lamang *úfáđò* (Wolff) = *fəwad*, Hide *məfad* (Colombel);

13) Mandara: Wandala *úfáđé*, Glavda *úfáđ*, Guduf (*w*)*úfáđ*, Dghwede (= Truade) *fíđl*, Ngwashi *úfáđù*, cf. also Paduko *wəfad* (Colombel), Nakatsa *wəfadá* (Kraft);

14) Sukur: Sukur *fwát*;



15) Matakam \**ma-fad* (Rossing 1978: 346, #289): Mafa *fad*, Mofu *ɲɪfàd*, Muktele *ùfàd*, cf. also Mada *wəfad*, Hurzo *fəwɔdəw* (Colombel), Gisiga *mùfàd* (Lukas), Muturua *mufát* (Strumpell), Baldarnu *mòovúnll* (Seignobos & Tourneux); the same prefix forms also the numeral \**ma-kar*, see Rossing 1978: 346, #739);

16) Daba: Daba *fɔɔd*, Musgoy *fwɔd*, Kola *fʷɔd*, cf. also Hina *fa* (Strumpell);

17) Gidar: Gidar *pódo* (Mouchet);

18) Kotoko \**ɣadi* < \**kV-fadi* (?): Yedina (= Buduma) *hááyay*, cf. also Logone *gádé*, Shoe *gade*, Gulfei *gaandé*, Kuseri *káade* (Lukas), Affade *wagaade*, Ngala *kaadi*, Makeri *gaade* (Barth);

19) Muzgu: Muzgu *poodu* (Barth), *poru* (Decorse), *puddu* (Overwegg), *fuudi* (Röder), Mulwi, Mbara *púɖɖú* (Tourneux);

20) Masa: Masa *fidí*, Banana, Misme (Zime) *fidi*, Lame *fúɖiʔi*, Lame (Peve) *fúɖii* (Kraft), Dari *fudi* (Lukas);

East Chadic:

21) Kera: Kera *waadé*, Kwang (= Modgel) *wúɖaay*;

22) Lai: Lele *pooriɲ*, Kabalai *pəɲj*, cf. also Nancere *pori*, Gabri, Dormo *porin* (Adolf Friedrich), Darbe *pudi* (Bruehl), Chire *pórbu* (Barth);

23) Sumray: Sumray *wáɬdəə*, Ndam *wèetii*, Tumak *wəri*, cf. Sumray *woyti*, Ndam *wayti* (Barth), Gulei *uori* (Alfred Friedrich), Miltu *wedi*, Sarwa *we* (Decorse);

24) Sokoro: Sokoro *pááda* (Nachtigal) = *faada* (Barth), cf. Barein *fudu* (Lukas);

25) Dangla: Dangla *pòòt*, *pòòɖ*, Migama *póóɖí*, cf. also Bidiya *paadaj* (Alio);

26) Mokilko: Mokilko *pidé*;

27) Mubi: Mubi *fáɖà*, Birgit *fòòɖí*, Jegu *food*;

Newman 1977: 26, #54 reconstructs pCh \**fʷadə*. The approach of Stolbova to the reconstruction is probably more fruitful. She explains the irregularity in WCh \*-ɖ- vs. Angas-Ankwe \*-r- instead of the expected \*-t- (Stolbova 1987: 70–71) as a result of the cluster \**-r(V)d-*. This idea should be generalized for all the Chadic family. Her WCh reconstruction \**firadu* (p. 160, #136) can be inspirational for proto-Chadic reconstruction. The modifications like \**faridu* (> \**firdu* > \**fidu* > \**fudu* or sim.) or \**farudi* (> \**fuardi* > \**fwadi* or sim.) perhaps agree better with the concrete forms. The same suffix \*-di probably also forms the numeral “3” in some groups, e.g. North Bauchi \**kundi* > Jimbin *kéndí*, Siri *bukudde*; Masa: Zime-Batna *híndziʔí*, Masa *hidi*; Mandara: Glavda *xkərda* (-r- < \*-n-) etc. (Jungraitmayr-Ibriszimow 1994, I: 168 and II: 326–27). This \*-d[i] can be hypothetically connected with Kotoko \**di* “thing” > Yedina, Logone, Affade *di*, Ngala *ndi*, cf. Affade (Lebeuf) *dipal* “the first” vs. *pal* “one” (Sölken 1967: 77). If we accept the preceding analysis, the root \**far[i]-* or \**far[u]-* can be determined in the Chadic numeral “4”.

After partial reconstructions in individual families a projection on the proto-Afroasiatic level should follow. The forms reconstructed above are compatible assuming the following hypothetical scenarios in internal reconstructions:

pEg \*fida[r]wa.t < \*faridwa.t ?

pBeja \*fa [rd]ig < \*fari-da-g(a) ?

pEast Cushitic \*far- & derivative \*ʔaffar-, pl. \*ʔaffur- ?

pOmotiic \*ʔa[β]urd- ?

pChadic \*fari-du or \*faru-di ?

It is evident that the numeral “4” consists of the root \*far- plus *d*-extension (with the exception of ECu), eventually with \*ʔa- (\*ʔi- ?) prefix (ECu, Om, ? Eg). The most hopeful etymology seems to start from AA \*far- “finger” attested in East Cushitic, Omotic (?) and Chadic (Blažek 1990: 29; Kammerzell 1994: 174). Black 1974: 117 reconstructs LECu \*fer- “finger” on the basis of Afar *feera*, pl. *feeraari* (Parker & Hayward), Saho *fera* (Reinisch), Somali, Boni *far* (Heine), Rendille *fār*, pl. *farró* (Galboran & Pilgrim), Bayso *fer*, Arbore *farró* (Hayward), Elmolo *fārr* (Heine). Bilin *gʷənda-filléra* “thumb” = “thick finger” (*gʷənd-* “be thick” — see Reinisch 1887: 154) seems to be the cognate in Central Cushitic (= Agaw). In Omotic, Koyra *partaa* and Chara *hartsaa* “finger” (Cerulli) are probably related. The position of the counterparts with the initial voiced labial (Wolayta *biraḍdiya*, Kullo *birradé* id.) is not clear. On the other hand, the Chadic parallels are more convincing: (W) Hausa *fārcèè*, pl. *fāràutaa* “fingernail”, (Sokoto) “finger”, Gwandara *apiraçi*; Kofyar pl. *furapsár*; (E) Dangla *péérmé*, Mubi *fèerí* “finger”, Jegu *fillo* “fingernail”, Migama *pùrrùn* id., etc. (Jungraithmayr & Ibrizimow 1994, II: 136, 247). A possible cognate appears perhaps also in Berber, cf. Izayan *if̣ḍen*, pl. *ifẹḍnan* (Loubignac), Iznacen, Rif *tafḍənt* (Renisio), Ghadames *tafaḍənt* (Lanfry) “toe”. The Be \*-d- (but why Ghadames -d- ?) reflects probably not only AA \*-t-, but also \*-rd-, cf. (E) Siwa *if̣*, Augila *awd*, Fodjaha *ayāḍ*, Ghadames *īḥed*; (S) Tahaggart *ehōḍ*, Ayr *ehāḍ*, Ghat *ihōḍ*; (W) Zenaga *īḍ*; (N) Semlali *īḍ*, pl. *aḍán*, Iznacen *ēḍ*, Gurara *īḍ* etc. “night” (collected by A. Militarev) vs. Chadic: (W) Sura, Angas *par*, Karekare *béèḍí*, Dera *bóḥi*; Kulere *má-fōḍ*; Guruntum *vùru*; Ngizim *di-viḍ*; (C) Tera *viḍ-ki*; Bura-Pela *viri*; Gude *vida*; Lamang *viḍí*; Guduf *viḍe*; Sukur *vət*; Mafa *vád*; Daba *vūdū*; Gidar *dáḥḍa*; Kotoko: Logone *vádè*; (E) Sokoro *báḍùm* id. (Jungraithmayr & Ibrizimow 1994, I: 128–29; II: 256–57). Newman 1977: 29, #92 has reconstructed pCh \*bāḍi; a better solution is perhaps presented by Stolbova (1987: 154, #91), reconstructing pWCh \*bardi (cf. also Fali Gili of Higi group (CCh) *wāḥi* recorded by Kraft).

Besides the possibility described above concerning the dental component of the numeral “4”, i.e. a numerative originally perhaps meaning “thing”, there are other no less tempting solutions: (i) a compound \*far[ū?]-yad... “fingers of a hand (i.e. without thumb)”; (ii) a compound “finger-span”, where the second component can be related to Ak *ūtu(m)*, in As 1x *ītu(m)* “Spanne, Halbelle” (AHw 1447). Eg *d* corresponds to Se *ṭ* regularly; in Beja an alternative proto-

form *\*farḡig* is also possible, similarly in Chadic the reconstruction can be modified in *\*fariḡu* or sim. The weakest aspect of this etymology is an uncertainty about the original initial consonant of the Akkadian word. Vycichl (1985: 173) collected the following ‘candidates’, giving regularly a zero-reflex in Akkadian: *ʔ, ʃ, h, ḥ, ḡ, y* and *w*. Only the ‘glides’ *ʔ, y & w* satisfy; the laryngeals and pharyngeals would be preserved in Egyptian.

In his brilliant study devoted to the Egyptian numeral “4”, F. Kammerzell presents important data supporting the ‘finger’-etymology. He mentions the similarity of the numeral “4” and the verb *fd* “herausreissen, auslösen” in Egyptian (1994: 173); cf. also Angas (WCh) *fīir* “to scrape with fingers” vs. *fīir* “4” (Foulkes 1915: 177). It is evident that just the “finger” represents the semantic bridge connecting the meanings “4” and “scrape, scratch”.

There are also attempts to connect the Semitic and Berber numerals “4” with the Egyptian, Cushitic, Omotic and Chadic counterparts. The Semitic numeral “4” reconstructed by Dolgopolsky (p.c.) *\*ʔarbaʃ-u(m)* f. and *\*ʔarbaʃ-át-u(m)* m. agrees with the Eg-Cu-Om-Ch isogloss “4” only in the consonant *r*. Dolgopolsky (1973: 231–32; 1983: 125) assumes a metathesis in Semitic comparable with the Oromoid cardinal *\*afur-* vs. ordinal *\*arf-*. But he is not able to explain the difference *f : b* between East Cushitic and Semitic. F. Kammerzell 1994: 180 reconstructs pre-Eg *\*fiṯṯá-* (in agreement with the Rössler’s reinterpretation of Egyptian consonantism) < *\*firtá-* < *\*firdá-* and compares it with Se *\*ʔ-r-b-ʃ*, assuming a metathesis *\*(ʔ-)b-r-ʃ* “4” (1994: 180). In the initial syllable *\*ʔa-*, a preformative can be identified, cf. the ordinals *\*rabuʃ-* (Akkadian), *\*rabiʃ-* (Hebrew-Aramaic), *\*rābiʃ-* (Arabic, Geez) (Gray 1934: 71). The idea of Kammerzell identifying the hypothetical cluster *\*-rd-* in Eg & Ch with the segment *-r-ʃ-* or *-ʃ-r-* in Semitic, was formulated already by Stolbova (1987: 96–97). The same process is described in the ECU language D’irayta, where the cluster *\*-rʃ-* changes regularly in *-rḏ-*, cf. *kárd* “belly” vs. Bussa *karʔ-a*, Gawwata *karʃ-étto*, Arbore *geréʔ* < LECu *\*garʃ-* (Black 1974: 207). In spite of the attractiveness of this solution, the difference *f : b* remains unexplained. Zyhlarz 1931: 136 rejects the comparison of the numeral “4” in Egyptian and Semitic, because the Se root *r-b-ʃ* implies Eg *\*\*rḡḡ*. This idea is based on an (irregular) correspondence between Eg *sḡḡ* and Se *\*sabʃ-u(m)* f. “7”. Let us add that the hypothetical pre-metathesized form without the preformative *\*ʔa-*, namely *\*b-r-ʃ*, remarkably agrees with Oromo of Wellega *barʔuu* “palm of hand” (Gragg) and eventually with the Omotic words denoting finger quoted above (*\*birad-* < *\*birʃ-* as in D’irayta ?). Stolbova 1987: 68 proposes a different etymology, comparing the Semitic numeral “4” with WCh *\*rabu* “2” > Hausa *rābl* “half”; Tangale *rap* “2”; Diri *rābúú*; Wangday *rwāp*, etc.; cf. Tera (CCh) *rap* “2” (Jungraitmayr & Ibrizimow 1994, II: 332; but they seek an origin in Jarawan Bantu, cf. I: 171). Finally, there is a possibility of an internal Semitic etymology based on the verb attested in Geez *rab(a)ba* “to stretch (out), extend, spread out”, Ar *rabba* “to arrange” (Leslau 1987: 460–61) and the hypothetical root *\*f..*, known from Eg

ʕ “arm, hand”, ʕ.t “member (of body)” (Wb. I: 156, 160). Lacau 1970: 17 finds its Semitic cognate in the preposition “with” attested in Ar *maʕa*, He, Aramaic *ʕim*, Syrian *ʕam*, Sabaic *ʕm* (Brockelmann 1908: 498), cf. Eg *mdj* “with, by” (Wb. II: 145), orig. “in hand” (DELC 145) and formally corresponding *m-ʕ* “in hand; together with, because of, from” (Wb. I: 156; Calender 1975: 19). The primary meaning of the hypothetical compound \**r-b* & \**ʕ..* could be “stretched hand” > “4”. If we accept one of these etymologies, the only conclusion is possible: the Semitic numeral “4” is not related to its counterparts in the other AA branches.

The original Berber numeral “4” is attested in all branches, cf. (E) Ghadames *aqquz*, (S) Tahaggart *ökkoʒ*, (W) Zenaga *akkuʰ*, (N) Semlal *qquz*, Baamrani *kkoʒ* etc. including Guanche (Gran Canaria) *acodetti* (collected by Militarev, p.c.; cf. also Woelfel 1954: 6). Prasse 1974: 403, 405 reconstructs pBe \**hakkūz*. It is evident that the Berber protoform \*ʔfʒ proposed by Jungraithmayr & Ibriszimow 1994, I: 73 as a cognate to Chadic and Egyptian data is not well-founded and consequently the comparison is impossible. On the other hand, there is a more hopeful cognate in Berber. Skinner 1994: 106 adds Tahaggart *əfəð* “to multiply” and *əfəð* “innumerable quantity; million” < \**hifid* (Prasse 1974: 407). The semantic dispersion is comparable with the semantic field of the Semitic root *r-b*: \**r-b-b* “to be numerous” > He *raḅ*, Ar *rabba*, Ak *rabābu* “to make big” vs. He *rebābā*, Ug *rbt*, Aramaic *ribbabtā* “10.000” (Aistleitner 1965: 286–87) & \*(ʔ-)*r-b-ʕ* “4” (if related, it represents the fourth possibility to etymologize the Semitic numeral “4”).

5. The numeral “5” (m.) has been vocalized \**dīyaw* or sim. (Edel, Osing, Schenkel, Loprieno). But Vycichl (1985: 176) mentions that the unaccented final *-aw* disappears in Coptic. He derives CoS m. ʦΟΥ & f. ʦΕ from \**diwēy* & \**diwē.t*. In the case of the abstract numeral (“pentade”) attested in Eg *dj-w.t* and CoS -TH he reconstructs \**dawīya.t* > \**dayīya.t*. A satisfying solution can probably be found in the influence of the numeral “50” (unattested in Egyptian): CoS ʦΑ(Ε)ΙΟΥ (besides irregular B<sup>0</sup> ʦΕΒΙ instead of ʦΕΟΥΙ). The same termination forms the numeral ʦʦΑΙΟΥ “90”. Reconstructing \**-īy-ū* > \**-īw-ū*, Vycichl sees here an old plural comparable with Ar *ḥams-ūn* “50” vs. *ḥamsat* “5” (DELC 223). Accepting the preceding explanation, there is no reason to reject the old identification of the numeral “5” and the word “hand”, reconstructed on the basis of the ‘hand’-hieroglyph with the phonetic value *d* and the preposition *mdj* “by” (MK), lit. “in hand”; cf. CoS ʦṚΑ-ϣ “by him”). Lacau (1970: 12) assumes the original form \**īd*, comparing the word *ībh* “tooth” with the sign *bḥ*, depicting “tusk”. Vycichl (1985: 177) presents the vocalic reconstruction \**yadīy-u* “hand” and \**ma-yadīy-u-fi* “in-hand-his” > \**medī-fi* > \**medīf* > \**mdīf* > ʦṚΑϣ. The reconstruction of the initial syllable \**ya-* is motivated by the suggestive cognate in the Semitic word for “hand”: Ak *idu(m)* “arm, side, power”, Ug, Ph *yd*, He *yad* “hand”, pl. (orig. du.) *yādāyim*, Aramaic *yəð-ā*, Syrian ʔīð-ā “the hand”, Ar *yad* “hand, arm”, pl.

*ʔaydiy*, Sabaic *yd* “hand”, Geez *ʔəd* “hand, arm, handle, haft, part, side, place”, pl. *ʔədaw* & *ʔaʔdāw*, Tigrinya *ʔid*, Amhara *əǧǧ* “hand”, Soqotri *ʔed*, du.*ʔidi*, pl.*ʔedhéten*, Šheri *ʔed* “hand”, Mahri *ḥayd* “hand, arm, armpit”, pl. *ḥadōten* (*ḥa-* is a prefix with the article function) etc. (Leslau 1987: 7). Conti 1990: 172 also finds this word in Eblaite: *ma-u*, *i-da* or *ma-wu i-da-a* = *lmāyū yiday(n)* “water for hands” (du.). Vycichl (1985: 174) proposes a triradical root *y-d-y*, probably *\*yadīy-u*.

An evident genetic connection of the numeral “5” and the word “hand” also appears in Beja: *ɛy* “5” vs. *ayi*, *ɛyi* “hand, forearm” (Roper), *ay*, *äy* “5” vs. *ay* “hand, (fore)arm” (Reinisch). These forms could be even related to the Se-Eg isogloss “hand” & Eg “5” analyzed above, if the loss of *-d-* before *-y-* is regular. A satisfying example supporting this change can perhaps be found in *gwedi* “eye”, pl. *gwey* (Almkvist).

Rössler 1971: 285–86 presents a different comparanda to Se *\*yad...* “hand” in Egyptian, starting from his reinterpretation of the Egyptian historical phonology. He sees a cognate in Eg *f* “arm, hand, side”, cf. the parallel forms in Eg *r-f* “bis hin zu, neben” vs. Ar *ladā* (*l-dy*) id. On the other hand, Knauf 1982: 29–39 finds a Semitic cognate to Eg *d* (‘hand’-hieroglyph) in Ak *ūtu* & *ītu* “Spanne, Halbelle”. The meanings are, in principle, compatible. Eg *d* corresponds regularly to both Se *\*d* and *\*ʔ*. Only the question of the anlaut remains open. In Egyptian the ‘weak’ consonants *ʃ*, *ʕ*, *y*, *w* can be expected. In Akkadian all the Semitic laryngeals, pharyngeals and glides (*\*ʔ*, *\*y* and mostly *\*w*) with the only exception (*h*) disappear. It means that Zeidler’s comparison with CSe *\*ḥawīṭ-* “thread, fibre” > Ar *ḥayṭ*, He *ḥūṭ* (Göttinger *Miszellen* 72 [1984]: 39–47) cannot be valid. The same development as in the case of pSe *\*yāwam-* “day” > Ar *yawm-*, Geez, He *yōm*, Akk *ūmu(m)* (Dolgopolsky 1992: 44, #54) can perhaps be assumed, i.e. Ak *ūtu* (& *ītu*) < *\*yāwaṭ-*. If this explanation is valid, the comparison of Eg *d* (*\*īd* after Lacau 1970: 12–13) “hand” (or “a part of hand”) and pESe *\*yā waṭ-* > Ak *ūtu* (& *ītu*) “Spanne, Halbelle”, is plausible.

6. The most archaic form of the Eg numeral “6” is preserved in MK *srs* “six-veawe linen” (Wb. IV: 200; cf. also p. 40 and Edel 1955–64: 169). The following scenario is probable (for m.):

*\*sirsāw* (only Loprieno 1986: 1308 and 1995: 71 reconstructs *\*-a-* in the first syllable) > *\*sūsāw* > *\*īssāw* (cf. alliteration with *sw* — see Černý 1976: 167 and MBa cuneiform transcription *ša-u*) > Co *\*CWOY* (DELIC 200). CoS *ace* in *ψαρραce* “96”, originally abstract, reflects *\*īssat* (Edel 1955–64: 176; Sethe 1916:18 reconstructs *\*āššēt*). CoSB *ce* “60” can be derived from a collective *\*si3sl.t* < *\*sirsl.t* (DELIC 182); cf. also the alliteration with *s(3wy)* (Černý 1976: 167). Loprieno 1995: 71 reconstructs m. *\*sjs.w* (*\*saʔsew*) “60”.

The numeral “6” has usually been compared with its counterparts in Semitic (Brugsch, see Erman 1892: 117), Berber (Zyhlarz 1931: 134, 137) and Hausa (Vycichl 1934: 77). Let’s analyze the concrete forms:

Se \*šid[u]t-u(m) f. & \*šid[u]t-át-u(m) m. (orig. a collective) (Dolgopolsky p.c., cf. 1992: 237) > Ak ? / šeššet, OAs šedištum ord. šeliššu(m) / OBA šeduštum, OAs šedištum (AHw 1220), Ug tt / ttt, ord. tdt = \*titt- / \*tittat-; \*tādi- (Segert 1984: 53), Ph šš / šist = \*šēš / \*šiš, He st. abs. šeš / šiššā, st. constr. šeš / šešet, Aramaic šit (šet) / šittā, Ar sitt / sittat, ord. sādīs, EpSAR s<sub>1</sub>dt, s<sub>1</sub>t / s<sub>1</sub>dt, s<sub>1</sub>tt, Geez səssu / sədəstu, g. com. səds, Tigre səs, Tigrinya šəddəštā, Amhara səddəst, Harari siddisti, Gurage sədəst, Soqotri hīte, 'īte, yīte / hyat (Leslau), y(h) aſt / hyəʔtəh, Mahri hēt / yəṯēt, Harsusi hāttəh / yəṯēt, Šheri šēt / štət (Johnstone) (Brugnatelli 1982: 133–41; Leslau 1987: 486–87).

Be (i) \*sūdas (or \*sūdas ?) > (E) Ghadames suz (\*suzz < \*suḍs) m. / suḍsāt f., (W) Zenaga šuḍəš.

(ii) \*saḍīs > (S) Tahaggart səḍīs / səḍīsāt, Taitoq saḍīs / saḍīsət etc., (N) Semlal sḍīs / sḍīst, Tazerwelt sddīs / sddīst, Demnat saddīs, sdis / saddīst, Mzab səz / səssət; Guanche (Gran Canaria ?) sesseti; cf. sesatti-marava “16” (Prasse 1974: 403, 405; Woelfel 1954:7).

Ch: (W) Hausa šhd(d)à, Gwandara šida; Nbauchi: Tsagu šīcə; Ngizim sedu (Koelle) = zidū (Schuh), Bade əzdū (Kraft), ‘Kallaghee’ zoodoo (Bowdich) (Stolbova 1987: 176, #288 reconstructs pWCh \*sidu); (E) Kwang (= Modgel) sidee, Mokilko zót (Lukas) = zóo(t) (Jungraithmayr). There are also hopeful cognates in CCh: Gidar serré (Strümpell) = ərrə, šire (Mouchet), Musgu \*šaara- > saara (Decorse), šaara (Krause), Munjuk slàarà (Seignobos & Tourneux), Mbara hírá (Tourneux) etc. The lateral sibilant represents a regular common Central Chadic innovation corresponding to pCh \*s (Newman 1977: 16, § 3.9.). The medial -r- can be derived from \*-d-, cf. Gidar bírya, Mbara fré “monkey” < pCh \*bədi (Newman 1977: 29, #85).

It is evident that in order to accept the relationship of the Egyptian numeral “6” with the quoted counterparts in Semitic, Berber and Chadic, it is necessary to explain the irregular correspondence Eg \*-r- vs. \*-d- (\*-ḍ-) in the other branches. It is interesting that a similar irregular change appears in the Omotic group Gongga, borrowing the numeral “6” from some Ethio-Semitic source (see above) with a substitution \*-d- > -r-: Kaffa širitto, Mocha širitto, Shinasha širittē, siirta (Zaborski 1983: 384). Rössler (1966: 221) demonstrated that Eg r substitutes Se d in Egyptian transcription of Semitic proper names. Does it mean that the Egyptian numeral “6” was borrowed from Semitic? In spite of the traditional point of view connecting both Semitic & Egyptian “6”s genetically, it is not possible to exclude it. But there is still another solution: the Egyptian “6” on the one hand and the forms in Semitic, Berber & Chadic on the other hand can be **unrelated**.

The closest cognate of pEg \*sirs- (\*sars- after Loprieno 1986: 1308) “6” can be found in phonetically fully corresponding Se \*talāt-u(m) “3” (with the variant \*šalāt-u(m))! The Semitic forms are as follows: Ak šalaš / šalāšat, Ug tlt / tltt, Ph šlš / šlšt, He šaloš / šəlošā, Aramaic tōlāt(a), Ar talāt / talātat, EpSAR tlt / tltt, s<sub>2</sub>t / s<sub>2</sub>tt, s<sub>2</sub>l<sub>3</sub> / s<sub>2</sub>l<sub>3</sub>t, Old Ethiopic slst, Geez šalās / šalastu,

Tigre *sālās*, Tigrinya *sālāste*, Amhara *sost*, Harari *širišiti*, *šišiti*, Gafat *s<sup>w</sup>ostā*, Soqotri *šile* / *šafīeh*, Mahri *shəlēt* / *sātāyt*, Harsusi *šaláys* / *sātāyt* & *šāfāyt*, Šeri *shalīt* / *šatēt* (Johnstone) (Brockelmann 1908: 236: dissimilation *l-l-l* > *š-l-l*; Brugnatelli 1982: 133–41; Leslau 1987: 529–30; Blažek 1990: 39: Eg + Se). The Eg form, if vocalized *\*sirs-*, corresponds to the Se pattern *qitl* attested e.g. in Ar *tilt* “je den 3. Tag”, He *šilšōm* “vorgestern” (Brockelmann 1908: 492). The root *l-l-l* probably reflects an apocopated reduplicated formation *l-l--l*. Grande 1972: 307 connects the primary root *l-l* with the Arabic verb *lāla* (*l-w-l*) “to gather”, cf. the derivatives: *taul* “crowd, swarm of bees”, *lawīlat* “bundle of herbs”, *tuṭṭulān* “hay”, *tullat*, pl. *ṭulal* “troop of people”; the mechanism of apocopy is described e.g. by Eilers 1987: 513 on the example of the Ar biradical nucleus *s-l*: *sāla* “to flow”, *tasalsula* “to flow down”, *salsāl* “sweet, cold water” vs. *salas* / *salāsāt* (cf. “3” !) and *sail* “river, stream”. Although Grande’s etymology is semantically too vague, the separation of the root *l-l* is fully acceptable. Its semantic motivation in Semitic remains open, but there are promising possibilities in other branches: Eg *s3ḥ* “toe” (Wb. 4: 20); ECu: Somali *suul* “thumb, big toe”, Jiddu, Baysō *suul* “fingernail” (Lamberti) and Dahalo *tsoolo* “claw, nail” (Tosco). ECu & Eg *s* correspond regularly to Se *\*l* reflecting pAA *\*č*. The primary meaning “thumb” can quite naturally serve to denotation of the numeral “6”, cf. Bantu forms quoted by Hoffmann (1952–53: 71): Zulu *isithupha* “thumb; 6”, Swazi *sifupha* id.

The Semitic numeral “6” is analyzable at least in two ways:

(i) An apocopy of a fully reduplicated stem *\*šidšid-* (dissimilatory *\*šidš.* > *\*šid-* or vice versa *\*tđt* > *\*šđt-* as Eilers 1984–86: 93 speculates ?). Did the original form mean a sum “3 + 3” ?

(ii) An apocopy of a compound *\*šid-tin-* “3 x 2” ?

An expression of the numeral “6” on the basis of the numeral “3” is known e.g. in Ug *tlttm* “twice three” (du.) or *tltt w tltt* “3 + 3” (Gordon 1965: 503). On the other hand, the multiplication “3 x 2” has an analogy e.g. in Ngala (Kotoko group of Central Chadic) *kingi ti kisang* “6”, where *kinga* = “3” and *kisang* = “2” (Migeod, see Sölken 1967: 174).

Both solutions identify the meaning “3” in *\*šid-*. An independent support of this hypothesis can be found in the Ak length measure *šizum*, *šizū* “Drittel-Elle”, *šizāt* =  $\frac{1}{3}$  *uṭṭat* (*uṭṭat* = “wheat”) (AHw 1254). But Ak *-z-* reflects pSe *\*-d-* or *\*-z-*. The first possibility allows a modification of the reconstruction of the numeral “6” in *\*šid-* < *\*šid-tin-*. The Ak form can be projected in pSe *\*šidC-u(m)*, where *C* = *w*, *y*, *ʔ*, *h*, *ḥ*, *ʕ*, *g*. Esp. the hypothetical form *\*šidḥ-* has a suggestive cognate in ECu *\*šizḥ-/šazḥ-/sazih-* “3” (Sasse 1976: 138; ECu *\*z* corresponds regularly to both Se *\*z* and *\*d*, cf. Dolgopolsky 1983: 139–40) > Afar *sidoh*, gen. *sidiha* (Parker & Hayward), Saho *ʕadoḥ* (< *\*aszVḥ*); Somali Isaq *saddeḥ*, Benadir *siddāḥ*, Jiddu *seye*, Boni *siddēh*, Rendille *seyyah*, Bayso *seedi*; Oromo: Wellega *sadii*, Waata *sēedi*, Konso *sessaa* (Black), *sezi* (Trento), Mashile *sessā* (Lamberti); Arbore *seezzé* (Hayward), Elmolo *sēepe* (*\*-w-* < *\*-y-* < *\*-z-*), Dasenech *seddi*; Gawwada *isēḥ*, Gollango *izzēḥ*, Harso

*ezzah*, Dobase *siséh*, Tsamakko *zeeh*; Sidamo, Gedeo *sase*, Hadiya *saso*, Kambatta *sasu*, Burji *fadiya* (*f-* after *foola* “4”) (Zaborski 1987: 331–42). The final *\*-h-* determines some body part names in East Cushitic (and Afroasiatic in general), cf. *\*bidh-* and *\*kelh-* “left side/hand”, *\*fanh-* “gap (between teeth)” vs. HECu *\*fan-* “open”, *\*malh-* “pus”, *\*math-* “head” etc. The original meaning of ECU *\*šiz-(h)-* should be a denotation of any part of body connected with tripartity. Perhaps Konso *sett-eetta* “instep, top of foot” (maybe related to Afar *sido* “sole of foot” < *\*sid(d)-* or *\*siz(z)-*) could be a plausible candidate, if the semantic development “top of foot” ⇒ “top of hand” ⇒ “middle finger” or sim. is possible. For completeness, the ECU numeral can also represent a Nilo-Saharan borrowing, cf. Kunama *saate*, Ilit *satte*; Berta *sittijini*; Berti (East Saharan) *soi* “3” (Bender). On the other hand, there is even an Asiatic candidate for the source of the hypothetical form *\*šid-* or *\*šid-* “3” in Semitic, namely Elamite *zī-ti* “3” (Hinz & Koch 1987: 1305)!

The reconstruction of the numeral “6” in Berber is not evident. Besides the forms with alternating vocalism *\*sūḍas* (*\*sūḍus*) in E & W branches vs. *\*saḍts* in S & N branches, there are NBe forms, where geminated *-dd-* appears instead of emphatic *-ḍ-*. The geminate is probably original, judging upon the pattern with a medial geminate characteristic for *\*hakkūz* “4”, *\*sammūs* “5”, *\*tizzāh* “9” and the long variants of simple stems in *\*hissīn* “2”, *\*hissāh* “7”, *\*hittām* “8” (Prasse 1974: 403–405). The skeleton *s-d-s* of the Berber numeral “6” corresponds regularly to Semitic, not regarding the reconstruction *\*šidṭ-*, *\*šidš-* or even *\*šidṭ-*. On the other hand, it is not excluded that Berber “6” (if not all the numerals “6–9”) is borrowed from Semitic.

Concerning the Chadic (Hausa) numeral “6”, Skinner 1994: 233 presents an inner Chadic etymology based on Hausa *sha* used in (*goma*) *sha ḍaya* “11”, (*goma*) *sha biyu*, lit. “(10) plus 1”, “(10) plus 2”, etc.; hence *shidda* < (*biyar/t*) *sha guda* “(5) plus unit” ? A more transparent structure appears in Kerekare (Bole group of WCh) *bəcodi* “6” < *bəḍi-* *\*si-wəḍi* “5 plus 1”, *bəcibèlu* “7” vs. *bèlu* “2” (after Kraft). A remarkable evidence is attested in Bade. Kraft quotes *əzdū* “6”, but Koelle recorded *badšōdi* “6” = “5 + 1”, consisting of *bādu* “5” & *g-āde* “1”. The same pattern is recognizable in ECh, e.g. Migama *bízgdíyí* “6” = *béedýá* “5” + *kádyí* “1” (Jungrauthmayr) or Dangla *bídígédý* “6” = *béédý* “5” + *kéedý* “1” (Lukas). All the quoted examples can demonstrate the creation of the shortened form of the type *S-D* “6”, originally “5 + 1”.

7. It is generally accepted to vocalize the Eg numeral “7” *\*safh-*, cf. also MBa transcription *šap-ha* (DELIC 203). It was already Brugsch, followed by Erman (1892: 118), who mentioned the similarity of the Semitic counterpart. Here Ak forms *sebe*, *seba* / *sebet(tu)* “7”, *sebiat*, *selabat*, *sebītum* “Siebentel” (*\*sibf-*, but OAs *šabe* “7” !, cf. AHW 1033) differ from the forms in other Semitic languages, reflecting *\*šabf-u(m)* f., *\*šabf-át-u(m)* m.: Ug *šbf* / *šbf* = *\*šabf-* / *\*šabfat-*, Ph *šbf* = *\*šib(a ?)f-* / *šbf*, He *šéba* / *šibšā*, Aramaic *šəbaš* / *šibšā*, Ar *sabf-* / *sabfat-*, EpSAr *sḫf* / *sḫft*, Geez *sabf(u)* / *sabfattu*, Tigre



*sābuʃ*, Tigrinya *šobʃatte*, Amhara *sābat*, Endegeñ *sāḥəʔat*, Harari *sātti*, Soqotri *yhóbeʃ* / *hyəbʃah*, Mahri *hōba* / *yəbáyʔt*, Harsusi *hōba* / *həbáyʔt*, Šeri *šəʃ* / *šbaʃət* (Brugnatell 1982: 133–41; Leslau 1987: 482–83; mSAr forms after Johnstone). The Akkadian *s*-form is probably old; only an old *s*- in the numeral “7” can explain the surprising *s* in *samāne* “8” instead of the expected *š*- < \**š*-. It seems the difference between the initial syllable \**si*- in Akkadian vs. \**ša*- in other languages originated as a result of the influence of the preceding numeral “6”: the sequence \**šid*[*u*]š- “6”, \**sabʃ*- “7” caused the change of the root vowel in ESe \**sibʃ*-, while in the other Semitic languages the initial consonant was changed in \**šabʃ*-. If this explanation is acceptable, the original root of the Semitic numeral “7” was \**sabʃ*-. Se \**s*, reflecting AA \**c*, is compatible with Eg *s*. But the irregular correspondence between the clusters *-ʃḥ*- and *-bʃ*- remains unexplained. The following solution can perhaps be plausible: The original form was \**sabʃ*- “7” in Egyptian, comparable with the Semitic counterpart. The following numeral is \**ḥamān*- or \**ḥamūn*- “8” in Egyptian. In the sequence “7”.. “8”, it is quite legitimate to expect sandhi \**sabʃ*-\**ḥamVn*- > \**sabḥ*-\**ḥamVn*-. One would expect the spirantization *-bḥ*- > *-ʃḥ*-, but the sequence *-b(-)ḥ*- exists e.g. in *3bḥ* “to mix” or in *sbḥ.t* “a kind of amulet” (DELIC 249, 185). It was perhaps some combinatorical change connected with the presence of *-s*-, that operated here, cf. the pair *ḥsf* vs. *ḥsb* “to succeed in protecting” (Edel 1955–64: 51). Vycichl assumes an analogical development in Eg *wšḥ* “to be wide” vs. Ar *wasīfa* id. (DELIC 240). Schenkel 1990: 56 sees regular reflexes of AA \**p* in Eg *f* vs. Se \**b* (similarly Dolgopolsky 1996, p.c.); Eg *ḥ* vs. Se \**f* have to reflect AA \**ɣ*<sub>1</sub> / \**ɣ*<sub>2</sub>.

The position of the Berber numeral “7” is more problematic. It is attested in all branches: (E) Ghadames *sā* / *sāt*; (S) Tahaggart *əssa* / *əssahāt*, Ayr *əšša* / *əššayāt*, Ghat *sa* / *sahət*, Tawlimidden *sah* / *sahat*; (W) Zenaga *əššəh* / *əššəddət*; (N) Mزاب *sā* / *sāt*, Semlal *sa* / *sāt*, Tazerwalt *ssā* / *ssāt* etc. and Guanche (Gran Canaria) *satti*, (Tenerife) *sa(t)* (Woelfel 1954: 9–10). Prasse 1969: 89 has reconstructed the consonantal skeleton  $\sqrt{h_1sh_2}$ , later he presented the protoform \**sāh* with a longer variant \**hissāh* (1974: 403, 405). Rössler 1952: 142 explains the loss of \**b* through assimilation *-sb-* > *-ss-*, postulating a primary form \**asba’u*. But the gemination of the first (second in the Prasse’s reconstructions) radical appears in “2”, “4”, “6”, “7”, “8”! AA \**b* has been sometimes lost in Berber, cf. (S) Taneslemt *ulh*, pl. *ulhawən* “heart”, Tawlimidden *ul*, *əwəl* (Prasse 1969: 76); (E) Augila *ul*, Siwa *uli* (Basset); (N) Ntifa *ull* etc.; (W) Zenaga *ud* & *už*, pl. *ellun* (Basset) < \**wilih* ? or \**huluh* ? (Prasse 1974: 72). Rössler 1952: 134–35 postulates the following development: \**ulh* < \**luh* < \**lub* < \**lubbu*, cf. Eg *ib* // Se \**libb*- (Fronzaroli), \**libw*- (Vycichl) // ECu \**lubb*-, etc. The pBe reconstruction \**sḥ* “7” of Zyhlarz (1931: 137) is not well-founded.

A hypothetical cognate can also be found in the Matakam group of CCh: Gwendele & Hurzo *ciḥā* “7” (de Colombel) = Hurzo *ciḥā* (Rossing 1978: 322, #621), if it is not a compound of *ciyāw* “2” & the numeral “5” of the type Mora *tdlibé* (Blažek 1990: 31).

No convincing etymology of the numeral “7” has been proposed so far. The following two solutions can be presented:

(i) A primary semantic motivation based on the meaning “forefinger, index”, cf. Ar *sabābat*, *sibbat*, *sabbāḥat* id. (Steingass 1988: 476–77). Perhaps the same biradical nucleus *s-b* appears in the verb *sabaʔa* “to take by hand”. Outside Semitic, Somali *safab* “palm of hand with fingers” (< \**sabf-* as *gafan* “hand” < \**ganf-*, see Sasse 1982: 77) and eventually Beja *sibta* “wrist, wrist-joint” (Roper) can be related. There are typological parallels e.g. in Zulu *isikhombisa* “7” and “forefinger” (Hoffmann 1952–53: 72) or Malay *tud’uh* “7” derived from Austronesian \**tuZuq* “forefinger”, orig. “to point” (Dahl 1981: 50 after Dyen).

(ii) A primary semantic motivation based on the numeral “3”, attested in ECh: Mubi *sūbā*, Birgid *sūúbū*, Jegu *sup / sub*, Migama *sūbbā*, Dangla *sūbbā*, Sokora *sūbbā*, Tumak *sūb*, Ndam *sūp*, cf. “Gulei” *cuba* (Lukas 1937: 94), Sumray *sūbū*, Lele *sūbū*, Kabalai *sāp*, cf. “Kaba” *sabu* (Lukas 1937: 92), Kera *soope*, Kwang *suupáy* (Jungraitmayr & Ibriszimow 1994, II: 327). A Central Chadic cognate can perhaps be found in Baldamu (Matakam group) *sābūr* “8” (Seignobos & Tourneux), if it represents the operation “3 + [5]”.

The numeral “7” created by “3” is not unusual esp. in Chadic: Sumray (Nachtigal) *dénā sūbu* “7” = “three [bent] fingers”, cf. *dénā men* “9” (*dénun*, *dunum* = “finger”, *mon*, *men* “1”) or Ndam (Decorse) *wo subo* “7” = *woro* “4” + *supu* “3” (Blažek 1990: 31).

The etymologies (i) and (ii) may not exclude one another; it is natural if the word \**[c]ab-* meant “forefinger” in some dialects and “middle finger” (> “3”) in others.

8. Eg \**ḥamān-* (cf. the cuneiform transcription *ḥa-ma-an*; see DELC 264) or \**ḥamūn-* “8” has been usually compared with a Se counterpart (already Brugsch, cf. Erman 1892: 116; lastly Loprieno 1995: 71). The following forms are attested in Semitic: Ak *samāne* f., As *šamāne* f. / *šamānat* m. (AHw 1017), Ug *ṯmn / ṯmnt* = \**ṯamānī-* / \**ṯamānīt-* (Segert 1984: 53), Ph *šmn(h)* = \**šəməṇā*, He *šəməṇē* / *šəməṇā*, Syriac *təməṇē* / *təməṇyā*, Ar *ṯamānin* / *ṯamāniyat*, EpSAR *ṯmn(y)* / *ṯmn(y)t*, Geez *samāni* / *samānitu*, *sammantu*, Tigre *sāman*, Tigrinya *šommānte*, Amhara, Gurage *səmmənt*, Harari *sūt* (\**sumn-t*), Harsusi *ṯəmōni* / *ṯəmənēt*, Mahri *ṯəmōni* / *ṯəmənēyēt*, Soqotri *təməni* / *təmənih*, Šeri *tūni* / *tēnīt* (Brugnatelli 1982: 133–41; Leslau 1987: 502; mSAR after Johnstone). The initial \**ṯ* (< AA \**č*) is incompatible with Eg *ḥ* in spite of the attempt of Albright 1918: 92, proposing the development: *ḥmn* < \**šmn* < \**ṯmn*. The vacillation *ḥ* ~ *š* is very rare in Egyptian. Edel 1955–64: 53 finds the only example in *iḥ t* “Sache” vs. *išt* with possessive suffixes (Wb. I: 124 & 134). Vycichl 1990: 68 quotes *ḥnš* “to stink” (Wb. III: 301) vs. nEg *mw šnš* “foul water” (Wb. IV: 517). The shift *ḥ* > Coptic *ϣ* has taken place in all dialects except Ahminic where *ḥ* is preserved (Vycichl 1990: 68).

The Se numeral “8” was also compared with the Berber counterpart (Rössler 1952: 143), reconstructed as \**iām* & \**hittām* (Prasse 1974: 405) on

the basis of the following forms: (E) Ghadames *tām / tāmət*; (S) Ghat *tam / tamət*, Tahaggart *əttām / əttāmāt*; (W) Zenaga *ittəm*; (N) Semlal *t(t)am / tamt*, Tazerwalt *tam / tamt*, Mzab *tam / tamət*, Djerba *attam* etc. and Guanche (Gran Canaria ?) *tamatti* “8” (Woelfel 1954: 10). But the regular correspondent of Se \**t* is Be \**s* (cf. §2; in spite to Rössler l.c., the response between Se \**t* & Be \**t* is based only on the unique example of the numeral “8”). From this point of view an only regular cognate to Se “8” appears in a puzzling form *sām* “8” recorded in Sus (of 'Amiln) by Klingenberg (see Woelfel 1954: 10). Rössler 1966: 228 explains an irregular \**t*- instead of an expected \**s*- in Berber by alliteration to the following numeral \**tizāh* & \**tūzah* “9”.

Besides this phonetically problematic comparison, there is one neglected etymology of the Eg numeral “8”, deriving \**hamVn*- “8” quite naturally from \**hamt*- “3” (Holmer 1966: 35). The same connection is evident for ECu \**sizheet*- / \**sizhent*- / \**sazhent*- “8” > Hadiya *sadento*, Sidamo *sette*, Kambatta *hezzetto*, Burji *hidlta* (\**hizzeet*- < \**hiszeet*- < \**sizheet*-); Somali *siddeed*, Oromo *saddeet*; Gollango *sette*, Tsamakko *sezzen*; Yaaku *siite* (Sasse 1982: 95; Ehret 1990: #14), consisting of \**s/šizh*- “3” (see above) & the numeral “5” attested in HECu \**omut*- > Burji *umútta*, Sidamo *onte*, Kambatta *onto* etc. (Sasse 1982: 184; Haberland & Lamberti 1988: 136–37). It is necessary to emphasize that this solution (“8” = “3” [+ “5”]) excludes the etymology (ii), analyzing the preceding numeral as “7” = “3”[subtracted from “10”], where even a different form of the numeral “3” would be used.

On the other hand, in the Se \**tamānáy-u(m) / \*tamānay-át-u(m)* “8”, the internal structure is also analyzable. It is tempting to identify the three radicals *t-n-y* of the numeral “2” within four radicals *t-m-n-y* of the numeral “8”. The primary shape of the numeral could be a syntagm \**tāniy-mā* or \**tānīy-mā* “the second not” (cf. Ar *mā* “not”; see Blažek 1990: 31) or \**tāniy-/tānīy-min*-[*fašar*-] “the second from [ten]”, cf. the ordinal patterns \**tāmin*- (Arabic, Ethiopic) or \**tāmīn*- (Hebrew, Aramaic) and the preposition \**min* “from” (Gray 1934: 71, 74). Let us add that Klimov 1985: 206 admits a connection of the Semitic numeral “8” and Hurrian *tumni* “4”!

Also in the case of the Berber numeral “8” there are alternative solutions:

(i) Semitic borrowing. Besides evident Arabic loans as Tawlimidden *taman* (Basset) or Demnat f. *təmun*t there are biradical forms representing the nucleus *t-m*. Not speaking about the missing third radical, the borrowing could have been realized only from such a Semitic dialect, where the continuant of (AA \**č* >) Se \**t* was either *t* (Ug, Ar, EpSAr, mSAr) or *t* (Aramaic), but not *š* (Ak, He, Ph, Ethio-Semitic). A similar contact was really possible, probably in Delta, thanks to the massive movement of Semites of Syro-Palestinian region into Egypt, known as Invasion of Hyksoses (after 1700 BC).

(ii) A derivative of one of the original Afroasiatic denotations of the numeral “3” (“8” = “[5]+3”). This point of view can be supported only by South Cushitic data: Iraqw, Burunge, Alagwa *tam*, Qwadza *tami*; ? Dahalo 'tātaníóni “third day after tomorrow” (Ehret 1980: 290; Blažek 1990: 31).

Besides the common East Cushitic form \**lam*- “2” (Sasse 1982: 133) there are rather enigmatic forms with initial *t*- in Konsoid: Mossiya *tammó* (Lamberti) = Bussa *tam* (Bender) and Dullay: Dume *tomme* “7” (Conti Rossini) vs. the other Dullay \**tahhan* “7” < pDullay \**tam-han* “2 + 5”? The vacillation between the meanings “3” and “2” (“7”) is perhaps explainable by the original “finger”-semantics.

(iii) If Be \**tiz(z)āh* & \**tūzah* “9” can be derived from \**t(V)-[k]ūz-* “[5] + 4”, it is natural to expect in \**tām* “8” analogically \**t(V)-[H]am...* “[5] + 3”, where the existence of a hypothetical segment \**[H]am-* “3” is supported by Guanche *amiat* etc. “3” and Eg \**hamt-* “3” (see above, n. 3) together with \**hamVn-* “8”.

9. Eg \**pisīd-* “9” (this vocalization is supported by MBa transcription *pi-ši-it*, cf. DELC 248) has again been compared with Semitic and Berber counterparts, in spite of serious phonetic problems (Albright 1918: 92 assumed *psd* < \**tsd* < \**tsg* < \**tsū* < \**tsf* !; Rössler 1971: 303–04, 307 and Schenkel 1990: 57 explain the irregular change *p* < \**t* via dissimilation of *t* against *s* (there is only one item representing the sequence *t-s*., namely *ts* “a kind of bread”, see Wb. V: 388); cf. also Loprieno 1986: 1308 and 1995: 71; on the other hand, Erman 1892: 111 agreed only hesitantly; Zyhlarz 1931: 137 would expect Eg \**tsḥ* vs. Se \**t-š-f* “7” as *sḥ* vs. \**s-b-f* “7”).

Se \**tšf-u(m)* f. / \**tšf-āt-u(m)* m. “9” (Dolgopolsky p.c.) continues in Ak *tiše* / *tīšē/īt(um)* (AHw 1362), Ug *tšf* / *tšft* = \**t/īšf-* / \**tšfat-*, Ph *tšf* = \**tšf(a ?)f-*, He *tšaf* / *tšfā*, Syriac *tšaf* / *tšfā*, Ar *tšf-* / *tšfat-*, EpSAR *ts<sub>1</sub>f* / *ts<sub>1</sub>ft*, Geez *təsfu* / *təsfatu*, Tigre *səf*, Tigrinya *təsšfattä*, Soqotri (*t*)*sefeh* / *sah* (Leslau 1938: 289), Mahri *sā* / *sāt*, Harsusi *sē* / *sāʔáyt*, Šheri *səf* / *safáyt* (Johnstone) (Brugnatelli 1982: 133–41; Leslau 1987: 580–81; Testen, BSOAS 61[1998]: 314–17 assumes for the aberrant mSAR forms the merger \**t* + \**š* > *s*).

Concerning etymology it is very remarkable that the numeral \**tšf-* “9” and one of the Semitic numerals “1” \**ʔaštay-* (Ak *ištē/īn(um)*, *ištiānum* / *ištiat*, *ištē/īt(um)* “1”, *ištēnšeret*, poet. *ištēnešret*, Ug *ʔšt ʔšr* / *ʔšt aʔšrh*, He *ʔaštēʔāšār* “11”, EpSAR *ʔs<sub>1</sub>tn* “1”) differ only in the order of consonants. This fact can represent a key to the etymology. If metathesis served as a way of expression of semantic polarity (cf. the examples collected by Majzel’ 1983: 246 as Ar *ḡamīl* “fair, excellent” vs. *lamīg* “disfigured, ugly”, etc.), it is possible to understand the opposite order of the radicals forming the numeral “9” just as the expression of “absence of one”. An alternative possibility can be a radical simplification (haplology ?) of the hypothetical syntagm \**ʔaštay-ʔašti/lu ʔašar-* “1 from 10”, cf. Ak *išt(um)*, *e/uštu*, nAs *issu* “from, of” (AHw 401) and Eblaite *ÁŠ-DU* “out from”, *ÁŠ-TI* “from” (Diakonoff 1988: 68 and 1990: 28). It is evident that the Akkadian forms are incompatible with Geez *wəṣṭ* “interior”, Ar *was(a)ṭ* “middle” for semantic and phonetic reasons.

The following forms of the numeral “9” are attested in Berber: (E) Ghadames *təṣū* m. / *təṣūt* f.; (S) Tahaggart *təzza* / *təzzāt*, Ayr *tāza* / *tāzayāt*,

Tawlimidden *təza / təzayāt*; (W) Zenaga *tuṭāh*; (N) Semlal *tza / tzat*, Tazerwalt *ṭzza / ṭzzat*, Mzab *təs / təssət* etc. Rössler (1952: 143) derives it from 'Lybian' \**tašša'u* and sees here a cognate to Se \**tišf-*. Prasse (1974: 403, 405) reconstructs pBe \**tižāh* with a variant \**tūzah* based on Zenaga. In spite of Rössler's categorical refusal "Entlehnung ausgeschlossen", the Semitic origin is quite possible (cf. § 8), esp. when there is no cognate in Guanche. In Guanche two forms of "9" are recorded: (i) *aldamorana* (Gran Canaria), (ii) *acot* (Tenerife). The form (i) consists of *marava* "10", while *alda-* can be identified with Shawiya *ald(a)* "jusque, jusqu'à", hence "9" = "up to 10" (Woelfel 1954: 11). The form (ii) corresponding undoubtedly to *acodetti* "4" recorded at Gran Canaria, represents probably an ellipse from \**sumus akot* "5 + 4" or sim., cf. e.g. Beja *aššaDig* "9" = \**as(a)-faDig* (Woelfel 1954: 26), where \**asa-* is a participle of the verb *as-* "mehr machen" (Reinisch), hence "9" = "adding 4" or sim. The pattern (ii) opens a possibility to interpret the Berber numeral "9" in a similar way: \**tūzah* can be derived from \**t(V)-[k]ūzah* "[5] + 4", cf. \**hakkūz* "4" (Blažek 1990: 31). The loss of \*-*k-* has an analogy e.g. in Tahagart *təsəmt*, pl. *təsmīn* "salt" vs. *kusəmt* "to be salt", *uksəmt* "natron" (Vycichl 1955: 312). The same structure is perhaps also analyzable in the numeral "8" (see #8). The same affixes \**tV-...-a(h)* probably form the Zenaga numerals *təšəndi* "20" and *tu karda* "30" (Woelfel 1955: 27; Prasse 1974: 406).

If the preceding arguments are correct, the Semitic and Berber forms of the numeral "9" are not related to the Egyptian counterpart, and even one another probably also not.

It seems that there are no external parallels to Eg \**pisīd-* "9". Sethe 1916: 20 and Loprieno 1986: 1308, 1306, fn. 30 propose an interesting internal etymology, identifying an original meaning "new" in "9". But their arguments cannot be accepted without doubts. The root *psd* does not mean "new". There is only *psd(n).tyw* "Tag des Neumonds" (Wb. I: 559). The semantic connection "new moon" and "new" is certainly possible, cf. Ug *ḥdṭ* "new moon" vs. Ar *ḥadaṭ* "new", but *psd(n).tyw* is evidently a derivative of *psd* "leuchten, scheinen" (Wb. I: 556). Sethe and Loprieno also refer to Indo-European \**neuy̯m* "9", usually derived from \**neuy-* "new". This argument may also not be valid, because the numeral has to be reconstructed with an initial laryngeal \**H<sub>1</sub>neuy̯m*, but the adjective without it. And finally, from the point of view of semantic typology the neglected etymology of Holmer (1966: 37) deriving the Indo-European numeral "9" from the preposition \**H<sub>1</sub>enu* "without" (Gothic *inu*) looks better. The preposition originates perhaps in a noun "lack". The numeral \**H<sub>1</sub>neuy̯m* can represent its accusative, hence "9" = "in lack" or sim.

The etymology of Eg \**pisīd-* remains open. It can perhaps be derived from *psd* "back" (Wb. I: 556), i.e. "9" = "[1] back", or better from the synonymous verb "sich entfernen von", hence "[one] removed (away), [one] moved (back)" ?

10. For semantic reasons Eg \**mūd-* "10" (cf. MBa transcription *mu-tu*, see DELC 124) can neither be directly connected with Eg *mḏ* "to be deep" (Sethe

1916: 17) nor with Se *m-d-d* or *m-ṭ-ṭ* “lang ziehen, ausdehnen” (Loprieno 1986: 1316, fn. 33) because of phonetic incompatibility of Eg *ḡ* and Se *\*d/\*ṭ*.

Brockelmann 1908: 487 compared it with phonetically quite incompatible Se *\*miṭát-u(m)* “100”.

The same can be said concerning the comparison with Se *\*maṭd-* “many” (Diakonoff 1988: 67) > Ak *mādu*, Ug *mād*, He *məṭōd* (*\*maṭād*, see Segert 1984: 191).

Behnk 1928: 139 connected *mḡw* with Hausa *góómàà* “10”. It is in principle possible, if metathesis operated. The Hausa numeral has cognates in all Chadic branches: (West) Iiwam *gmbat*; Dera *gûm*; Tsagu *wúúmá*; Ngizim *gúúmá*; (Central) Tera *gwáṅ*; Margi *kùmù*; Paduko *jumá*; Buduma *hā-kán*; Musgu (Röder) *gum*; (East) Mokilko *kòómát(t)* (Jungraithmayr-Ibriszimow 1994, II: 320–21). But Hoffmann (1970: 12–14) demonstrated the Benue-Congo origin of the Chadic numeral (cf. Benue-Congo *\*-kumi* “10”, see Jungraithmayr-Ibriszimow 1994, I: 165).

It was already Meinhof (1912: 240) who found a possible cognate of *mḡw* in Berber, concretely Tazerwalt *mḡráu* “10”. Prasse (1974: 403, 405) reconstructed pBe *\*marāw* “10”, continuing in (E) Ghadames *maraw* / *marāwet*; (S) Tahaggart *māraw* / *mārawāt*, Ayr *maraw* / *marawat* etc.; (W) Zenaga *mərəg*, *məri* / *mərəgəṭ*; (N) Semlal *mraw* / *mrawt*, Demnat *mraw* / *mərawt*, Mzab *məraw* / *mərawt* etc. and Guancho (Gran Canaria) *marava*, (Tenerife) *marago* (Woelfel 1954: 12). This comparison was accepted by Zyhlarz (1931: 137 and 1934: 104, 106), speculating about a special correspondence Eg *ḡ* // Be *\*r*. Vycichl (DELIC 124) rejected this comparison just for the difference *ḡ* vs. *r*. He also mentioned that *-w* represents an integral part of the root of the Berber numeral, while in the case of Egyptian it is only a masculine marker. Rössler 1966: 227 modified the comparison, postulating the original forms *\*m3ḡ.w* for Egyptian and *\*m-r-ṭ-w* for Berber. The loss of medial *3* is nothing unusual in Egyptian. Edel 1955–64: 58 quotes e.g. *zb* vs. ‘normal’ *z3b* “jackal”. It remains to explain the correspondence of the third radicals in both forms. Rössler l.c. finds a regular correspondent to Eg *ḡ* in unattested Be *\*ʔ* < *\*ʕ*. But AA *\*ʕ* has been preserved in Egyptian (Ember 1930: 32–33; Cohen 1947: 85–90). There is a couple of examples to demonstrate the regularity of the correspondence between Eg *ḡ* and Se *\*ʕ*: *sḡm* // *\*s-m-ʕ* “to hear”, *nḡm* // *\*n-ʕ-m* “sweet”, *nḡs* “be small” // *\*n-ʕ-š* “be weak” (Albright 1918: 92, fn. 4; Ember 1930: 111–12), although they are not unambiguous. Perhaps an easier solution could consist in a small modification of the Berber reconstruction in *\*marāgw* giving *\*marā(w)w* in majority of the languages vs. *\*marā(g)g* in Zenaga and Guancho of Tenerife. It is generally accepted that Eg *ḡ* can originate from *g* palatalized before *u* or *i*. On the other hand, in Berber languages there is a regular change *\*-ww-* > *\*-gg-* and not vice versa (Prasse 1972: 64–64; Blažek 1998: 164).

Finally, there are promising parallels in East Chadic: Sumrai *mwāj* (Jungraithmayr & Ibriszimow 1994, II: 321) = *moj* (Nachtigal) = *moid* (Adolf

Friedrich) = *moet* (Decorse), Gabri, Dormo *moid* (Adolf Friedrich), Tchiri *mōdo* “10” (Lukas 1937: 74, 87), although it remains to be proved the regularity of the phonetic correspondences. In principle, also pBe *\*tē-mihḍay*, pl. *\*tī-muhāḍ* “100” (Prasse 1974: 406) can be related. Eg *ḍ* and Be *\*ḍ* are compatible if they are continuants of AA *\*ḥ* or *\*ḥ̣* (Militarev 1991: 242).

Recently Takács (1996a: 39–42 and 1996b: 441–48) has found probably the most convincing solution, comparing the Egyptian *\*mūḍ-* “10” with East Cushitic *\*mig-/mug-* “full(ness)”, *\*-mg-* “to fill” > Saho *mig-e* “fullness”, *-meg-* “to fill”, Afar *mig-i* and *-eng-* (< *\*-emg-*) id., *mamga* & *manga* “fulness, abundance”, *mango* & *maggo* “to be many / much”, Somali *mug* “multitude, fullness”, Jiddu *ammuug-* “to be full”, Rendille (Heine) *mig*, pl. *amige* “strong”, Bayso *mig-i* “full”, Oromo *mog-a* “fullness”, *mij-uu* “full”, Konso *immak-*, D’irayta *innak-* “to fill”, Yaaku *mok* “many” (Sasse 1979: 25; Haberland & Lamberti 1988: 127), Chadic: Musgu (Krause) *mógwa* “high”, (Overweg) *mogó* “long”, (Röder) *mógo*, (Rohlf) *ana-mogó* “big” (*a-na* “it is”) and Tumak (Caprille) *māg* “être beaucoup / capable; pouvoir”, and perhaps Omotic: Mao of Didessa (Fleming) *muk* “all”. It is also tempting to include here the isolated form for “10” in the Central Chadic group Higi (Kraft): Higi Nkafa *mùḡḡy*, Higi Futu *mùḡi*, Fali Gili *mùḡ* etc., perhaps from *\*mu-mg-* (cf. Afar *mamga* “fulness”) — see Blažek 1990: 41 and Takács 1996b: 442).

The semantic development is quite natural, cf. Se *\*fašar-(at-)* “10” (besides Arabic *fašrat* “association, company, tribe”, Sabaic *ḥs,rt* “nomad group”) and Eg *ḥšḥ* “(to be) numerous; many” (Sethe 1916: 17; Ember 1917: 88).

11. The numeral “20” is not directly preserved, but thanks to the play on words known from the Leiden papyrus it is reconstructible as *\*ḍwtj* (Wb. V: 552). The Coptic data allow to vocalize m. *\*ḍawātay*, f. *\*ḍawātat*.

Sethe 1916: 24 derived the numeral from *\*debšōtej*, dual of *\*ḍōbšet* “set of fingers” = “10”, cf. Eg *ḍbš* “finger” (similarly Zyhlarz 1931: 137). But the difference *w* vs. *b* is not explained.

Behnk 1928: 141 connected *ḍwt* with Beja *tágw*, *dágw*, pl. *tagúug*, Hadendiwa also *dagúug* “20” (Reinisch). The Beja numeral can be derived from *tagéega* “high” (Reinisch) or compared with East Cushitic data: Saho *tagáa*, pl. *táagoog* “shoulder”, common Boni *\*tágóg* “lower arm” (Heine). There are also other similar forms for “20” in this area: Oromo *digetam* (Tutschek), *digdama* (Gragg) and Barea (= Nara) *dokuta* (Reinisch), cf. *doko* “1” ? Eg *ḍwt* is compatible with its Beja counterpart only if *ḍwt* could be derived from *\*dḍwt*.

Dolgopolsky 1969: 300 compared Eg “20” with the numeral “2” in the Gongga group of the Omotic family: Kaffa, Anfillo *guttoo*, Mocha *gútto*, Shinasha *gittaa*, but these forms are probably borrowed from Ethio-Semitic, cf. Harari *koʔot gutti* “centre, middle”, lit. “the middle of two”, *koʔot* “2”, Gogot *kʷet* “2” etc. (Leslau 1963: 76, 90).

The most convincing solution was proposed by Loprieno (1986: 1309), restoring the numeral in the form *\*[mu]ḍawātay*, orig. du. f. of *\*mūḍaw* “10”.

The same pattern appears in Se \**fášar-ā* “20”, du. of \**fášar-u(m)* “10” (Brockelmann 1908: 490; reconstructions after Dolgopolsky p.c.).

12. In most languages with the decimal system the numerals “30” & “40” have been derived from “3” & “4” respectively. There are a few exceptions, e.g. Turkic (“30”, “40”), Russian (“40”), Afar (“40”) and also Egyptian. The form *mfb3* “30” is apparently derived by *m*-prefix (nomen loci or nomen instrumenti) from the root *fb3*. Loprieno 1986: 1309 assumes the primary meaning to have been “ausgestattet sein” for *fb3* and “Komplettheit” for *mfb3*.

Albright 1918: 92 and Ember 1930: 33 connect Eg *mfb3* “30” with He *məʃubbār* “intercalculated”. Albright assumes an original semantic motivation based on the lunar calendar. A remarkable support can be found in Djebel Nefusa (Zenatian group of NBe) *uyər* “30”, originally “moon, month” (Woelfel 1954: 31; DELC 108).

13. The numeral “40” is not directly attested. Thanks to the play on words, the form \**hm.* can be reconstructed (Sethe 1916: 29; Wb. III: 82; DELC 299; Loprieno 1986: 1309). It is supported by CoSB *ʒME* “40”. Loprieno l.c. speculates about derivation from *hmw* “herstellen” or “kunstfertig sein” (Wb. III: 82f).

14. The numerals \**ši[nyu]t* “100” and its dual \**ši[nyū]tay* “200” (Loprieno 1995: 71) are probably derived from *šny* “rund sein, umkreisen” (Wb. IV: 489), hence “100” = \**“runde [Zahl]”* (DELC 254; Loprieno 1986: 1309). It is remarkable to mention the same semantic motivation in Berber: Mzab (Hanoteau) *twīnest*, pl. *twīnas* “100” vs. Proto-Tuareg \**tā-wīnist*, pl. \**tī-wuynās* “ring, circle” (Prasse 1974: 53, 133) > Tahaggart *tāwīnəst*, pl. *tiwīnās*, Ayr *tawəynəst* (Blažek 1998: 163).

Beja *šee* “100” represents probably a late Egyptian borrowing (Reinisch 1895: 207 adds Ar *šayf* “quantitas”).

15. Eg \**ha3* “1 000” < \**hal* or \**har* (DELC 255; Loprieno 1995: 71) was derived by Albright (1918: 92) from the verb *h3y* “messen, wägen” (Wb. III: 223). The sign “lotus” for the numeral “1000” is undoubtedly based on homonymy with *h3* “leaf of lotus” (Wb. III: 218). Albright connects the latter word with Geez *həllat* “cane, reed, papyrus” (Leslau 1987: 261). The verb *h3y* is comparable with Se \**h-l-y* “to think, consider, ponder, decide” etc. (Leslau 1987: 262). Takács (1997:217) seeks external parallels in the Bata group of Central Chadic: Nzangi *háarú*, Garwa *háarum* etc. “100” (Strümpell).

16. Eg \**ǰ[u]báf* “10 000” (vocalized after Callender 1975: 57) is depicted by the sign of a “finger”, written *ǰbʃ* (Wb. V: 565). The principle of homonymy was probably used again, but “...Allerdings ist der semantische



Zusammenhang zwischen dem Ideogramm und dessen arithmetischen Bedeutung nicht geklärt" (Loprieno 1986: 1310).

There are remarkable areal parallels in various languages of North Africa: West Chadic: Hausa *dúbuu*, pl. *dubbái* "1000", Ngizim (Schuh) *dóbu*; Central Chadic: Gidar, Nzangi *dúbu*, Mboku *dúbò*, Hurza-Uzam *dúbu*, Mada *dóbu* (all Mouchet), Gisiga (Lukas) *dubu*; Kotoko: Affade *debbú*, *dubu*, Makeri, Gulfei *dubu*, Kuseri *dibu*, *dúbu*, Shoe *debu*; Saharan: Kanuri (Lukas) *dóvu* (Sölken 1967: 172, 181), Teda-Daza *dubu*; Central Sudanic: Bagirmi *dubu*, Sara *duub*-etc. id. (Skinner 1994: 47) and further perhaps East Cushitic *\*ḏibb-* "100" (Black 1974: 216; Sasse 1982: 47) > Oromo *ḏibb-a*, Konso *ḏipp-a*, D'irayta *ḏipp*; Arbore (Hayward) *ḏiib-á*; Highland East Cushitic *\*ḏibb-e* > Burji *ḏibba*, Sidamo, Kambatta, Hadiyya *ḏibbe* etc., although some of these forms can be borrowed from Oromo.

17. Loprieno 1986: 1310 quotes three sets of Semitic comparanda to *ḥfn* "100 000":

(i) Ar *ḥafl* "multitude" (Sethe 1916: 13–14; Albright 1918: 93);

(ii) He *ḥoḥnayim* "beide hohle Hände"; Ar *ḥafna* "Hohlraum" (Loprieno 1986: 1317, fn. 51);

(iii) Se *\*ʔáluḥ-* "1 000" (Loprieno 1995: 71). However this comparison seems to be the least probable, both for the semantic difference "100 000" vs. "1 000", and for the incompatibility of *ʔ* vs. *ḥ*.

18. Eg *\*ḥaḥ* "1 000 000, big number" continues in CoS *ḡaḡ* "multitude, many" (DELG 320). Albright 1918: 93 derived it from the verb *ḥḥy* "to seek" (Wb. III: 151–52), extrapolating the original meaning of the numeral as *\*"what is sought for (but not attained)"* ⇒ "illimitably great".

### Conclusion

The preceding analysis allows us to formulate the following results concerning the origin of Egyptian cardinals:

1) For the numerals "1" & "2", there are exact cognates in Berber, "3" is probably related to its counterpart in Guanche, perhaps also in Beja.

2) Among Semitic cardinals a perfect cognate appears only in the case of the numeral "2". The numerals "1" and "6" are comparable with Semitic data on the root level (in the case of "6" a borrowing from Semitic cannot be excluded). The same can be said about "5", if it is derived from "hand", but it is evidently an independent Egyptian innovation.

3) The numeral "4" has a common origin with its counterparts in Beja, East Cushitic, Chadic and probably Omotic.

4) The numeral "7" in Egyptian, Semitic and Berber can represent a common heritage in spite of irregular correspondences explainable by sandhi and combinatorial changes. An alternative solution assumes a borrowing, probably from a Semitic source where a promising internal etymology is possible

("index-finger"). But in this case the questions *Where ? & When ?* must be answered.

5) The numeral "8" cannot be directly connected with its Semitic and Berber counterparts. The most natural etymology is based on the numeral "3" as in East Cushitic languages. A borrowing is not impossible either, but the substitution \**ṭ* >> \**ḥ* has no analogy among identified Semitic borrowings in Egyptian.

6) The internal etymology of the numeral "9" within Egyptian looks more naturally than the Semitic and Berber parallels, regardless of their genetic or areal character, because the substitution \**t-š..* > \**p-s..* is again without any analogy.

7) The numeral "10" is compatible with Berber "10" (accepting the development \**mūḍ* < \**muṣḍ*-) or with East Chadic "10" and Berber "100" or with East Cushitic \**mig*-/\**mug*- "full(ness)".

The numerals reconstructible for a common Afroasiatic continuum (it means with continuants at least on a root level in three or more branches) are "1", "2", "3", "4", with certain problems "5", perhaps even "10". None of the numerals continue in five or even all six branches. It implies two alternative solutions: (i) These numerals were created only after the separation of the peripheral branches, i.e. Omotic and partly Cushitic and Chadic; (ii) In the Omotic, Cushitic and Chadic branches almost all the originally inherited numerals ("1" — "5" ?) were replaced by borrowings from substratal languages or by local innovations. The answer (ii) looks more probable. If we investigate the semantic field of Afroasiatic numerals from the point of view of Afroasiatic dialectology, the closest set of numerals appears in Berber, followed by Semitic, further by Cushitic (Beja !) and Chadic, and finishing by Omotic. The irregular similarities of the numerals "6"- "9" in Egyptian, Semitic and Berber are more probably caused by areal influences rather than by chance. Their relationship is excluded. Deducing from the hopeful internal etymologies of the Semitic numerals, the diffusion could move from Semitic to Egyptian and Berber. It does not exclude the possibility that in Egyptian and Berber there were higher numerals of their own. They could have been contaminated, accommodated or almost totally substituted by imported forms.

#### Abbreviations:

AA Afroasiatic; Ak Akkadian; Ar Arabic; As Assyrian; Ba Babylonian; Be Berber; Bj Beja; Central; Ch Chadic; Co Coptic (A Ahminic, B Bohairic, F Fayyumic, S Sahidic); Cu Cushitic; E East; Eg Egyptian; Ep Epigraphic; Gu Guanche; H Highland; He Hebrew; K Kingdom; L Lowland; M Middle; m modern; n new; N North; O Old; Om Omotic; p proto-; Ph Phoenician; S South; Se Semitic; Ug Ugaritic; W West.

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